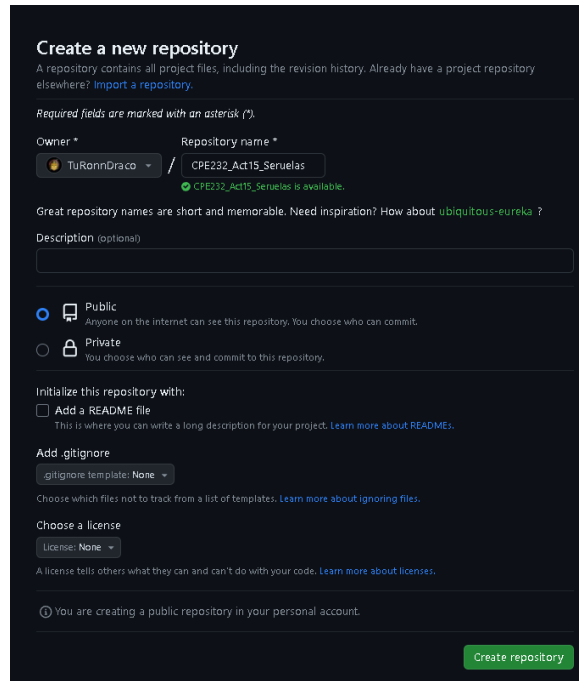


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Course/Section: CPE232-CPE31S4	Date Submitted: 12-09-2023
Instructor: Dr. Jonathan V. Taylar	Semester and SY: 1st Sem. 2023-2024
Activity 15: OpenStack Installation (Neutron, Horizon, Cinder)	
1. Objectives	
Create a workflow to install OpenStack using Ansible as your Infrastructure as Code (IaC).	
2. Intended Learning Outcomes	
<ol style="list-style-type: none"> 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	
<p>Oracle VirtualBox (Hypervisor)</p> <p>1x Ubuntu VM or Centos VM</p>	
4. Tasks	
<ol style="list-style-type: none"> 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/ <ol style="list-style-type: none"> 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)

1. Setup Repository in Github and Workstation.



Create a new repository
A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)

Required fields are marked with an asterisk (*).

Owner * TuRonnDraco Repository name * CPE232_Act15_Seruelas
CPE232_Act15_Seruelas is available.

Great repository names are short and memorable. Need inspiration? How about [ubiquitous-eureka](#) ?

Description (optional)

☒ **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:
☐ **Add a README file**
This is where you can write a long description for your project. [Learn more about READMEs.](#)

Add .gitignore
gitignore template: None

Choose which files not to track from a list of templates. [Learn more about ignoring files.](#)

