How to Install and Configure an Ansible Control Node – Part 2

Ravi Saive | Last Updated: October 15, 2019 | Read Time: 3 mins | Ansible | 1 Comment

In the previous topic, you learn about basic Ansible terminologies and basic concepts. In this topic (Part 2 of Ansible series), we will demonstrate how you can install and configure an **Ansible** control node on **RHEL 8**.

In our setup, we are going to use **1 Ansible** server and **2 remote Linux nodes**:

```
Control Node 1: RHEL 8 Server      IP: 192.168.0.108        Ansible Server
Managed Host 1: Debian 10          IP: 192.168.0.15         Webserver
Managed Host 2: CentOS 8           IP: 192.168.0.200        Database Server
```

What is an Ansible Control Node?

A **control node** is a Linux server that has **Ansible** installed on it and is used for managing remote hosts or nodes. These remote systems are known as **Managed Hosts** or **Managed nodes**.

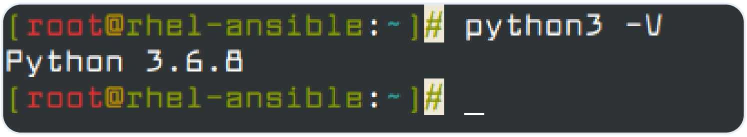
In the setup above, the control node is the **RHEL 8** server on which **Ansible** will be installed and **Debian 10** & **CentOS 8** are the managed hosts.

NOTE: Ansible is only installed on the control node and not the managed hosts.

Step 1: Installing Python 3

By default, RHEL 8 comes with Python 3 and you can verify the version of Python installed on your server by running.

```
# python3 -V
```

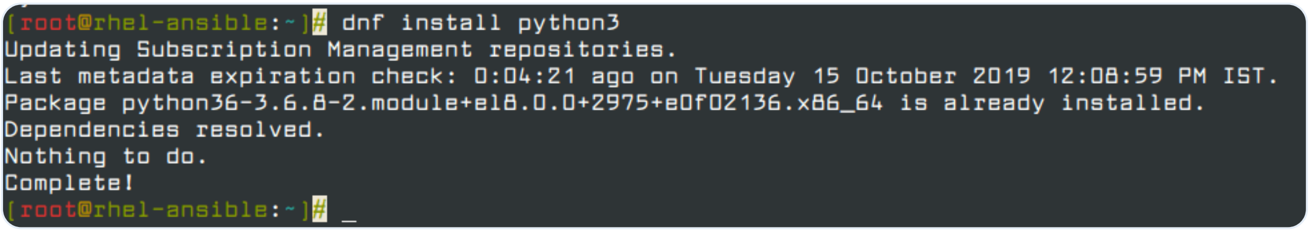


```
[root@rhel-ansible:~]# python3 -V
Python 3.6.8
[root@rhel-ansible:~]# _
```

Check Python Version

If for whatever reason Python3 is not installed, install it using the following dnf command.

```
# dnf install python3
```

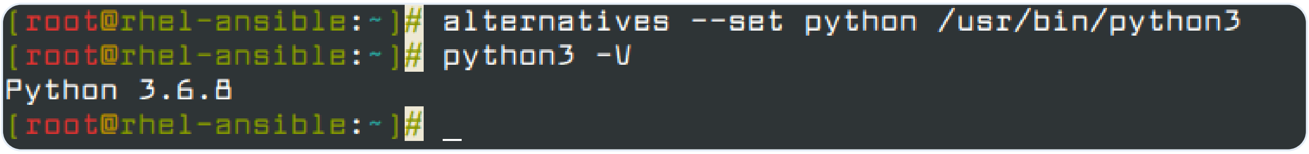


```
[root@rhel-ansible:~]# dnf install python3
Updating Subscription Management repositories.
Last metadata expiration check: 0:04:21 ago on Tuesday 15 October 2019 12:08:59 PM IST.
Package python36-3.6.8-2.module+el8.0.0+2975+e0f02136.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@rhel-ansible:~]# _
```

Install Python3 on RHEL 8

If multiple versions of Python exist on your RHEL 8 system, you can set Python 3 as the default Python version by running.

```
# alternatives --set python /usr/bin/python3
```



