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Course/Section: CPE232-CPE31S22	**Date Submitted:** 10/12/2022
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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)

```
madiane@workstation:~$ git clone git@github.com:qmja/Agpaoa_HOA_15.git
Cloning into 'Agpaoa_HOA_15'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
```

Figure 1.1 Cloning Agpaoa_HOA_15 Repository

I created a new repository in GitHub for this activity and named it Agpaoa_HOA_15. After creating the repository, I cloned it in my workstation by using the command “git clone”.

```
madiane@workstation:~$ cd Agpaoa_HOA_15
madiane@workstation:~/Agpaoa_HOA_15$ mkdir roles
madiane@workstation:~/Agpaoa_HOA_15$ cd roles
madiane@workstation:~/Agpaoa_HOA_15/roles$ mkdir neutron horizon cinder
```

Figure 1.2 Creating directories for the roles

I created the roles directories by using the command “mkdir”, then changed the directory to roles directory by using the command “cd”. Within the roles directory I created the directory for neutron, horizon, and cinder by using the command “mkdir”.

```
madiane@workstation:~/Agpaoa_HOA_15/roles$ cd neutron
madiane@workstation:~/Agpaoa_HOA_15/roles/neutron$ mkdir tasks
madiane@workstation:~/Agpaoa_HOA_15/roles/neutron$ cd tasks
madiane@workstation:~/Agpaoa_HOA_15/roles/neutron/tasks$ touch main.yml
```

Figure 1.3 Creating task directory and main.yml for neutron

First, I changed the directory to neutron by using the command “cd” and then I created the tasks directory by using the command “mkdir”. After that I changed the directory to tasks by using the command “cd” and I created the main.yml by using the command “touch”.

```
madiane@workstation:~/Agpaoa_HOA_15/roles/neutron/tasks$ cd ..
madiane@workstation:~/Agpaoa_HOA_15/roles/neutron$ cp -r tasks ~/Agpaoa_HOA_15/roles/horizon
madiane@workstation:~/Agpaoa_HOA_15/roles/neutron$ cp -r tasks ~/Agpaoa_HOA_15/roles/cinder
```

Figure 1.4 Copying the tasks directory and it’s contents to other directories within the roles directory

First I changed the directory to neutron by using the command “cd”, then I copied the tasks directory and its content to horizon and cinder directories by using the command “cp” and option “-r”.

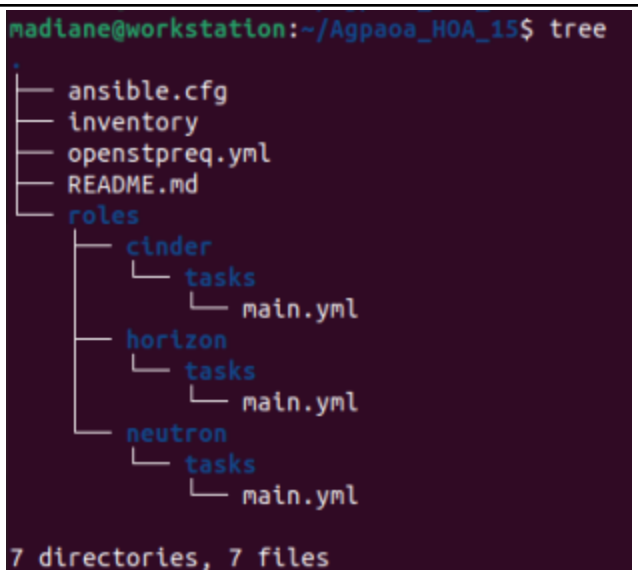

Figure 1.5 Files within the Agpaoa_HOA_15 directory

Figure 1.6 Contents of inventory file

The inventory file contains the IP address of my Ubuntu Server 1 which is 192.168.56.105 (controller group).

Figure 1.7 Contents of openstpreq.yml playbook

The openstpreq.yml contains the pre-tasks and the roles that contain the tasks that will install and configure the Neutron, Horizon and Cinder.

