Name: Pacinos, Angela Monique A.	**Date Performed:** 12-03-23
Course/Section: CPE232 - CPE31S4	**Date Submitted:** 12-06-23
Instructor: Dr. Jonathan V. Taylar	**Semester and SY:** 1st Sem: '23 - '24

Activity 15: OpenStack Installation (Neutron, Horizon, Cinder)

1. Objectives

Create a workflow to install OpenStack using Ansible as your Infrastructure as Code (IaC).

2. Intended Learning Outcomes

1. Analyze the advantages and disadvantages of cloud services
2. Evaluate different Cloud deployment and service models
3. Create a workflow to install and configure OpenStack base services using Ansible as documentation and execution.

3. Resources

Oracle VirtualBox (Hypervisor)

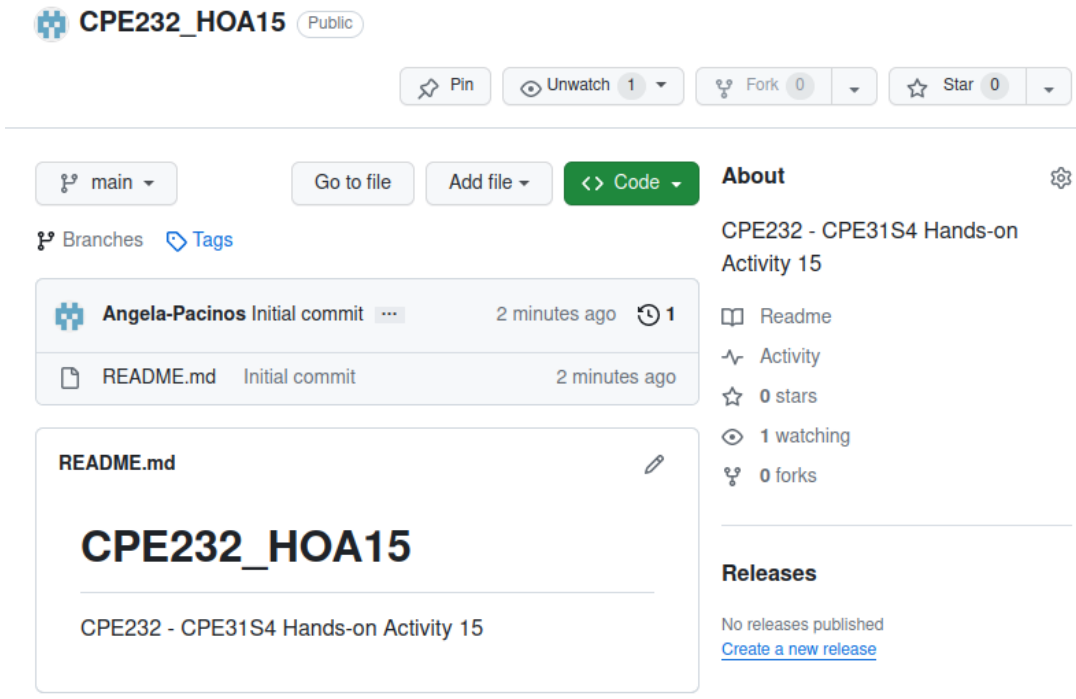
1x Ubuntu VM or Centos VM

4. Tasks

1. Create a new repository for this activity.
2. Create a playbook that converts the steps in the following items in https://docs.openstack.org/install-guide/
   a. Neutron
   b. Horizon
   c. Cinder
   d. Create different plays in installing per server type (controller, compute etc.) and identify it as a group in the Inventory file.
   e. Add, commit and push it to your GitHub repo.

