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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)

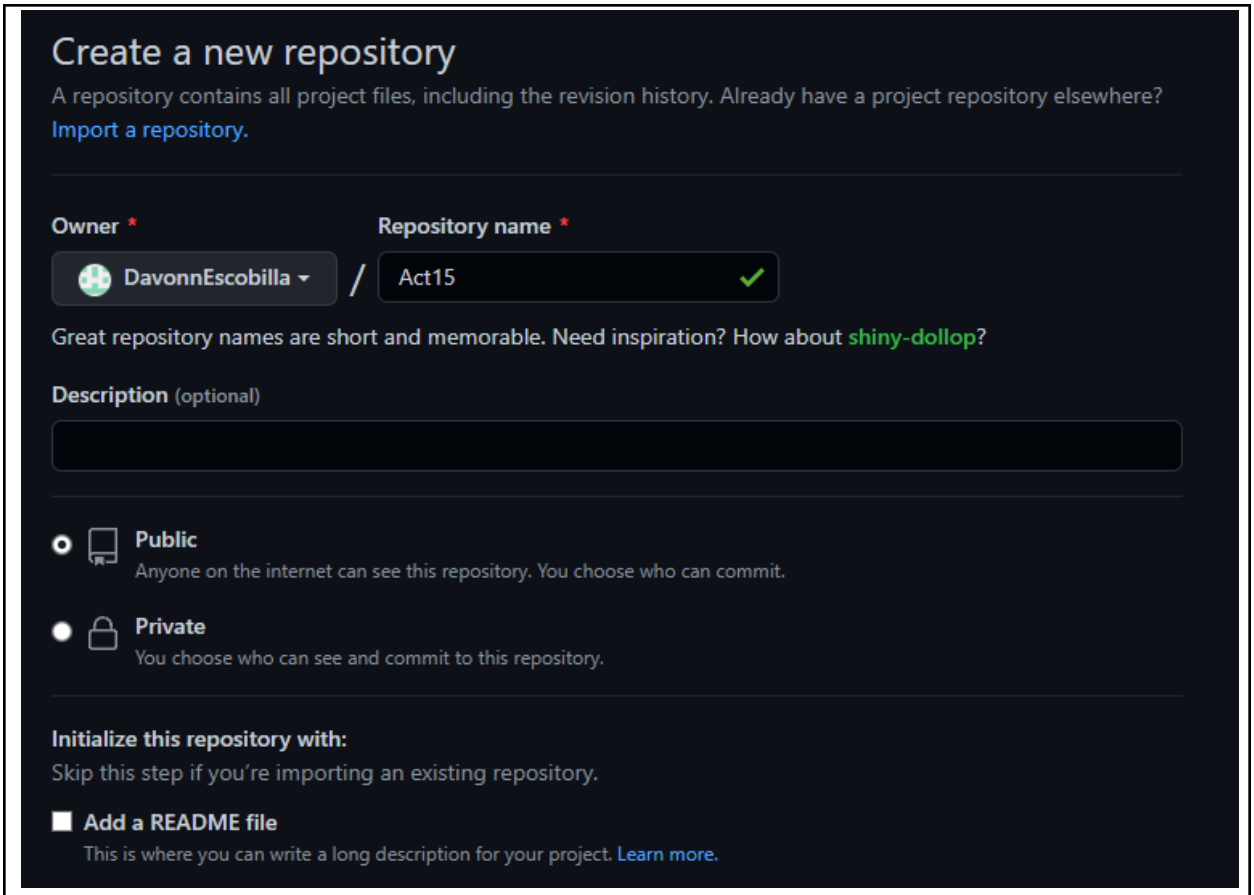
1x Ubuntu VM or Centos VM

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.