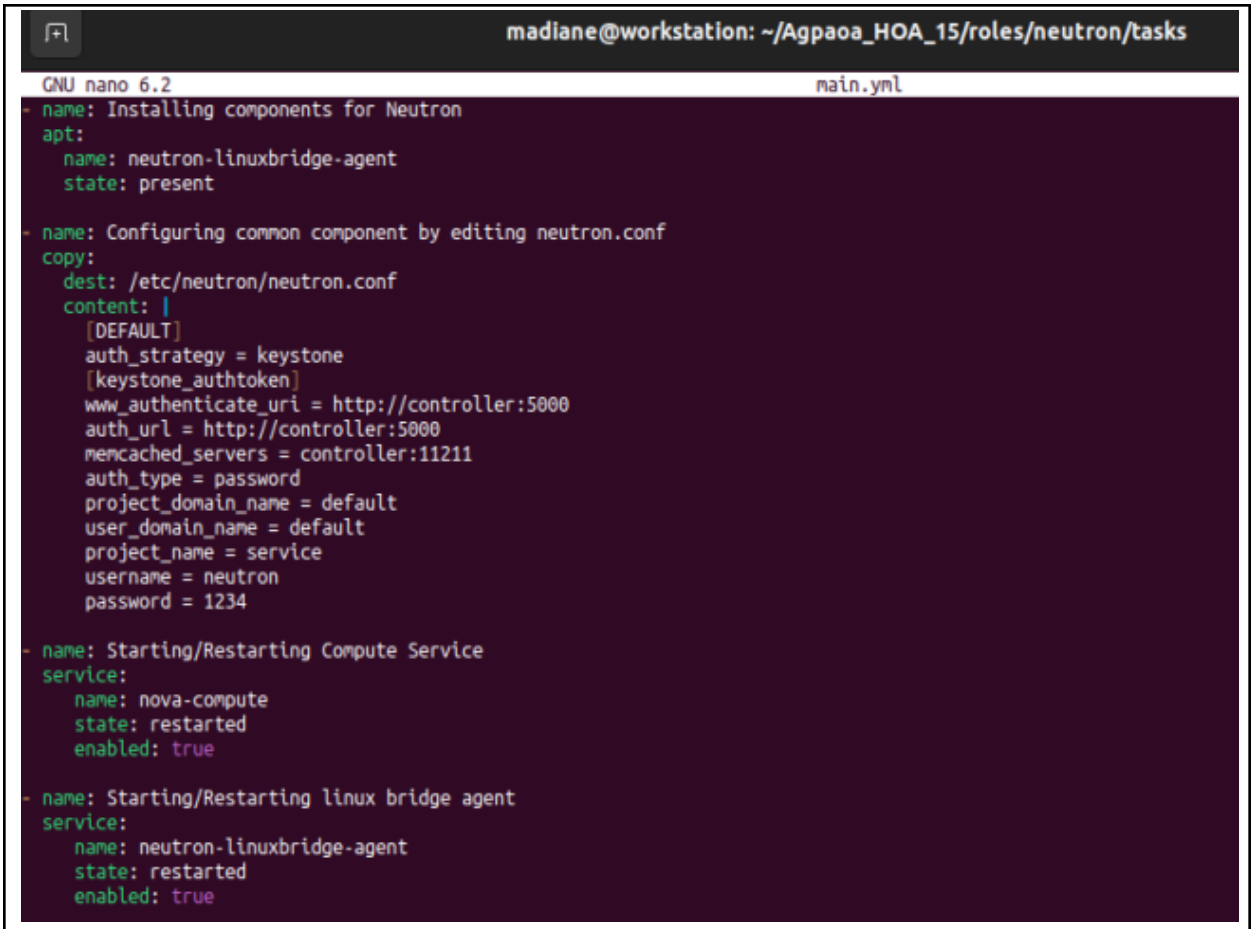

Figure 2.1 Contents of main.yml within the neutron directory

The main.yml within the neutron directory contains the workflow for installing and configuring neutron and restarting the service of nova-compute and neutron-linuxbridge-agent.