5. Output (screenshots and explanations)

INPUT
Create a new repository for this activity

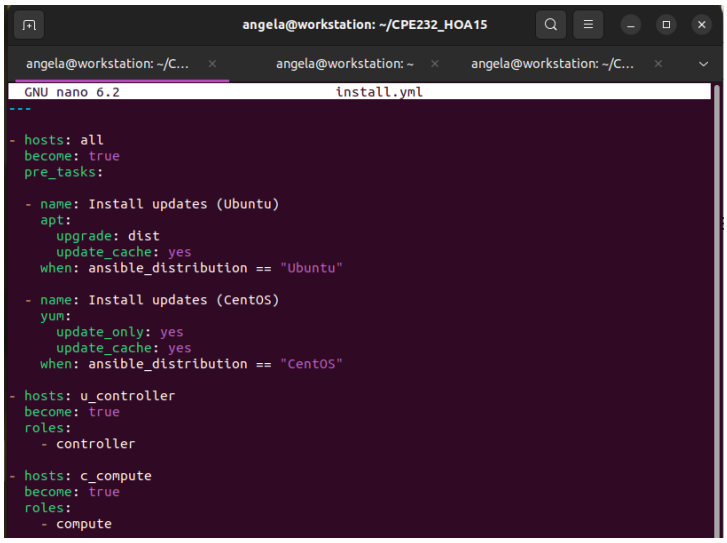



```
angela@workstation: ~/CPE232_HOA15
angela@workstation:~$ git clone https://github.com/Angela-Pacinos/CPE232_HOA15.git
Cloning into 'CPE232_HOA15'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
angela@workstation:~$ cd CPE232_HOA15
angela@workstation:~/CPE232_HOA15$ sudo nano ansible.cfg
[sudo] password for angela:
angela@workstation:~/CPE232_HOA15$ sudo nano inventory
angela@workstation:~/CPE232_HOA15$ sudo nano controller.yml
angela@workstation:~/CPE232_HOA15$ ls
ansible.cfg  controller.yml  inventory  README.md
angela@workstation:~/CPE232_HOA15$
```

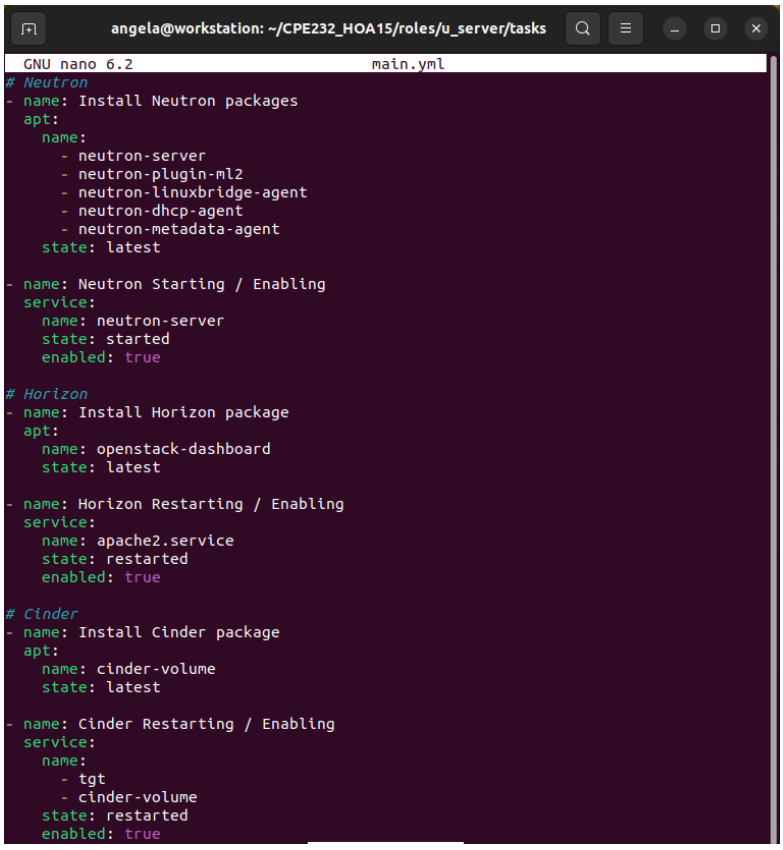
```
angela@workstation: ~/CPE232_HOA15
angela@workstation:~/CPE232_HOA15$ tree
.
├── ansible.cfg
├── controller.yml
├── inventory
├── README.md
└── roles
    ├── c_server
    │   └── tasks
    │       └── main.yml
    └── u_server
        └── tasks
            └── main.yml

5 directories, 6 files
```

Create a playbook that converts the steps in the following items in https://docs.openstack.org/install-guide/