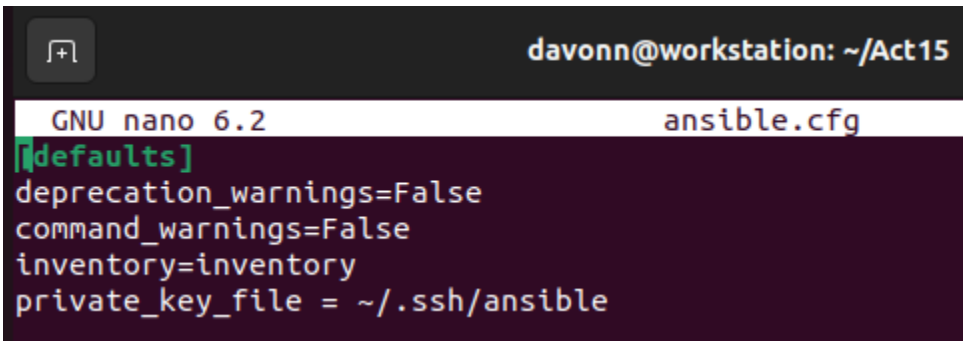
5. Output (screenshots and explanations)

Create a repository for the activity and clone it on the managed node.

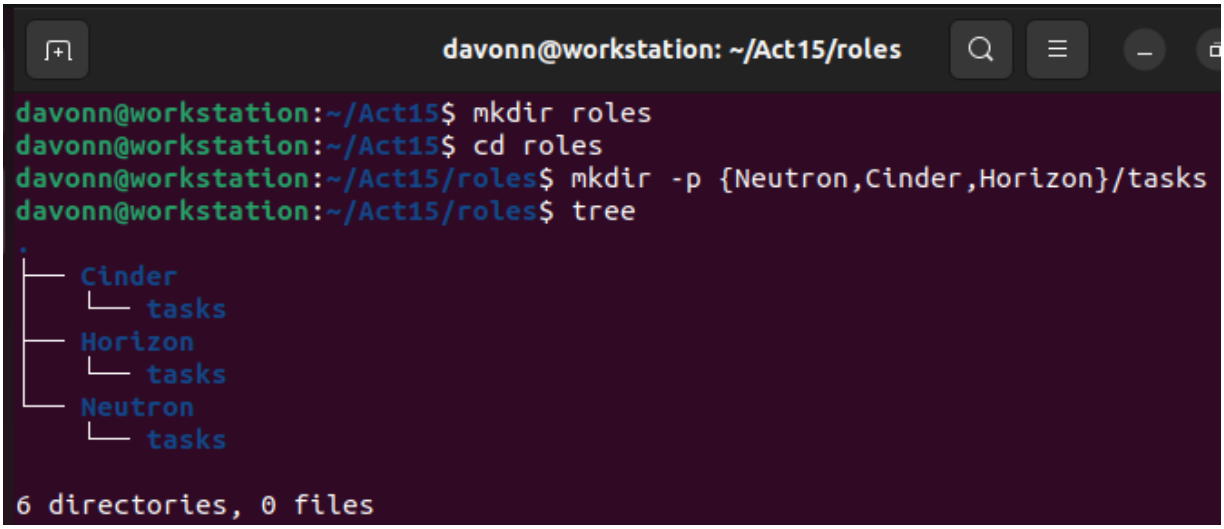



```
davonn@workstation:~$ git clone git@github.com:DavonnEscobilla/Act15.git
Cloning into 'Act15'...
warning: You appear to have cloned an empty repository.
davonn@workstation:~$ ls
Act13              CPE_MIDEXAM_ESCOBILLA  Escobilla_Act9Prometheus  snap
Act14              Desktop                main.yml                  Templates
Act15              Documents              Music                     Videos
Container          Downloads              nano.save
CPE232_Davonn      Escobilla_Act10        Pictures
CPE232_Escobilla   Escobilla_Act8Nagios   Public
```

Next is to create ansible.cfg and inventory properly grouped.



Next, create roles for each task.



Next, create the Act15.yml to configure basic tasks.

```
davonn@workstation: ~/Act15
 GNU nano 6.2                                  Act15.yml
---
- hosts: all
  become: true
  pre_tasks:

  -  name: Install updates Ubuntu
     tags: always
     apt:
       upgrade: dist
       update_cache: yes
     changed_when: false
     when: ansible_distribution == "Ubuntu"

- hosts: controller
  become: true
  roles:
    - Neutron

- hosts: compute
  become: true
  roles:
    - Horizon
    - Cinder
```

Next step, create the main.yml on each task on every role.