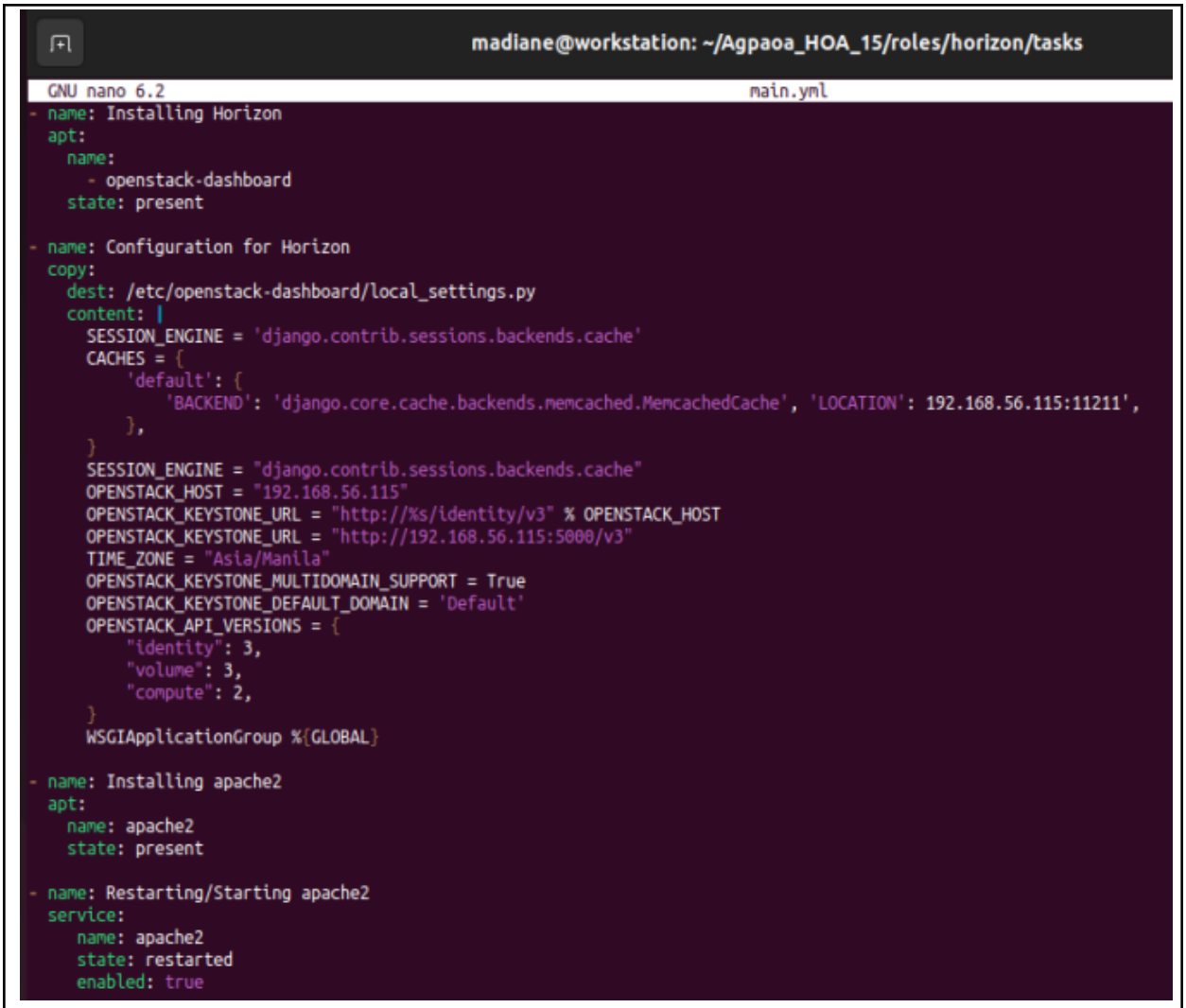

Figure 2.2 Contents of main.yml within the horizon directory

The main.yml within the horizon directory contains the workflow for installing and configuring horizon, installation of apache2 and restarting the service of apache2.