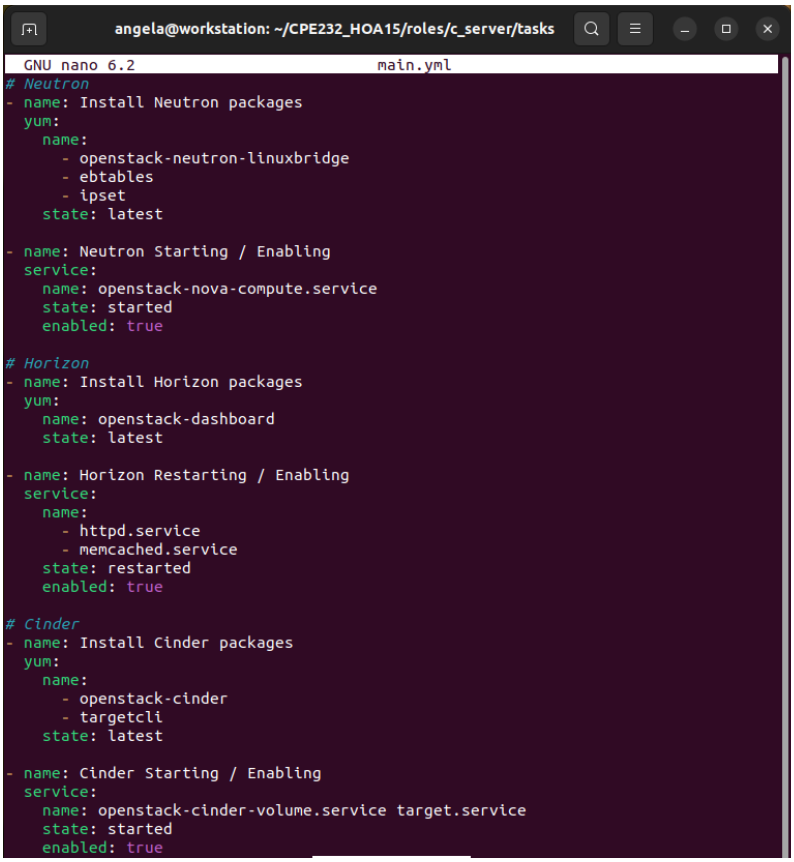
controller.yml



for Ubuntu



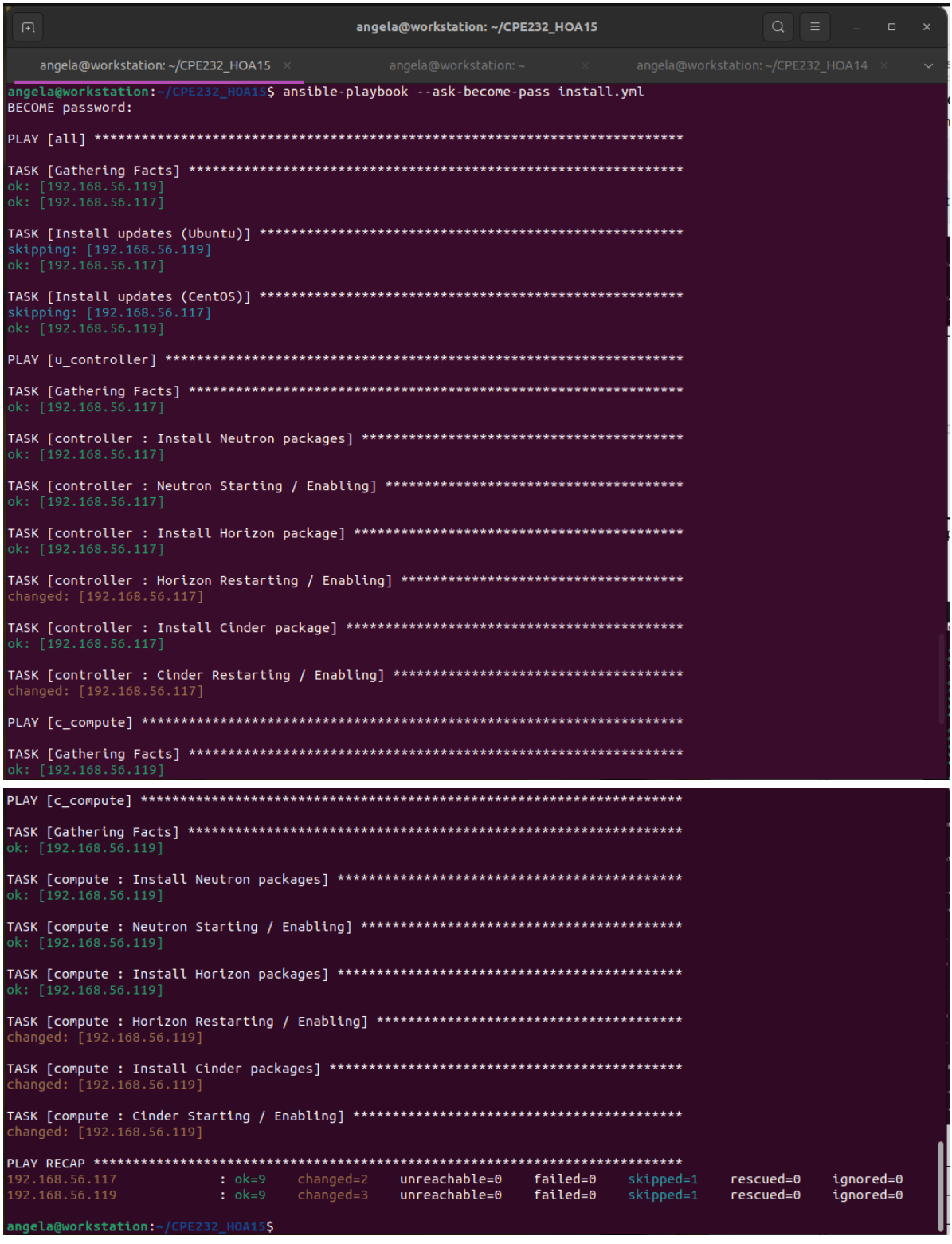
for CentOS



Add, commit, and push it to your GitHub repo.

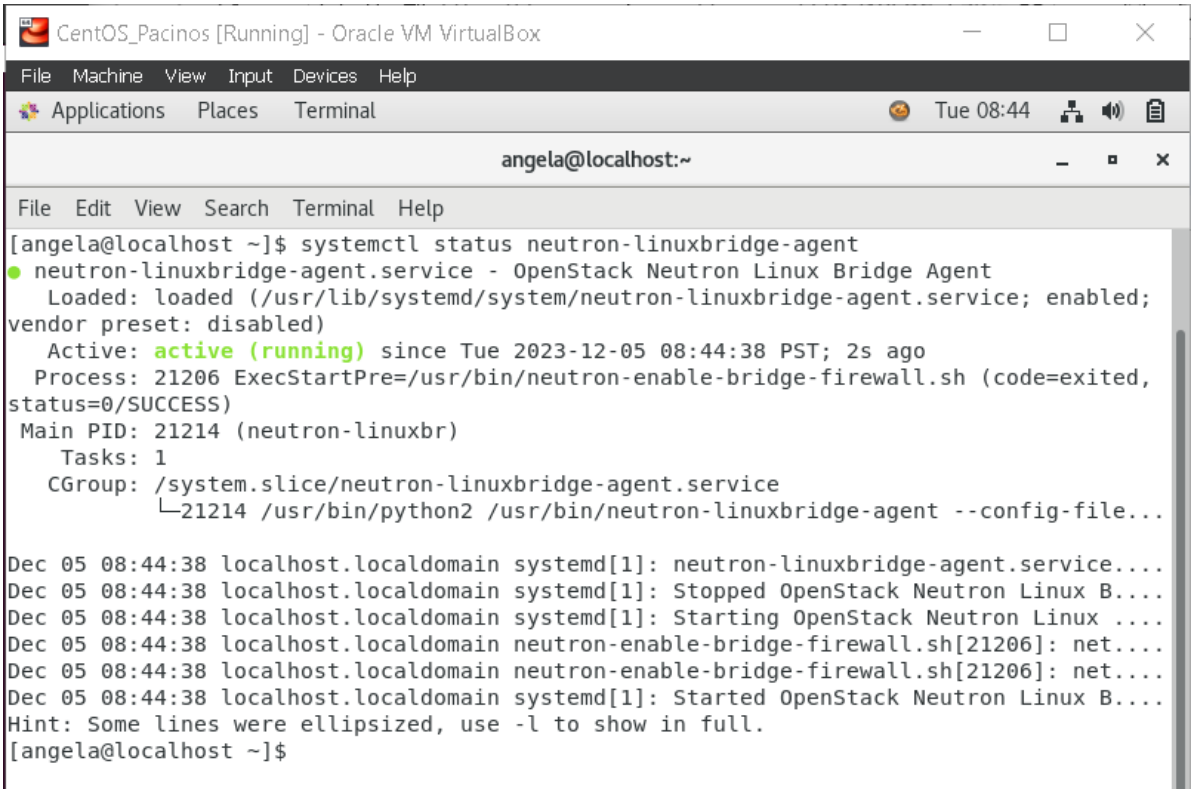
```
angela@workstation:~/CPE232_HOA15$ git add *
angela@workstation:~/CPE232_HOA15$ git commit -m "HOA15"
[main 8028a15] HOA15
 5 files changed, 125 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 controller.yml
 create mode 100644 inventory
 create mode 100644 roles/c_server/tasks/main.yml
 create mode 100644 roles/u_server/tasks/main.yml
angela@workstation:~/CPE232_HOA15$ git push origin main
Username for 'https://github.com': Angela-Pacinos
Password for 'https://Angela-Pacinos@github.com':
Enumerating objects: 13, done.
Counting objects: 100% (13/13), done.
Delta compression using up to 2 threads
Compressing objects: 100% (8/8), done.
Writing objects: 100% (12/12), 1.40 KiB | 89.00 KiB/s, done.
Total 12 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), done.
To https://github.com/Angela-Pacinos/CPE232_HOA15.git
   da5683c..8028a15  main -> main
```