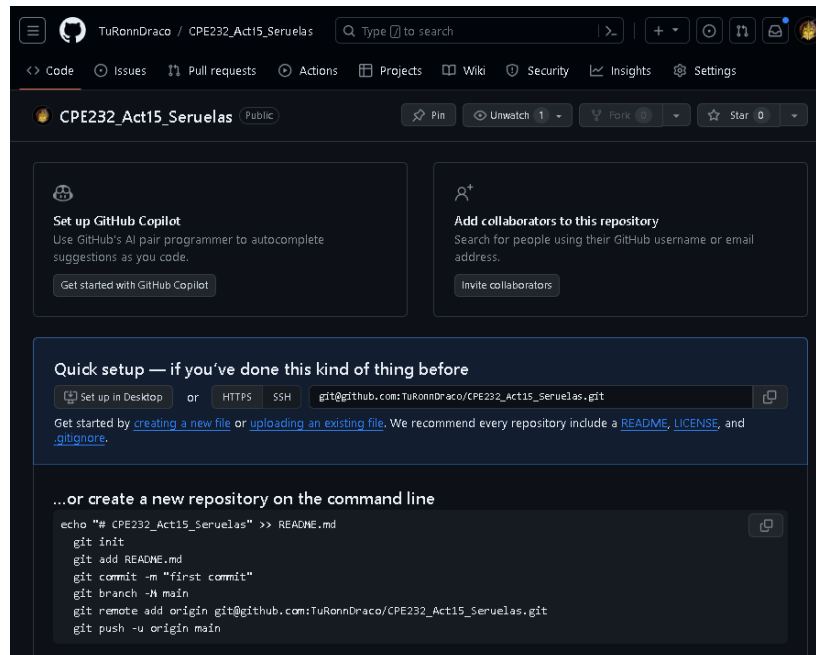
Choose a license
License: None

A license tells others what they can and can't do with your code. [Learn more about licenses.](#)

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

[Create repository](#)

1.1 - Creation of Repository



TuRonnDraco / CPE232_Act15_Seruelas

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Set up GitHub Copilot
Use GitHub's AI pair programmer to autocomplete suggestions as you code.
[Get started with GitHub Copilot](#)

Add collaborators to this repository
Search for people using their GitHub username or email address.
[Invite collaborators](#)

Quick setup — if you've done this kind of thing before

[Set up in Desktop](#) or [HTTPS](#) [SSH](#) `git@github.com:TuRonnDraco/CPE232_Act15_Seruelas.git`

Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [gitignore](#).

...or create a new repository on the command line

```
echo "# CPE232_Act15_Seruelas" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin git@github.com:TuRonnDraco/CPE232_Act15_Seruelas.git
git push -u origin main
```

1.2 - Successful creation of Repository

```
seruelas@Workstation: ~/CPE232_Act15_Seruelas
GNU nano 6.2 inventory *
[Controller]
Server1
```

1.3 - Inventory Configuration

2. Setup installation for Neutron, Horizon, and Cinder.

```
seruelas@Workstation: ~/CPE...
GNU nano 6.2 roles/Neutron/tasks/main.yml *

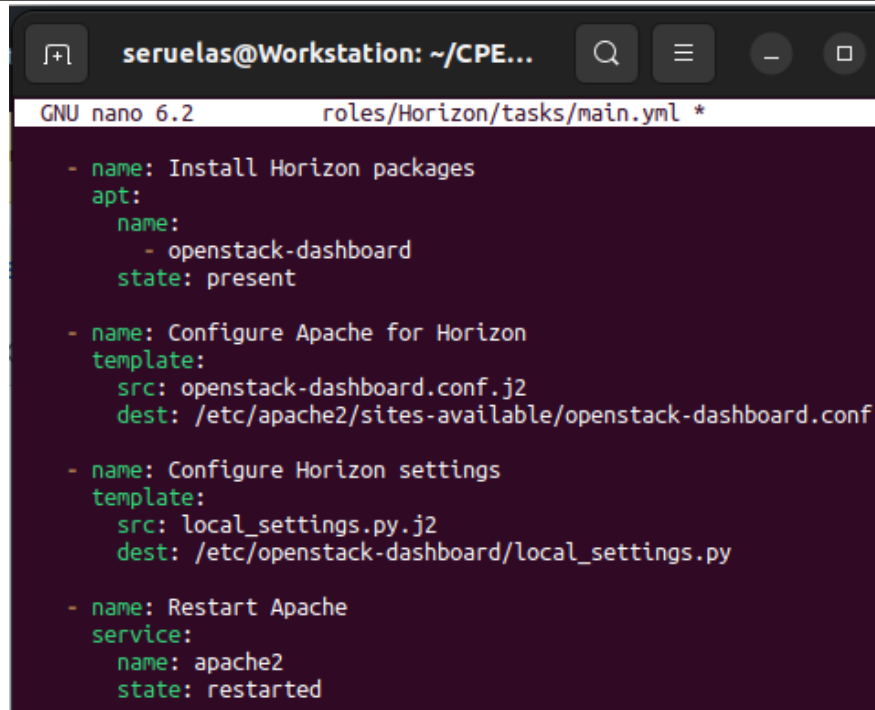
- name: Install Neutron packages
  apt:
    name:
      - neutron-server
      - neutron-plugin-ml2
      - neutron-linuxbridge-agent
      - neutron-l3-agent
      - neutron-dhcp-agent
      - neutron-metadata-agent
    state: present

- name: Configure Neutron
  template:
    src: neutron.conf.j2
    dest: /etc/neutron/neutron.conf

- name: Configure ML2 plugin
  template:
    src: ml2_conf.ini.j2
    dest: /etc/neutron/plugins/ml2/ml2_conf.ini

- name: Restart Neutron
  service:
    name: neutron-server
    state: restarted
```