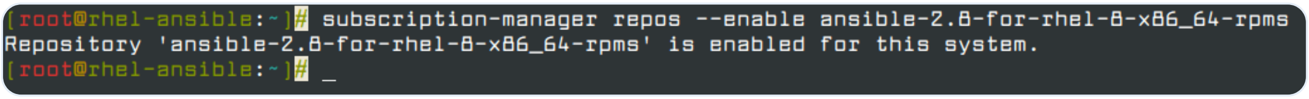
```
[root@rhel-ansible:~]# alternatives --set python /usr/bin/python3
[root@rhel-ansible:~]# python3 -V
Python 3.6.8
[root@rhel-ansible:~]# _
```

Set Default Python Version

Step 2: Enable Official RedHat Repository

After installing **Python3**, make sure that you have enabled RedHat's official repository for **Ansible** as shown below.

```
# subscription-manager repos --enable ansible-2.8-for-rhel-8-x86_64-rpms
```



```
[root@rhel-ansible:~]# subscription-manager repos --enable ansible-2.8-for-rhel-8-x86_64-rpms
Repository 'ansible-2.8-for-rhel-8-x86_64-rpms' is enabled for this system.
[root@rhel-ansible:~]# _
```

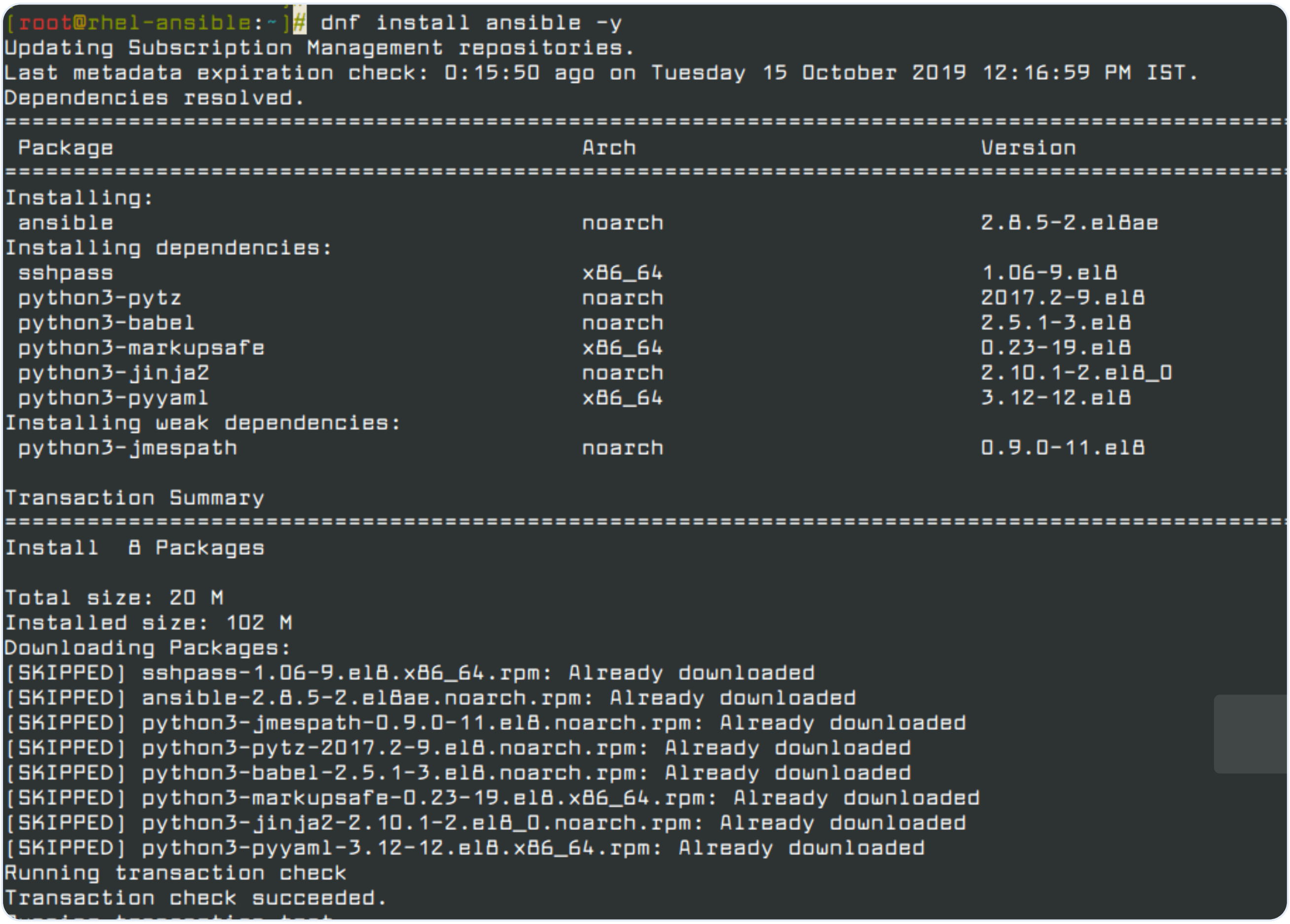
Enable RedHat Ansible Repository

NOTE: For the above command to work, ensure that you have [registered your RHEL 8 for RedHat subscription](https://www.tecmint.com/install-and-configure-an-ansible-control-node/).

Step 3: Install Ansible on RHEL 8

To install **Ansible** on the Control node which is our **RHEL 8** system, run the command.

```
# dnf install ansible -y
```

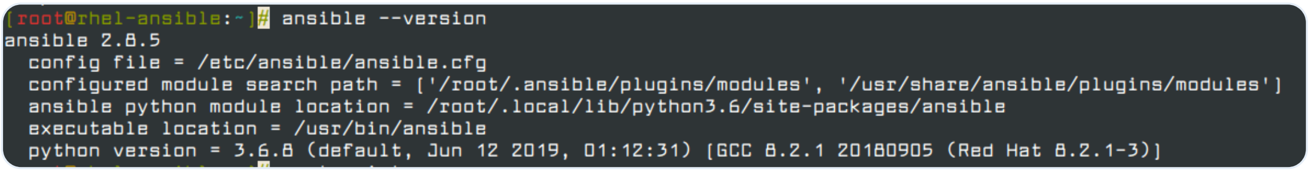


```
[root@rhel-ansible:~]# dnf install ansible -y
Updating Subscription Management repositories.
Last metadata expiration check: 0:15:50 ago on Tuesday 15 October 2019 12:16:59 PM IST.
Dependencies resolved.
==============================================================================================
 Package                                  Arch                         Version
==============================================================================================