PROCESS

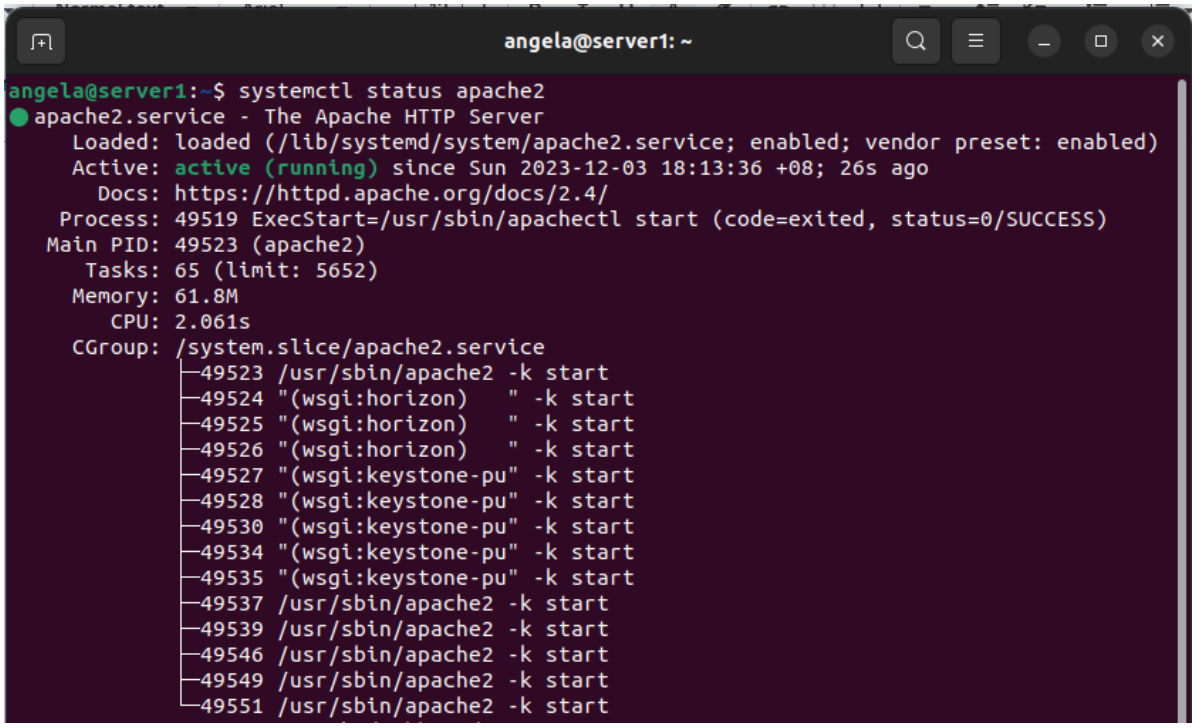

angela@workstation: ~/CPE232_HOA15
angela@workstation: ~/CPE232_HOA15
angela@workstation: ~
angela@workstation: ~/CPE232_HOA14
angela@workstation:~/CPE232_HOA15$ ansible-playbook --ask-become-pass install.yml
BECOME password:
PLAY [all] ***
TASK [Gathering Facts] ***
ok: [192.168.56.119]
ok: [192.168.56.117]
TASK [Install updates (Ubuntu)] **
skipping: [192.168.56.119]
ok: [192.168.56.117]
TASK [Install updates (CentOS)] **
skipping: [192.168.56.117]
ok: [192.168.56.119]
PLAY [u_controller] **
TASK [Gathering Facts] ***
ok: [192.168.56.117]
TASK [controller : Install Neutron packages] *************************************
ok: [192.168.56.117]
TASK [controller : Neutron Starting / Enabling] **********************************
ok: [192.168.56.117]
TASK [controller : Install Horizon package] **************************************
ok: [192.168.56.117]
TASK [controller : Horizon Restarting / Enabling] *********************************
changed: [192.168.56.117]
TASK [controller : Install Cinder package] ***************************************
ok: [192.168.56.117]
TASK [controller : Cinder Restarting / Enabling] **********************************
changed: [192.168.56.117]
PLAY [c_compute] ***
TASK [Gathering Facts] ***
ok: [192.168.56.119]
PLAY [c_compute] ***
TASK [Gathering Facts] ***
ok: [192.168.56.119]
TASK [compute : Install Neutron packages] **
ok: [192.168.56.119]
TASK [compute : Neutron Starting / Enabling] *************************************
ok: [192.168.56.119]
TASK [compute : Install Horizon packages] **
ok: [192.168.56.119]
TASK [compute : Horizon Restarting / Enabling] ************************************
changed: [192.168.56.119]
TASK [compute : Install Cinder packages] ***
changed: [192.168.56.119]
TASK [compute : Cinder Starting / Enabling] ***************************************
changed: [192.168.56.119]
PLAY RECAP ***
192.168.56.117 : ok=9 changed=2 unreachable=0 failed=0 skipped=1 rescued=0 ignored=0
192.168.56.119 : ok=9 changed=3 unreachable=0 failed=0 skipped=1 rescued=0 ignored=0
angela@workstation:~/CPE232_HOA15$