2.1 - Installation for Neutron



```
seruelas@Workstation: ~/CPE...
GNU nano 6.2 roles/Horizon/tasks/main.yml *

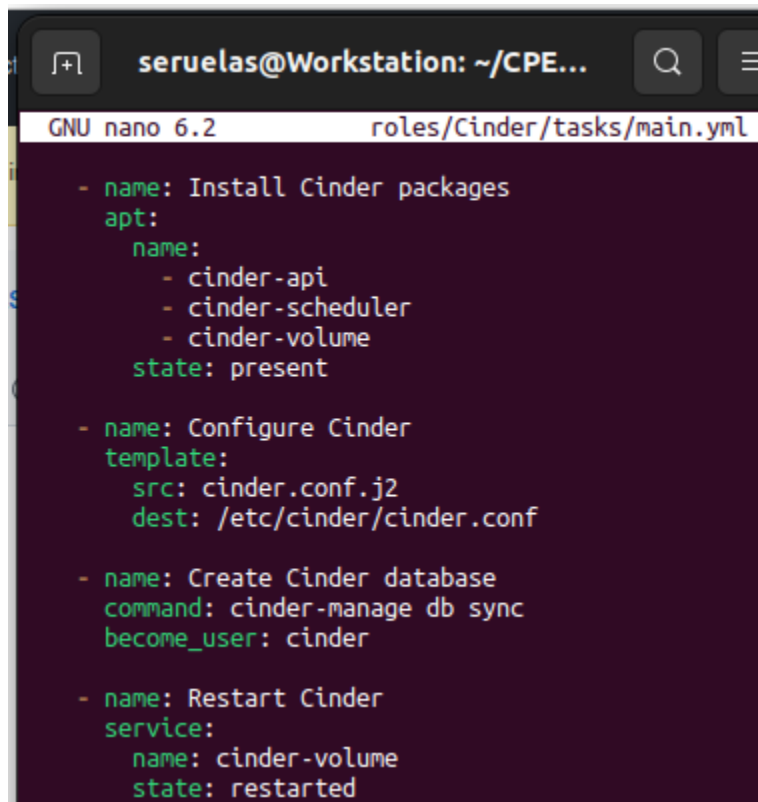
- name: Install Horizon packages
  apt:
    name:
      - openstack-dashboard
    state: present

- name: Configure Apache for Horizon
  template:
    src: openstack-dashboard.conf.j2
    dest: /etc/apache2/sites-available/openstack-dashboard.conf

- name: Configure Horizon settings
  template:
    src: local_settings.py.j2
    dest: /etc/openstack-dashboard/local_settings.py

- name: Restart Apache
  service:
    name: apache2
    state: restarted
```

2.2 - Installation for Horizon



```
seruelas@Workstation: ~/CPE...
GNU nano 6.2 roles/Cinder/tasks/main.yml

- name: Install Cinder packages
  apt:
    name:
      - cinder-api
      - cinder-scheduler
      - cinder-volume
    state: present

- name: Configure Cinder
  template:
    src: cinder.conf.j2
    dest: /etc/cinder/cinder.conf

- name: Create Cinder database
  command: cinder-manage db sync
  become_user: cinder

- name: Restart Cinder
  service:
    name: cinder-volume
    state: restarted
```