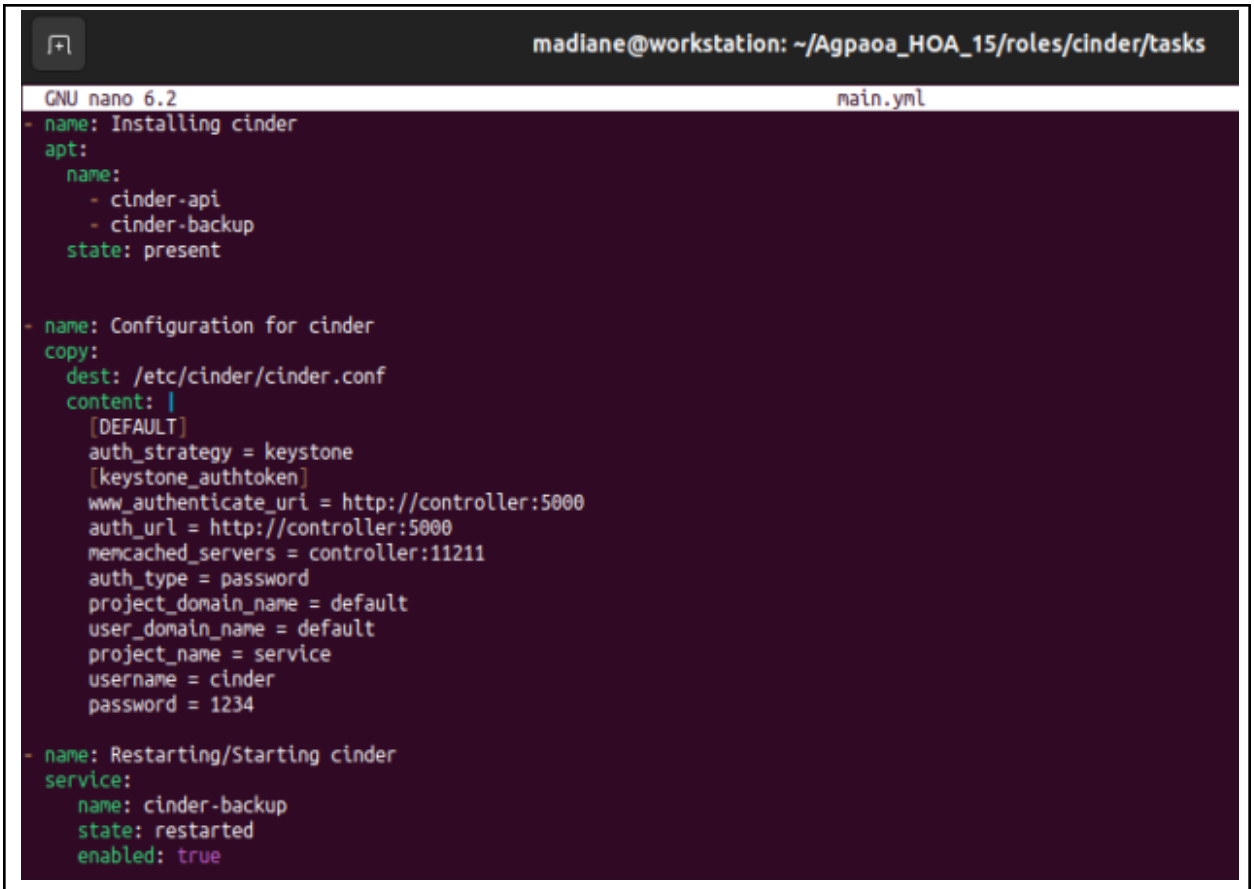

Figure 2.3 Contents of main.yml within the cinder directory

The main.yml within the cinder directory contains the workflow for installing and configuring cinder and restarting the service of cinder-backup.

