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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 new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere?
Import a repository.

Owner * **Repository name** *

Bencitoo / Bencito_OpenNHC ✓

Great repository names are short and memorable. Need inspiration? How about **fantastic-fortnight**?

Description (optional)

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

◉ **Public**
Anyone on the internet can see this repository. You choose who can commit.

○ **Private**
You choose who can see and commit to this repository.

Initialize this repository with:
Skip this step if you're importing an existing repository.

☑ **Add a README file**
This is where you can write a long description for your project. Learn more.

Add .gitignore
Choose which files not to track from a list of templates. Learn more.

.gitignore template: None

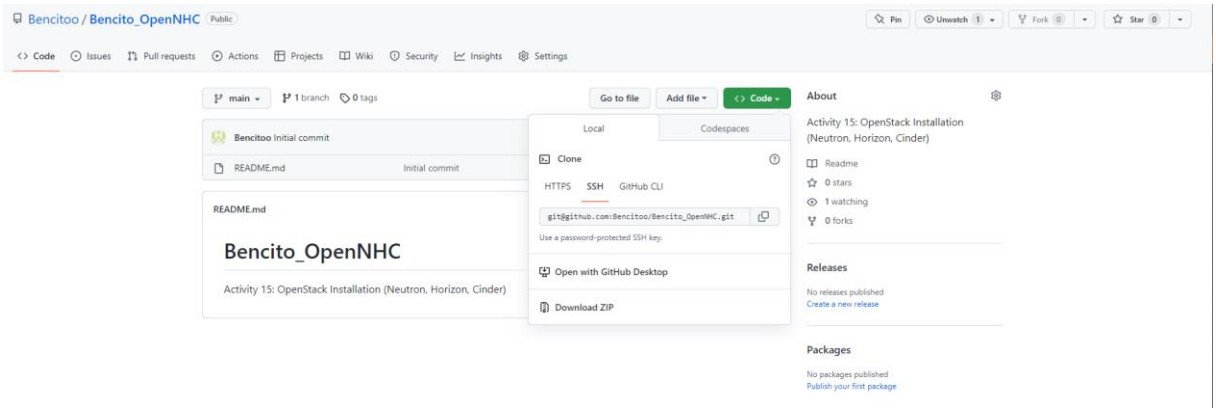
Choose a license
A license tells others what they can and can't do with your code. Learn more.

License: None

This will set `main` as the default branch. Change the default name in your settings.

ⓘ You are creating a public repository in your personal account.

Create repository



```
bencito@workstation:~$ git clone git@github.com:Bencitoo/Bencito_OpenNHC.git
Cloning into 'Bencito_OpenNHC'...
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.
bencito@workstation:~$ cd Bencito_OpenNHC
bencito@workstation:~/Bencito_OpenNHC$
```

```
 GNU nano 6.2                                inventory
[controller]
192.168.56.101

[compute]
192.168.56.101
```

```
 GNU nano 6.2                                ansible.cfg
[defaults]

inventory = inventory
Host_key_checking = False

deprecation_warnings = False
command_warnings = False

remote_user = bencito
private_key_file = /.ssh/
```

```
bencito@workstation:~/Bencito_OpenNHC$ nano inventory
bencito@workstation:~/Bencito_OpenNHC$ nano ansible.cfg
bencito@workstation:~/Bencito_OpenNHC$ ansible -m ping all
192.168.56.101 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
bencito@workstation:~/Bencito_OpenNHC$
```

I create a repository on the GitHub and add the inventory and ansible.cfg, after that I ping the control node and It was successful.

```
bencito@workstation:~/Bencito_OpenNHC$ nano site.yml
bencito@workstation:~/Bencito_OpenNHC$
```

```
GNU nano 6.2                                site.yml *
---

- hosts: all
  become: true
  pre_tasks:

  -  name: Update Repository (Ubuntu)
     apt:
       upgrade: dist
       update_cache: yes
     changed_when: false
     when: ansible_distribution == "Ubuntu"

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

```
- hosts: controller
  become: true
  roles:
    - Neutron
    - Horizon

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

I create a main playbook that inside of it was the 2 roles that I will run later.

```
bencito@workstation:~/Bencito_OpenNHC$ mkdir roles
bencito@workstation:~/Bencito_OpenNHC$ cd roles
bencito@workstation:~/Bencito_OpenNHC/roles$ mkdir -p {Neutron,Horizon,Cinder}/
tasks
bencito@workstation:~/Bencito_OpenNHC/roles$ tree
.
├── Cinder
│   └── tasks
├── Horizon
│   └── tasks
└── Neutron
    └── tasks

6 directories, 0 files
bencito@workstation:~/Bencito_OpenNHC/roles$
```