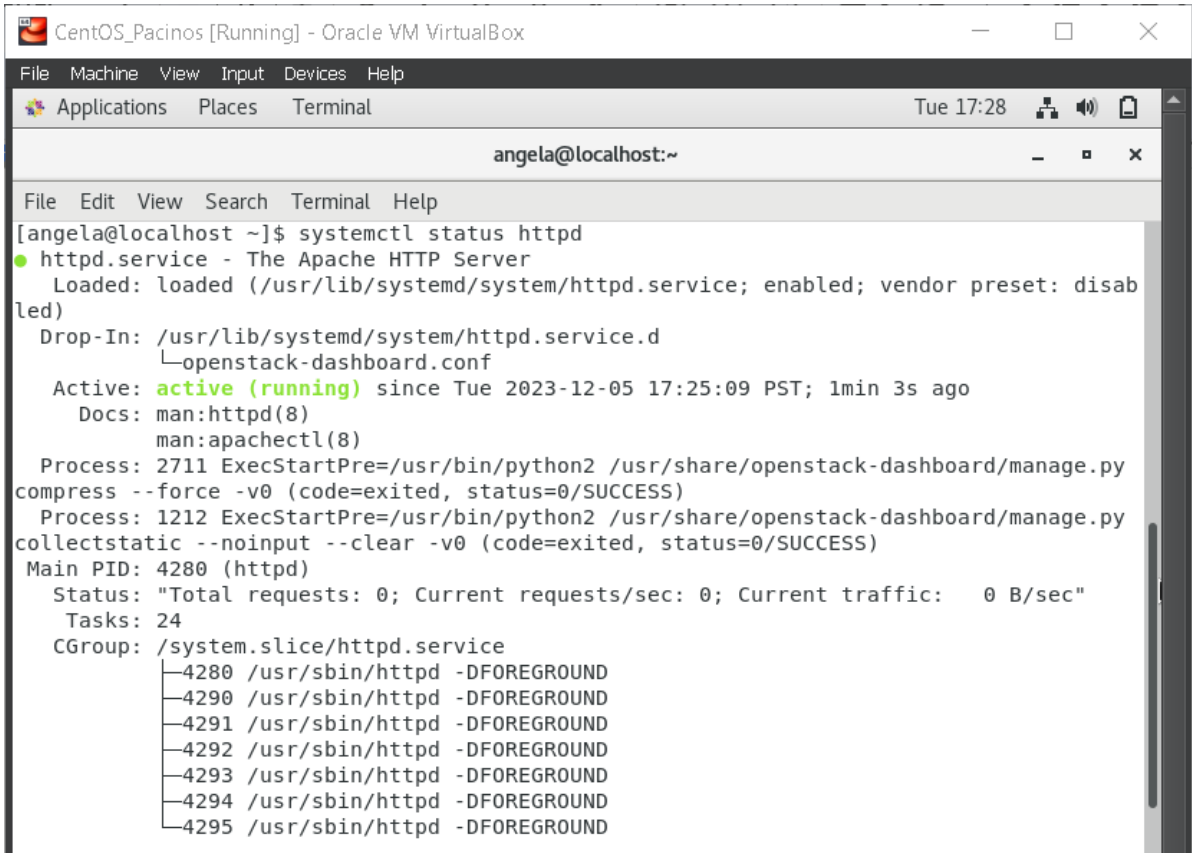
OUTPUT

Neutron

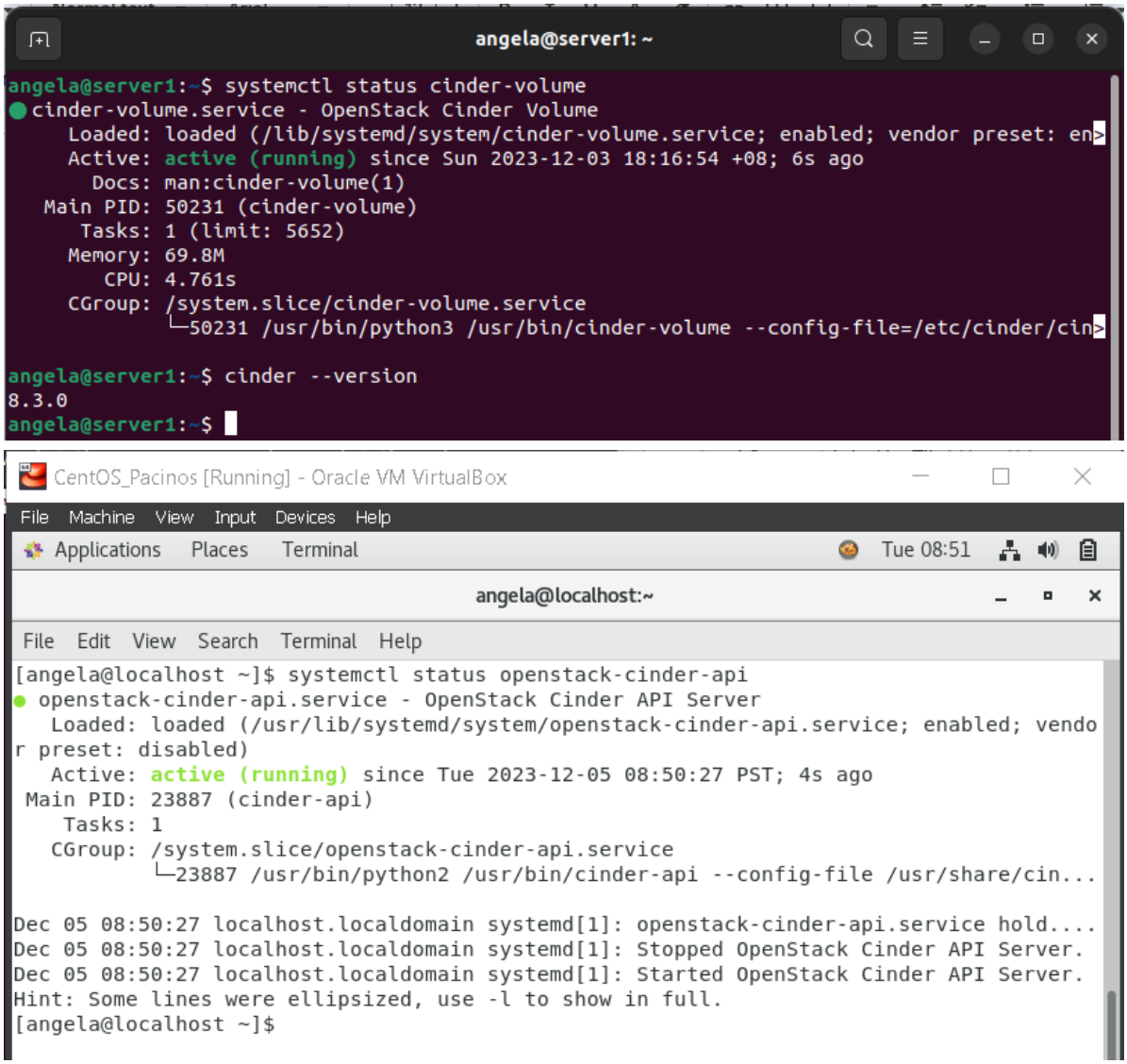


Horizon


angela@server1: ~
angela@server1:~$ systemctl status apache2
apache2.service - The Apache HTTP Server
Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
Active: active (running) since Sun 2023-12-03 18:13:36 +08; 26s ago
Docs: https://httpd.apache.org/docs/2.4/
Process: 49519 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
Main PID: 49523 (apache2)
Tasks: 65 (limit: 5652)
Memory: 61.8M
CPU: 2.061s
CGroup: /system.slice/apache2.service
├─49523 /usr/sbin/apache2 -k start
├─49524 "(wsgi:horizon) " -k start
├─49525 "(wsgi:horizon) " -k start
├─49526 "(wsgi:horizon) " -k start
├─49527 "(wsgi:keystone-pu" -k start
├─49528 "(wsgi:keystone-pu" -k start
├─49530 "(wsgi:keystone-pu" -k start
├─49534 "(wsgi:keystone-pu" -k start
├─49535 "(wsgi:keystone-pu" -k start
├─49537 /usr/sbin/apache2 -k start
├─49539 /usr/sbin/apache2 -k start
├─49546 /usr/sbin/apache2 -k start
├─49549 /usr/sbin/apache2 -k start
└─49551 /usr/sbin/apache2 -k start


CentOS_Pacinos [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal
Tue 17:28
angela@localhost:~
File Edit View Search Terminal Help
[angela@localhost ~]$ systemctl status httpd
httpd.service - The Apache HTTP Server
Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disabled)
Drop-In: /usr/lib/systemd/system/httpd.service.d