2.3 - Installation for Cinder

```
seruelas@Workstation: ~/CPE...
seruelas@Workstation:~/CPE232_Act15_Seruelas$ tree roles
roles
├── Cinder
│   ├── tasks
│   │   └── main.yml
│   └── templates
│       └── cinder.conf.j2
├── Horizon
│   ├── tasks
│   │   └── main.yml
│   └── templates
│       ├── local_settings.py.j2
│       └── openstack-dashboard.conf.j2
├── main.yml
└── Neutron
    ├── tasks
    │   └── main.yml
    └── templates
        ├── ml2_conf.ini.j2
        └── neutron.conf.j2

9 directories, 9 files
```

2.4 - File Hierarchy of Roles

3. Verify installations of Neutron, Horizon, and Cinder.

```
seruelas@Workstation: ~/CPE...
seruelas@Workstation:~/CPE232_Act15_Seruelas$ ansible-playbook --ask-bec
ome-pass install_openstack_nhc.yaml
BECOME password:

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

TASK [Gathering Facts] *****
*****
ok: [Server1]

TASK [Install Updates (Ubuntu)] *****
*****
ok: [Server1]

PLAY [Controller] *****
*****

TASK [Gathering Facts] *****
*****
ok: [Server1]

TASK [Neutron : Install Neutron packages] *****
*****
changed: [Server1]

TASK [Neutron : Configure Neutron] *****
*****
changed: [Server1]

TASK [Neutron : Configure ML2 plugin] *****
*****
changed: [Server1]

TASK [Neutron : Restart Neutron] *****
*****
changed: [Server1]
```

```
seruelas@Workstation: ~/CPE...  
TASK [Gathering Facts] *****  
*****  
ok: [Server1]  
  
TASK [Neutron : Install Neutron packages] *****  
*****  
changed: [Server1]  
  
TASK [Neutron : Configure Neutron] *****  
*****  
changed: [Server1]  
  
TASK [Neutron : Configure ML2 plugin] *****  
*****  
changed: [Server1]  
  
TASK [Neutron : Restart Neutron] *****  
*****  
changed: [Server1]  
  
TASK [Horizon : Install Horizon packages] *****  
*****  
changed: [Server1]  
  
TASK [Horizon : Configure Apache for Horizon] *****  
*****  
changed: [Server1]  
  
TASK [Horizon : Configure Horizon settings] *****  
*****  
changed: [Server1]  
  
TASK [Horizon : Restart Apache] *****  
*****  
changed: [Server1]
```

```
seruelas@Workstation: ~/CPE...
*****
changed: [Server1]

TASK [Horizon : Configure Horizon settings] *****
*****
changed: [Server1]

TASK [Horizon : Restart Apache] *****
*****
changed: [Server1]

TASK [Cinder : Install Cinder packages] *****
*****
changed: [Server1]

TASK [Cinder : Configure Cinder] *****
*****
changed: [Server1]

TASK [Cinder : Create Cinder database] *****
*****
[WARNING]: Module remote_tmp /var/lib/cinder/.ansible/tmp did not exist
and was
created with a mode of 0700, this may cause issues when running as another
user. To avoid this, create the remote_tmp dir with the correct permissions
manually
changed: [Server1]

TASK [Cinder : Restart Cinder] *****
*****
changed: [Server1]

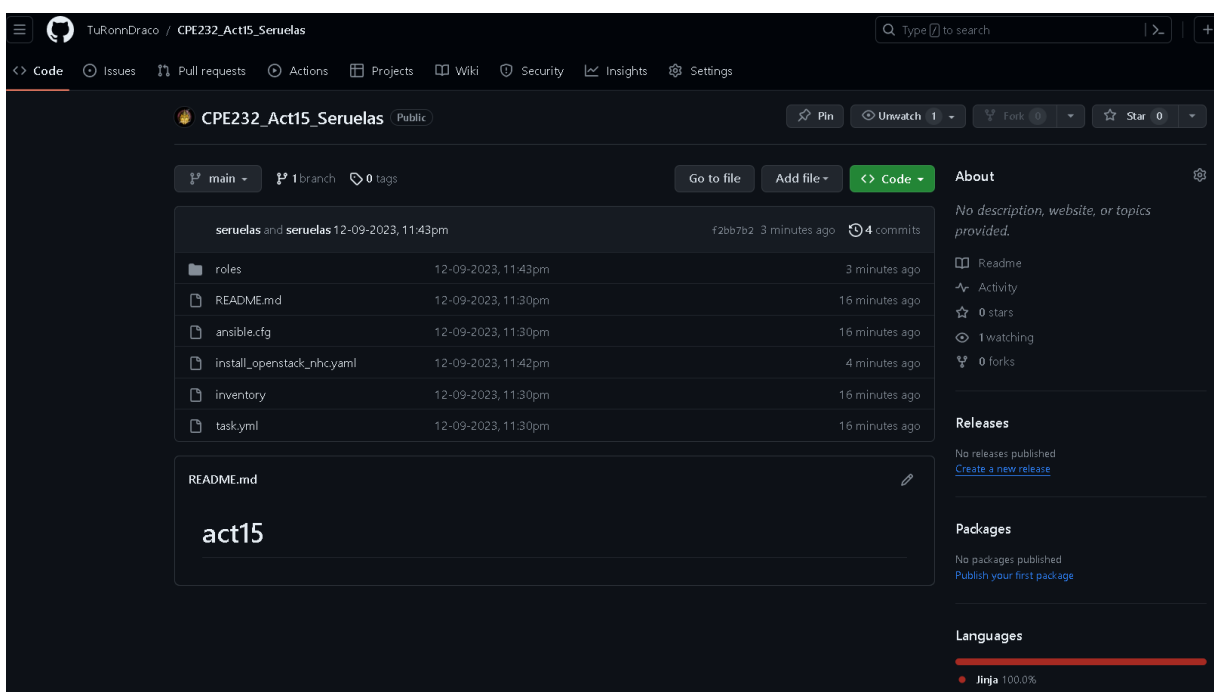
PLAY RECAP *****
Server1 : ok=15 changed=12 unreachable=0 failed=0
skipped=0 rescued=0 ignored=0

seruelas@Workstation:~/CPE232_Act15_Seruelas$
```