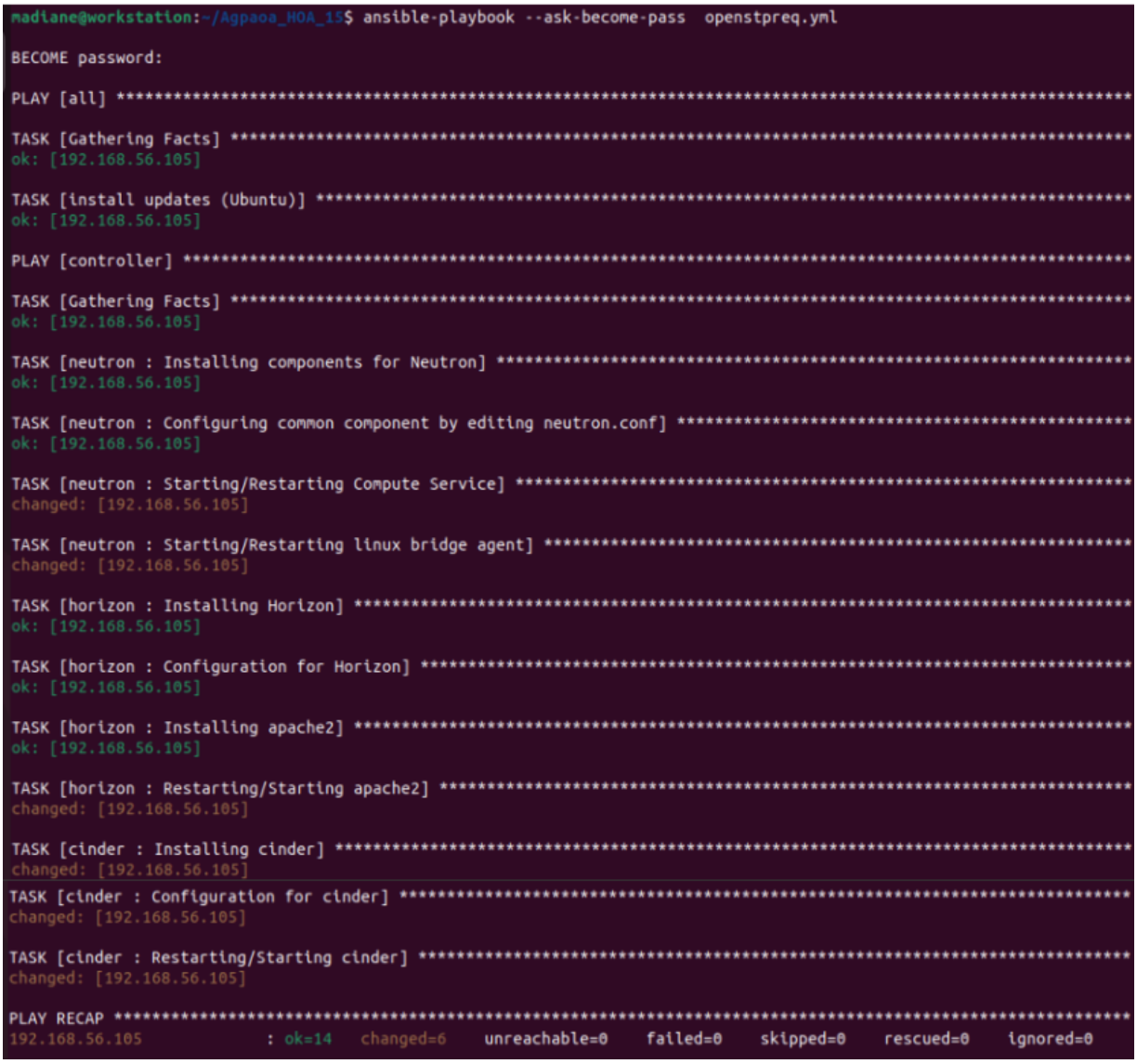

Figure 3.1 Running the playbook openstpreq.yml

I run the playbook openstpreq.yml using the command “ansible-playbook --ask-become-pass openstpreq.yml”. The first task executed was the pre-task for the installation of updates within the Ubuntu Server. After the pre-tasks, the tasks for installing, configuring and starting/restarting the services of Neutron, Horizon and Cinder will be executed. According to the play recap, all of the tasks was successfully executed based on their states that shows “ok” and “changed”.

```
madiane@workstation:~/Agpaoa_HOA_15$ git add *
madiane@workstation:~/Agpaoa_HOA_15$ git commit -m "HOA-15"
[main ae99cc6] HOA-15
 6 files changed, 135 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 inventory
 create mode 100644 openstpreq.yml
 create mode 100644 roles/cinder/tasks/main.yml
 create mode 100644 roles/horizon/tasks/main.yml
 create mode 100644 roles/neutron/tasks/main.yml
madiane@workstation:~/Agpaoa_HOA_15$ git push
Enumerating objects: 16, done.
Counting objects: 100% (16/16), done.
Compressing objects: 100% (8/8), done.
Writing objects: 100% (15/15), 2.14 KiB | 1.07 MiB/s, done.
Total 15 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), done.
To github.com:qmja/Agpaoa_HOA_15.git
   cb050e7..ae99cc6  main -> main
```

Figure 3.2 Saving the files to my GitHub Repository

First, I add the files within the Agpaoa_HOA_15 directory to the GitHub Repository by using the command “git add *”. Next, I commit the changes by using the command “git commit -m “HOA-15”. Lastly, I upload the files within the GitHub repository using the command “git push”.

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services

The Neutron, Horizon, and Cinder services are part of the OpenStack cloud computing platform. Neutron is considered as the Networking Service and its purpose is for giving network connectivity to cloud’s computing resources. Horizon is considered as the web-based dashboard which allows the users to have a link with other services by using a web-based interface. Lastly, Cinder is considered as the Block Storage Service and its purpose is to give users the ability to create and manage persistent block storage volumes for virtual machines.

Conclusions:

In conclusion, this activity helped me to learn the process of installing and configuring the OpenStack with Neutron, Horizon and Cinder services, and practice my skill in creating a flow using ansible. I also learned about the purpose of Neutron, Horizon and Cinder services for Openstack. Neutron is the Networking Service for

OpenStack, Horizon is the web-based dashboard for OpenStack and Cinder is the Block Storage Service for OpenStack. These three services are important for the OpenStack cloud because these services will give the users the required tools to manage and utilize the cloud's computing resources.

Honor Pledge:

"I affirm that I will not give or receive unauthorized help on this activity and that all work will be my own."