└─openstack-dashboard.conf
Active: active (running) since Tue 2023-12-05 17:25:09 PST; 1min 3s ago
Docs: man:httpd(8)
man:apachectl(8)
Process: 2711 ExecStartPre=/usr/bin/python2 /usr/share/openstack-dashboard/manage.py compress --force -v0 (code=exited, status=0/SUCCESS)
Process: 1212 ExecStartPre=/usr/bin/python2 /usr/share/openstack-dashboard/manage.py collectstatic --noinput --clear -v0 (code=exited, status=0/SUCCESS)
Main PID: 4280 (httpd)
Status: "Total requests: 0; Current requests/sec: 0; Current traffic: 0 B/sec"
Tasks: 24
CGroup: /system.slice/httpd.service
├─4280 /usr/sbin/httpd -DFOREGROUND
├─4290 /usr/sbin/httpd -DFOREGROUND
├─4291 /usr/sbin/httpd -DFOREGROUND
├─4292 /usr/sbin/httpd -DFOREGROUND
├─4293 /usr/sbin/httpd -DFOREGROUND
├─4294 /usr/sbin/httpd -DFOREGROUND
└─4295 /usr/sbin/httpd -DFOREGROUND

Cinder



Reflections:

1. **Describe Neutron, Horizon and Cinder services**

Neutron is a Networking service that is developed to allow users to build / set up topology to prove network connectivity. With this it enables users to set up and manage networks, can configure it and customize according to needs. It allows for utilizing different networking technologies to power the cloud and is managed by other OpenStack services like Nova.

Horizon is primarily developed to facilitate data sharing, providing public access, etc. It serves as a web-based dashboard providing the users graphical interface. IT also includes features like managing compute instances, storage, networks, etc making it an essential tool for users that prefer visual interface.

Cinder is developed to create and manage a service that provides data storage to cloud computing applications. It allows users to create, attach, and detach block storage devices to VMs. It can be used for many things like storing data or providing more storage capacity offering flexibility in choosing what is the right storage solution depending on the need.

Conclusions:

This activity is still connected to the previous activities. Since this is connected to the previous ones I already quite learned properly how to build the structure and debug the errors. I just followed the installation process on the website and turned it into a playbook structure. I encountered errors where some of the libraries of the packages are not supported by the version so I removed them and replace with the appropriate ones. This error was mostly in the centos that is why I made sure that the right libraries that are compatible with the version that I have is what is being installed. Overall, installing these packages didn't take that long since there is only a few, I just had challenges in finding the right version and right libraries to install as well as the indentation and spellings in the playbook.