Installing:
 ansible                                  noarch                       2.8.5-2.el8ae
Installing dependencies:
 sshpass                                  x86_64                       1.06-9.el8
 python3-pytz                             noarch                       2017.2-9.el8
 python3-babel                            noarch                       2.5.1-3.el8
 python3-markupsafe                       x86_64                       0.23-19.el8
 python3-jinja2                           noarch                       2.10.1-2.el8_0
 python3-pyyaml                           x86_64                       3.12-12.el8
Installing weak dependencies:
 python3-jmespath                         noarch                       0.9.0-11.el8

Transaction Summary
==============================================================================================
Install  8 Packages

Total size: 20 M
Installed size: 102 M
Downloading Packages:
[SKIPPED] sshpass-1.06-9.el8.x86_64.rpm: Already downloaded
[SKIPPED] ansible-2.8.5-2.el8ae.noarch.rpm: Already downloaded
[SKIPPED] python3-jmespath-0.9.0-11.el8.noarch.rpm: Already downloaded
[SKIPPED] python3-pytz-2017.2-9.el8.noarch.rpm: Already downloaded
[SKIPPED] python3-babel-2.5.1-3.el8.noarch.rpm: Already downloaded
[SKIPPED] python3-markupsafe-0.23-19.el8.x86_64.rpm: Already downloaded
[SKIPPED] python3-jinja2-2.10.1-2.el8_0.noarch.rpm: Already downloaded
[SKIPPED] python3-pyyaml-3.12-12.el8.x86_64.rpm: Already downloaded
Running transaction check
Transaction check succeeded.
```