Cinder

```
davonn@workstation: ~/Act15/roles/Cinder/tasks
 GNU nano 6.2                                  main.yml *
  - name: Install for OpenStack Cinder
    apt:
      name:
        - cinder-volume
        - python3-mysqldb
      state: latest
      update_cache: yes
    when: ansible_distribution == "Ubuntu"
```

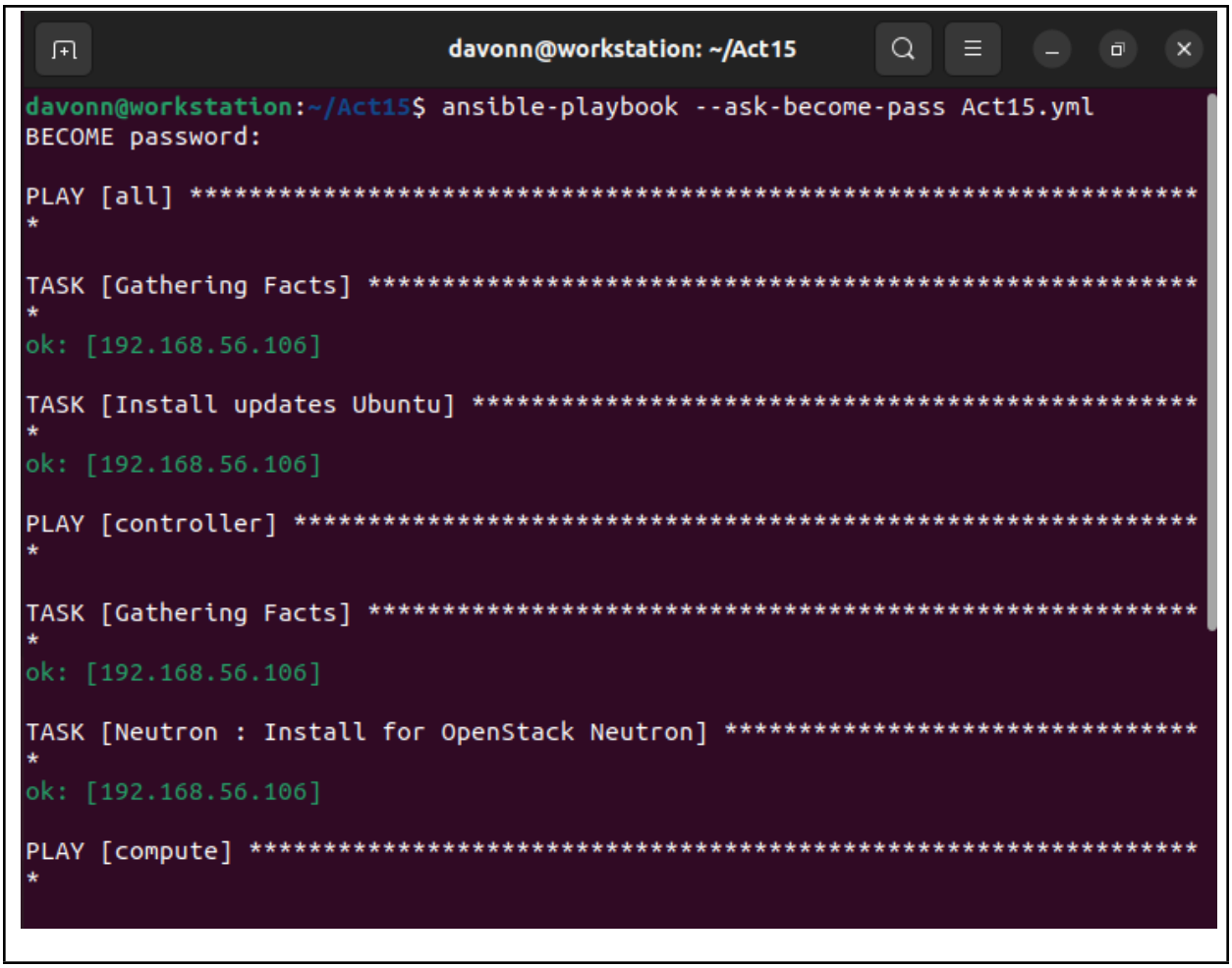
Horizon

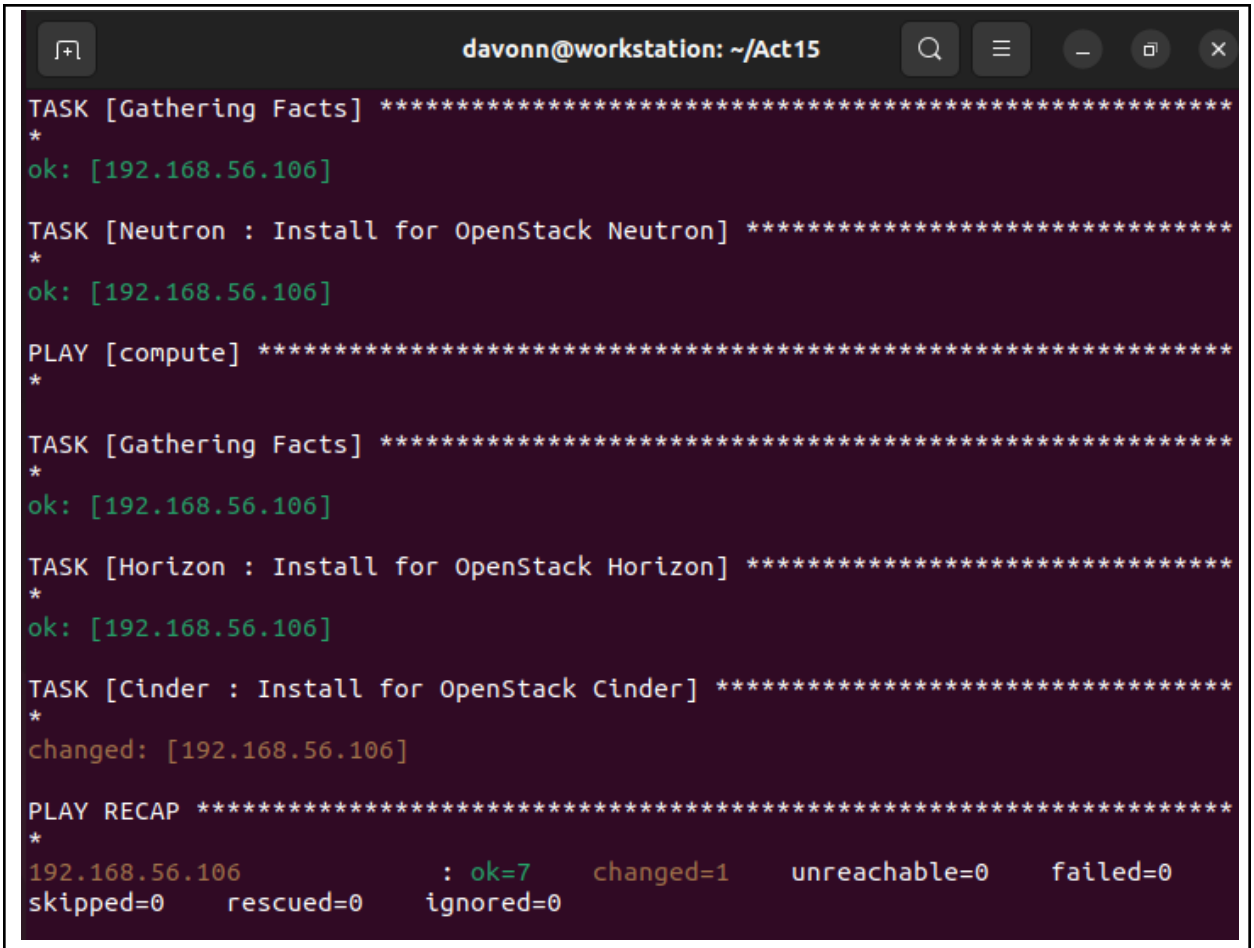
```
davonn@workstation: ~/Act15/roles/Horizon/tasks
GNU nano 6.2                                 main.yml
- name: Install for OpenStack Horizon
  apt:
    name: openstack-dashboard
    state: latest
    update_cache: yes
  when: ansible_distribution == "Ubuntu"
```