Neutron


```
seruelas@Ubuntu: ~  
seruelas@Ubuntu:~$ systemctl status neutron-server.service  
● neutron-server.service - OpenStack Neutron Server  
   Loaded: loaded (/lib/systemd/system/neutron-server.service; enable  
   Active: active (running) since Sat 2023-12-09 23:57:00 +08; 6s ago  
     Docs: man:neutron-server(1)  
    Main PID: 35678 (neutron-server)  
      Tasks: 1 (limit: 2261)  
     Memory: 103.8M  
        CPU: 2.886s  
    CGroup: /system.slice/neutron-server.service  
            └─35678 /usr/bin/python3 /usr/bin/neutron-server --config-  
lines 1-10/10 (END)
```

4. Push and Save all Changes to GitHub Repository.



https://github.com/TuRonnDraco/CPE232_Act15_Seruelas

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services
 - Neutron's purpose is to provide the administrator a networking service that allows it to manage and to access other interfaces using a network. Horizon's

purpose is to provide the administrator a web based user interface that allows the administrator to access and to interact with the OpenStack services. Cinder's purpose is to provide the administrators a block storage service to hosts and containers.

Conclusions:

In this activity, we were able to educate ourselves on the importance of Neutron, Horizon, and Cinder in OpenStack services and what their main function is. We were able to learn that in summary, OpenStack is a set of services and packages that is used to assist and give administrators an open interface that allows them to monitor, manage and use each services using networks and hashes.