Install Ansible in RHEL 8

Once installed, you can check the version of **Ansible** installed by running the command.

```
# ansible --version
```



```
[root@rhel-ansible:~]# ansible --version
ansible 2.8.5
  config file = /etc/ansible/ansible.cfg
  configured module search path = ['/root/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /root/.local/lib/python3.6/site-packages/ansible
  executable location = /usr/bin/ansible
  python version = 3.6.8 (default, Jun 12 2019, 01:12:31) [GCC 8.2.1 20180905 (Red Hat 8.2.1-3)]
```

Check Ansible Version

Step 4: Creating a Static Host Inventory File

So far, we have successfully installed **ansible** on the **Control Node** which is our **RHEL 8** server. The remote nodes to be managed by the control node need to be defined in a file called the **inventory** file. The inventory file is a plain text file that resides on the control node and consists of the remote hosts' hostnames or IP addresses.

A static host file is a plain text file that contains a list of managed nodes defined by their IP addresses or hostnames. Let's create a static file '**hosts**' in the **/etc/ansible/** directory.

```
# vi /etc/ansible/hosts
```

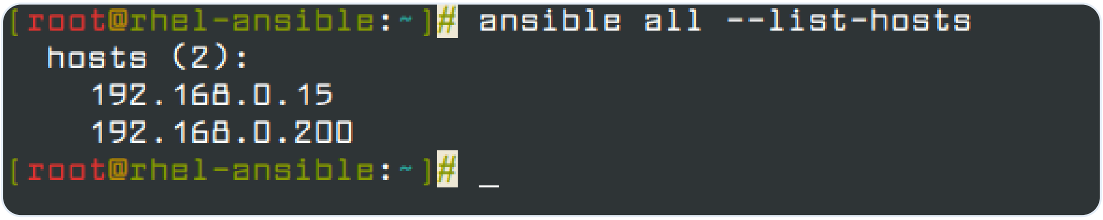
Next, define a group or groups for your managed hosts. We have 2 managed hosts as earlier seen in the setup at the introduction of this topic. From the setup, the static host file will be defined as follows:

```
[webserver]
192.168.0.15

[database_server]
192.168.0.200
```

Save and exit the inventory file.

To list managed hosts run:

```
# ansible all -i hosts --list-hosts
```



```
[root@rhel-ansible:~]# ansible all --list-hosts
  hosts (2):
    192.168.0.15
    192.168.0.200
[root@rhel-ansible:~]# _
```

Check Host Inventory File

Thus far, we have managed to install **Ansible** in the control node and define the managed hosts in a static Host file residing on the control node.