Neutron

```
davonn@workstation: ~/Act15/roles/Neutron/tasks
GNU nano 6.2                                 main.yml
- name: Install for OpenStack Neutron
  apt:
    name:
      - neutron-server
      - neutron-plugin-ml2
      - neutron-linuxbridge-agent
      - neutron-l3-agent
      - neutron-dhcp-agent
      - neutron-metadata-agent
      - python3-neutronclient
    state: latest
    update_cache: yes
  when: ansible_distribution == "Ubuntu"
```

After creating all the main.yml, run the ansible playbook.


davonn@workstation: ~/Act15
davonn@workstation:~/Act15$ ansible-playbook --ask-become-pass Act15.yml
BECOME password:
PLAY [all] ***
*
TASK [Gathering Facts] ***
*
ok: [192.168.56.106]
TASK [Install updates Ubuntu] **
*
ok: [192.168.56.106]
PLAY [controller] **
*
TASK [Gathering Facts] ***
*
ok: [192.168.56.106]
TASK [Neutron : Install for OpenStack Neutron] ***********************************
*
ok: [192.168.56.106]
PLAY [compute] ***
*


davonn@workstation: ~/Act15
TASK [Gathering Facts] **
*
ok: [192.168.56.106]
TASK [Neutron : Install for OpenStack Neutron] ********************************
*
ok: [192.168.56.106]
PLAY [compute] **
*
TASK [Gathering Facts] **
*
ok: [192.168.56.106]
TASK [Horizon : Install for OpenStack Horizon] ********************************
*
ok: [192.168.56.106]
TASK [Cinder : Install for OpenStack Cinder] **********************************
*
changed: [192.168.56.106]
PLAY RECAP **
*
192.168.56.106 : ok=7 changed=1 unreachable=0 failed=0
skipped=0 rescued=0 ignored=0

Output:

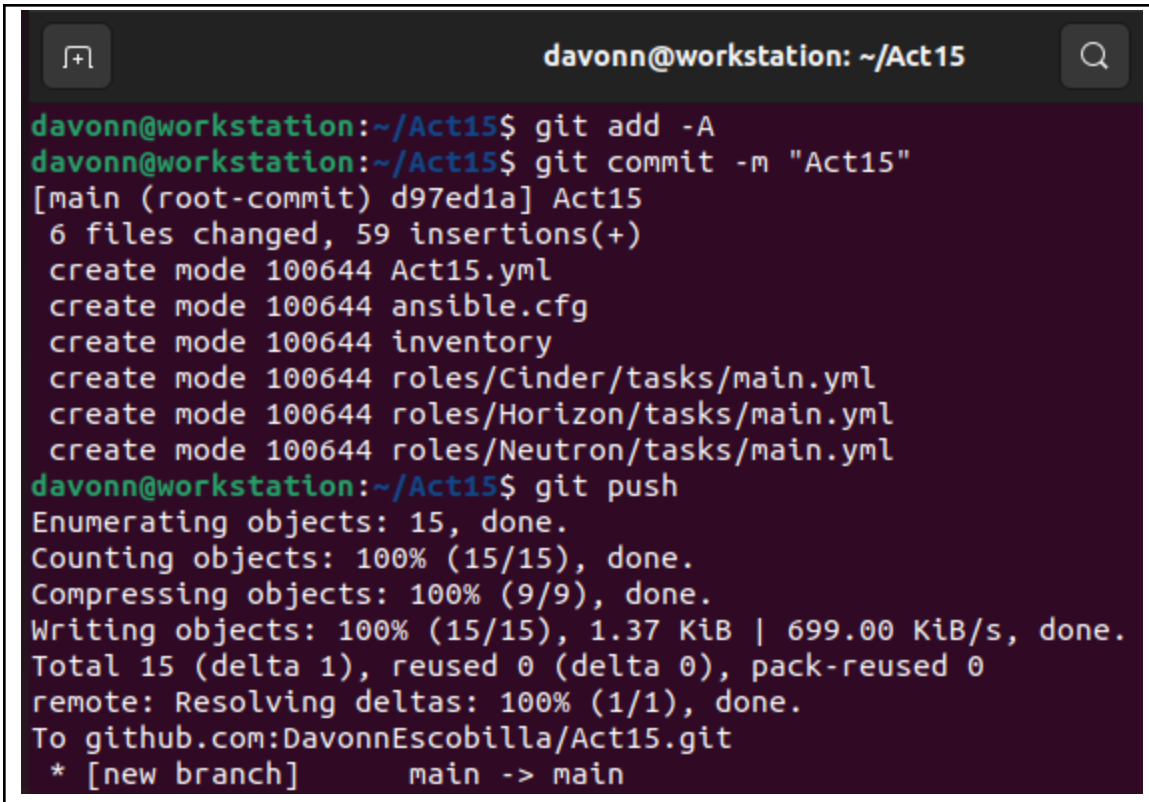
```
davonn@server3:~$ systemctl status cinder-volume.service
● cinder-volume.service - OpenStack Cinder Volume
     Loaded: loaded (/lib/systemd/system/cinder-volume.service; enabled; vendo>
     Active: active (running) since Thu 2022-12-08 21:46:04 PST; 7s ago
       Docs: man:cinder-volume(1)
   Main PID: 14189 (cinder-volume)
      Tasks: 1 (limit: 2225)
     Memory: 84.4M
        CPU: 1.495s
     CGroup: /system.slice/cinder-volume.service
             └─14189 /usr/bin/python3 /usr/bin/cinder-volume --config-file=/et>

Dec 08 21:46:04 server3 systemd[1]: cinder-volume.service: Scheduled restart j>
Dec 08 21:46:04 server3 systemd[1]: Stopped OpenStack Cinder Volume.
Dec 08 21:46:04 server3 systemd[1]: cinder-volume.service: Consumed 2.403s CPU>
Dec 08 21:46:04 server3 systemd[1]: Started OpenStack Cinder Volume.
Dec 08 21:46:11 server3 cinder-volume[14189]: /usr/lib/python3/dist-packages/c>
Dec 08 21:46:11 server3 cinder-volume[14189]:   last_heartbeat = column_proper>
Dec 08 21:46:11 server3 cinder-volume[14189]: /usr/lib/python3/dist-packages/c>
Dec 08 21:46:11 server3 cinder-volume[14189]:   num_hosts = column_property(
Dec 08 21:46:11 server3 cinder-volume[14189]: /usr/lib/python3/dist-packages/c>
Dec 08 21:46:11 server3 cinder-volume[14189]:   num_down_hosts = column_proper>
```

```
davonn@server3: ~
davonn@server3:~$ systemctl status neutron-server.service
● neutron-server.service - OpenStack Neutron Server
     Loaded: loaded (/lib/systemd/system/neutron-server.service; enabled; vend>
     Active: active (running) since Thu 2022-12-08 21:45:24 PST; 552ms ago
       Docs: man:neutron-server(1)
   Main PID: 13141 (neutron-server)
      Tasks: 1 (limit: 2225)
     Memory: 944.0K
        CPU: 23ms
     CGroup: /system.slice/neutron-server.service
             └─13141 /usr/bin/python3 /usr/bin/neutron-server --config-file=/e>

Dec 08 21:45:24 server3 systemd[1]: neutron-server.service: Scheduled restart >
Dec 08 21:45:24 server3 systemd[1]: Stopped OpenStack Neutron Server.
Dec 08 21:45:24 server3 systemd[1]: neutron-server.service: Consumed 3.249s CP>
Dec 08 21:45:24 server3 systemd[1]: Started OpenStack Neutron Server.
lines 1-15/15 (END)
```

Lastly, save the work on github.



Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services

   Neutron is a service that focuses on delivering NaaS in virtual machine compute environments. Cinder is a Block Storage, it is about the management of devices and providing users with self service API. Horizon is the dashboard with extensions that also provide users with a web based interface for OpenStack services.

Conclusions:

Performing the activity is quite longer than expected since my computer hangs up because of the heavy process coming from the virtual machines. Luckily, I have managed to finish the task efficiently. The Horizon service is not viewable as it is one with the apache service. This activity is done effectively by using roles and managing each task.