I create a directory name role and inside of it was the need installation directory with tasks.

```
bencito@workstation:~/Bencito_OpenNHC/roles$ cd Cinder
bencito@workstation:~/Bencito_OpenNHC/roles/Cinder$ cd tasks
bencito@workstation:~/Bencito_OpenNHC/roles/Cinder/tasks$ nano main.yml
bencito@workstation:~/Bencito_OpenNHC/roles/Cinder/tasks$ cd ..
bencito@workstation:~/Bencito_OpenNHC/roles/Cinder$ cd ..
bencito@workstation:~/Bencito_OpenNHC/roles$ cd Horizon
bencito@workstation:~/Bencito_OpenNHC/roles/Horizon$ cd tasks
bencito@workstation:~/Bencito_OpenNHC/roles/Horizon/tasks$ nano main.yml
bencito@workstation:~/Bencito_OpenNHC/roles/Horizon/tasks$ cd ..
bencito@workstation:~/Bencito_OpenNHC/roles/Horizon$ cd ..
bencito@workstation:~/Bencito_OpenNHC/roles$ cd Neutron
bencito@workstation:~/Bencito_OpenNHC/roles/Neutron$ cd tasks
bencito@workstation:~/Bencito_OpenNHC/roles/Neutron/tasks$ nano main.yml
bencito@workstation:~/Bencito_OpenNHC/roles/Neutron/tasks$ cd ..
bencito@workstation:~/Bencito_OpenNHC/roles/Neutron$ cd ..
bencito@workstation:~/Bencito_OpenNHC/roles$ cd ..
bencito@workstation:~/Bencito_OpenNHC$
```

After that I add the playbook per directory

Neutron

```
 GNU nano 6.2                                main.yml *
- name:  Install Neutron on Ubuntu
  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"
```

Horizon

```
 GNU nano 6.2                                main.yml *
- name: Install Horizon on Ubuntu
  apt:
    name: openstack-dashboard
    state: latest
    update_cache: yes
  when: ansible_distribution == "Ubuntu"
```

Cinder

```
GNU nano 6.2                                main.yml *
- name: Install Cinder on Ubuntu
  apt:
    name:
      - cinder-volume
      - python3-mysqldb
    state: latest
    update_cache: yes
  when: ansible_distribution == "Ubuntu"
```

The code per installation is from the given openstack guide.

Run the site.yml

```
bencito@workstation:~/Bencito_OpenNHC$ ansible-playbook --ask-become-pass site.
yml
BECOME password:

PLAY [all] *********************************************************************
*

TASK [Gathering Facts] *********************************************************
*
ok: [192.168.56.101]

TASK [Update Repository (Ubuntu)] **********************************************
*
ok: [192.168.56.101]

TASK [Install Updates on Ubuntu] ***********************************************
*
ok: [192.168.56.101]

PLAY [controller] **************************************************************
*

TASK [Gathering Facts] *********************************************************
*
ok: [192.168.56.101]

TASK [Neutron : Install Neutron on Ubuntu] *************************************
*
ok: [192.168.56.101]
```

```
TASK [Horizon : Install Horizon on Ubuntu] *************************************
*
changed: [192.168.56.101]

PLAY [compute] *****************************************************************
*

TASK [Gathering Facts] *********************************************************
*
ok: [192.168.56.101]

TASK [Cinder : Install Cinder on Ubuntu] ***************************************
*
changed: [192.168.56.101]

PLAY RECAP *********************************************************************
*
192.168.56.101             : ok=8    changed=2    unreachable=0    failed=0
skipped=0    rescued=0    ignored=0

bencito@workstation:~/Bencito_OpenNHC$
```

I run the site.yml and it was successfully installed on my control nodes.

OUTPUT

Horizon

The horizon is inside of the Apache configuration open stack.