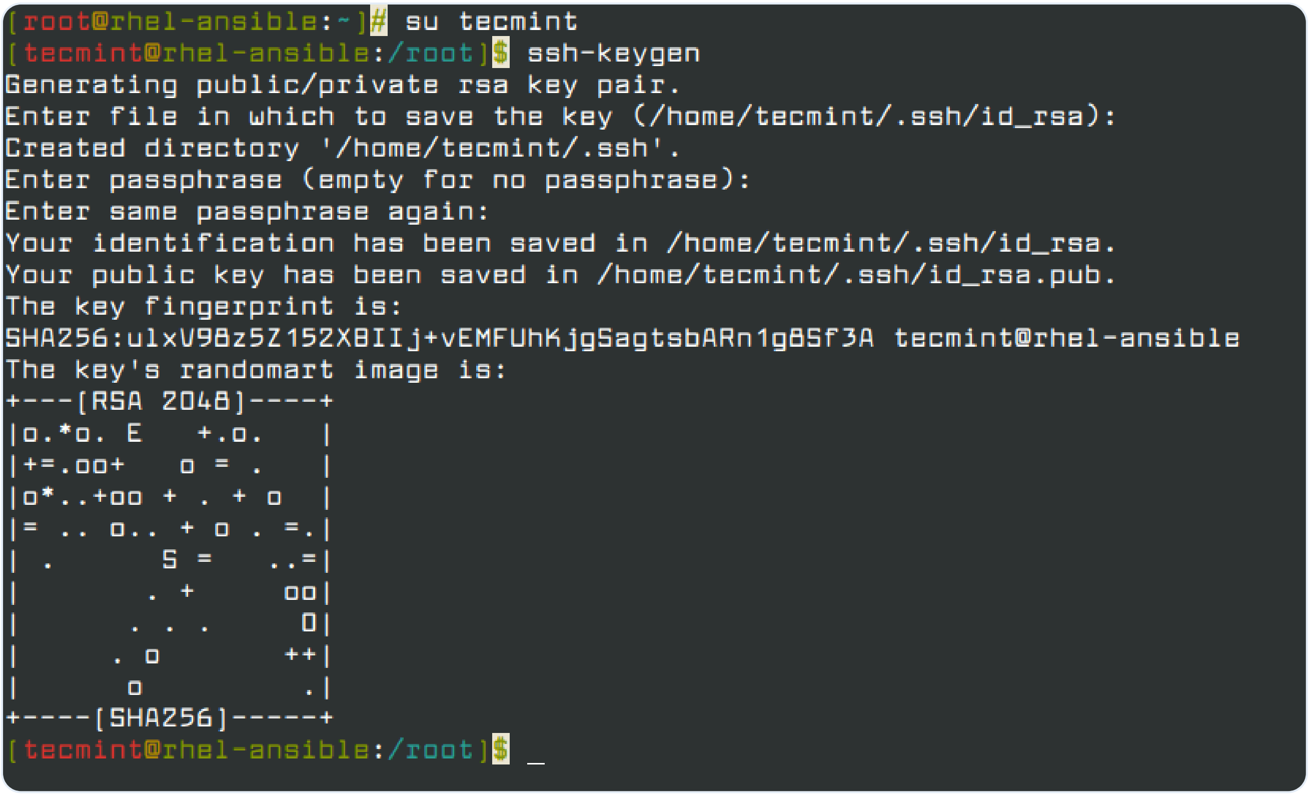
Next, we are going to see how we can manage or control our remote or managed hosts.

Step 5: Setup the Ansible Control Node to Connect with the Remote Nodes

For the **Ansible control node** (RHEL 8) to manage the remote host systems (**Debian 10** and **CentOS 8**) we need to set up passwordless SSH authentication to the remote hosts. For this to happen, you need to generate an SSH key pair and save the public key to the remote nodes.

On the Ansible control node, log in as a normal user and generate the SSH key pair by running the command.

```
# su tecmint
$ ssh-keygen
```

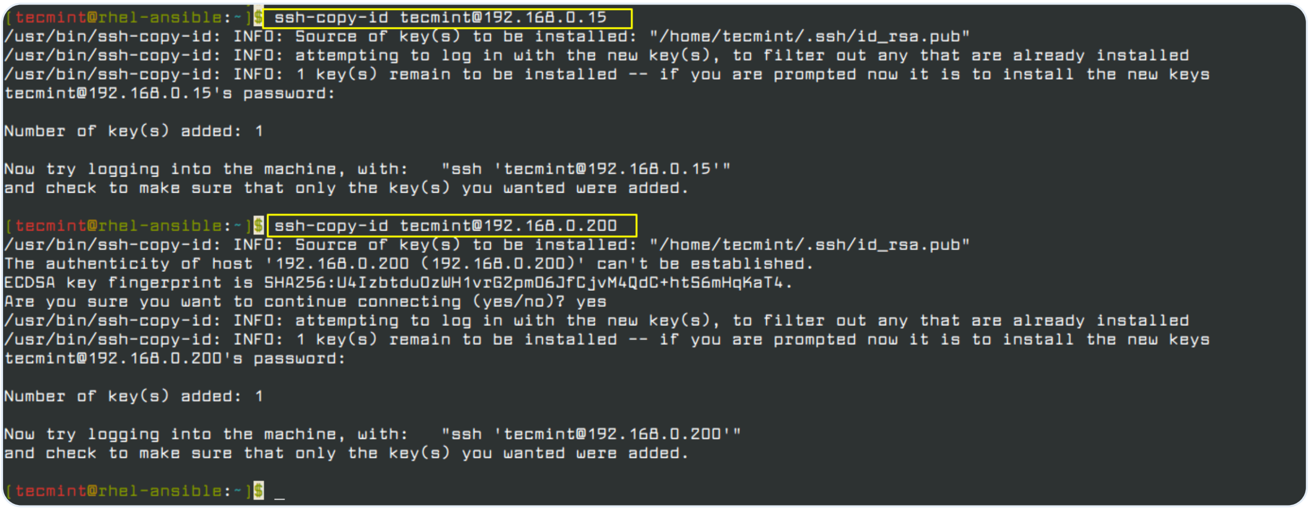


```
[root@rhel-ansible:~]# su tecmint
[tecmint@rhel-ansible:/root]$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/tecmint/.ssh/id_rsa):
Created directory '/home/tecmint/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/tecmint/.ssh/id_rsa.
Your public key has been saved in /home/tecmint/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:ulxV98z5Z152XBIIj+vEMFUhKjgSagtsbARn1g85f3A tecmint@rhel-ansible
The key's randomart image is:
+---[RSA 2048]----+
|o.*o. E   +.o.   |
|+=.oo+   o = .   |
|o*..+oo + . + o  |
|= .. o.. + o . =.|
| .      S =   ..=|
|      . +      oo|
|     . . .      O|
|    . o        ++|
|     o          .|
+----[SHA256]-----+
[tecmint@rhel-ansible:/root]$ _
```

Generate SSH Keys

Next, copy the public ssh key to remote nodes as shown.

```
$ ssh-copy-id tecmint@192.168.0.15              (For Debian 10 node)
$ ssh-copy-id tecmint@192.168.0.200             (For CentOS 8 node)
```

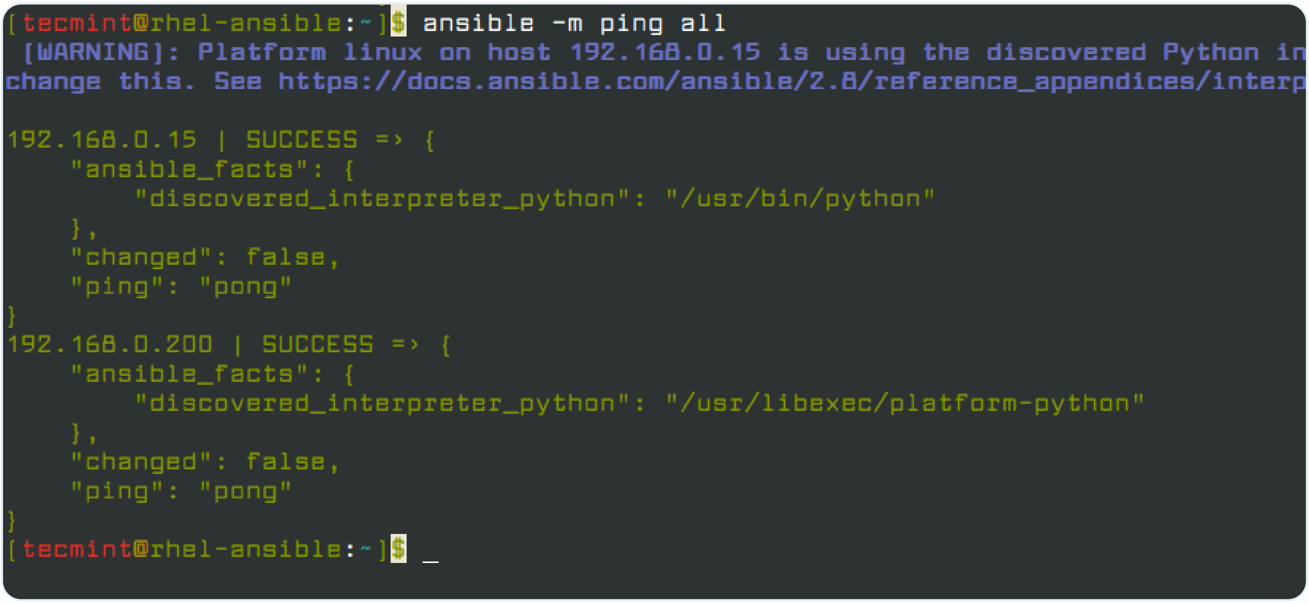


```
[tecmint@rhel-ansible:~]$ ssh-copy-id tecmint@192.168.0.15
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/tecmint/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
tecmint@192.168.0.15's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'tecmint@192.168.0.15'"
and check to make sure that only the key(s) you wanted were added.

[tecmint@rhel-ansible:~]$ ssh-copy-id tecmint@192.168.0.200
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/tecmint/.ssh/id_rsa.pub"
The authenticity of host '192.168.0.200 (192.168.0.200)' can't be established.
ECDSA key fingerprint is SHA256:U4IzbtduOzWH1vrG2pmO6JfCjvM4QdC+htS6mHqKaT4.
Are you sure you want to continue connecting (yes/no)? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
tecmint@192.168.0.200's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'tecmint@192.168.0.200'"
and check to make sure that only the key(s) you wanted were added.

[tecmint@rhel-ansible:~]$ _
```