Cinder

```
bencito@Server1:~$ 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 Wed 2022-12-07 16:48:32 PST; 8s ago
       Docs: man:cinder-volume(1)
   Main PID: 12496 (cinder-volume)
      Tasks: 1 (limit: 2225)
     Memory: 39.2M
        CPU: 1.361s
     CGroup: /system.slice/cinder-volume.service
             └─12496 /usr/bin/python3 /usr/bin/cinder-volume --config-file=/et>

Dec 07 16:48:32 Server1 systemd[1]: cinder-volume.service: Consumed 4.847s CPU>
Dec 07 16:48:32 Server1 systemd[1]: Started OpenStack Cinder Volume.
lines 1-13/13 (END)
```

Neutron

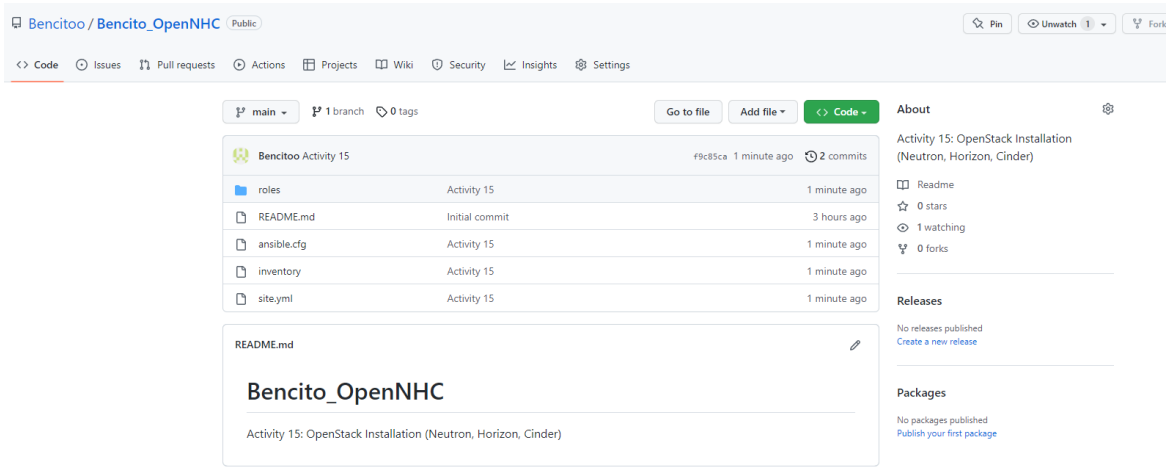
```
bencito@Server1:~$ systemctl status neutron-dhcp-agent.service
● neutron-dhcp-agent.service - OpenStack Neutron DHCP agent
     Loaded: loaded (/lib/systemd/system/neutron-dhcp-agent.service; enabled; >
     Active: active (running) since Wed 2022-12-07 16:23:19 PST; 23min ago
       Docs: man:neutron-dhcp-agent(1)
   Main PID: 3697 (neutron-dhcp-ag)
      Tasks: 3 (limit: 2225)
     Memory: 44.7M
        CPU: 5.520s
     CGroup: /system.slice/neutron-dhcp-agent.service
             └─3697 "neutron-dhcp-agent (/usr/bin/python3 /usr/bin/neutron-dhc>

Dec 07 16:23:19 Server1 systemd[1]: Started OpenStack Neutron DHCP agent.
lines 1-12/12 (END)
```

As you can see, it was successfully installed on my control nodes.

Pushing to Github

```
bencito@workstation:~/Bencito_OpenNHC$ git add inventory
bencito@workstation:~/Bencito_OpenNHC$ git add ansible.cfg
bencito@workstation:~/Bencito_OpenNHC$ git add site.yml
bencito@workstation:~/Bencito_OpenNHC$ git add roles/
bencito@workstation:~/Bencito_OpenNHC$ git commit -m "Activity 15"
[main f9c85ca] Activity 15
 6 files changed, 73 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 inventory
 create mode 100644 roles/Cinder/tasks/main.yml
 create mode 100644 roles/Horizon/tasks/main.yml
 create mode 100644 roles/Neutron/tasks/main.yml
 create mode 100644 site.yml
bencito@workstation:~/Bencito_OpenNHC$ git push
Enumerating objects: 16, done.
Counting objects: 100% (16/16), done.
Compressing objects: 100% (9/9), done.
Writing objects: 100% (15/15), 1.55 KiB | 75.00 KiB/s, done.
Total 15 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:Bencitoo/Bencito_OpenNHC.git
   d34d2a9..f9c85ca  main -> main
bencito@workstation:~/Bencito_OpenNHC$
```



<u>It was successfully push to my repository.</u>

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services

   The neutron on the openstack was uses to provide a network connectivity as a service. The Neutron set up and define the network connectivity. While the Horizon, is a web-based graphical interface on the openstack cloud, it accesses to manage the storage services. Last is the Cinder, the cinder is a block storage services on the openstack. It uses to provides with a self-service API.

Conclusions:

In the conclusion, after making this activity I learned that you need have more ram on your PC, because sometimes it will shutdown your PC or Bluescreen. I don't have any issue on the code from the guided installation. Only the ram of my pc is the problem you need to close all the running apps for the smooth run.