Copy SSH Key to Remote Host

Having added the public keys to all of our remote nodes, we are going to issue a ping command from the Ansible Control node to ensure that they are reachable.

```
$ ansible -m ping all
```



```
[tecmint@rhel-ansible:~]$ ansible -m ping all
 [WARNING]: Platform linux on host 192.168.0.15 is using the discovered Python in
change this. See https://docs.ansible.com/ansible/2.8/reference_appendices/interp

192.168.0.15 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": false,
    "ping": "pong"
}
192.168.0.200 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/libexec/platform-python"
    },
    "changed": false,
    "ping": "pong"
}
[tecmint@rhel-ansible:~]$ _
```

Ping All Remote Nodes

From the output above, we can clearly see that the ping command was successful and we were able to test reachability to all the nodes.

Conclusion

In this guide, we successfully installed and set up **Ansible** on the control node running RHEL 8. We later defined the remote hosts in a static host file and configured the control node to connect and control the managed hosts by setting up SSH passwordless authentication.

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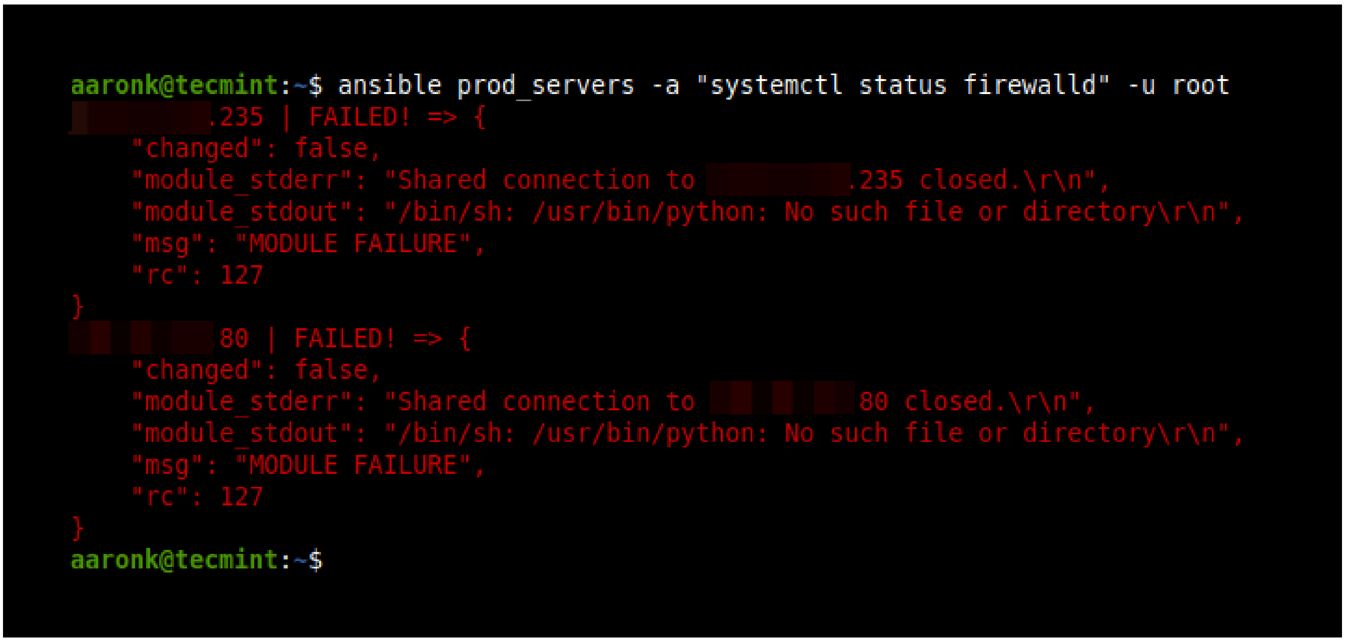

```
aaronk@tecmint:~$ ansible prod_servers -a "systemctl status firewalld" -u root
[redacted].235 | FAILED! => {
    "changed": false,
    "module_stderr": "Shared connection to [redacted].235 closed.\r\n",
    "module_stdout": "/bin/sh: /usr/bin/python: No such file or directory\r\n",
    "msg": "MODULE FAILURE",
    "rc": 127
}
[redacted]80 | FAILED! => {
    "changed": false,
    "module_stderr": "Shared connection to [redacted]80 closed.\r\n",
    "module_stdout": "/bin/sh: /usr/bin/python: No such file or directory\r\n",
    "msg": "MODULE FAILURE",
    "rc": 127
}
aaronk@tecmint:~$
```

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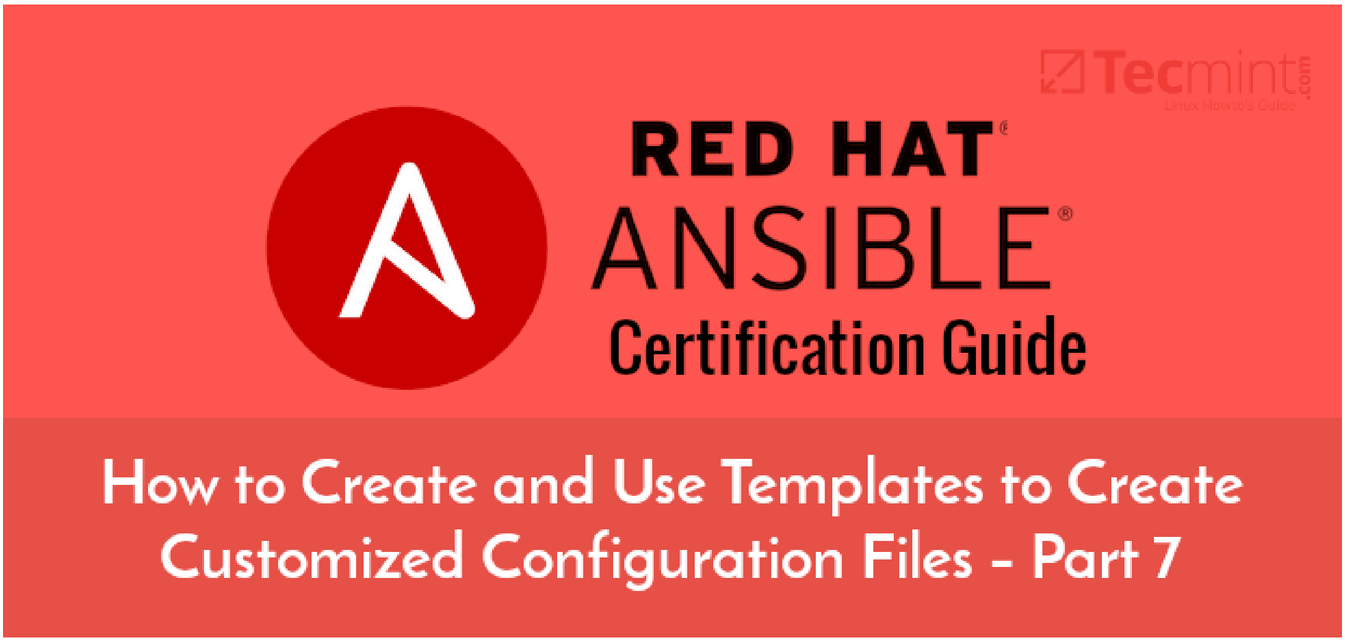
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1 Comment

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ahmet

June 8, 2020 at 6:54 pm

I didn’t understand how managed nodes trust to control node. In this way any people can do this with their server, so they can connect my server. Don’t we have to authenticate the ansible control node at our local systems (managed nodes)?

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