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Activity 14: OpenStack Installation (Keystone, Glance, Nova)

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)

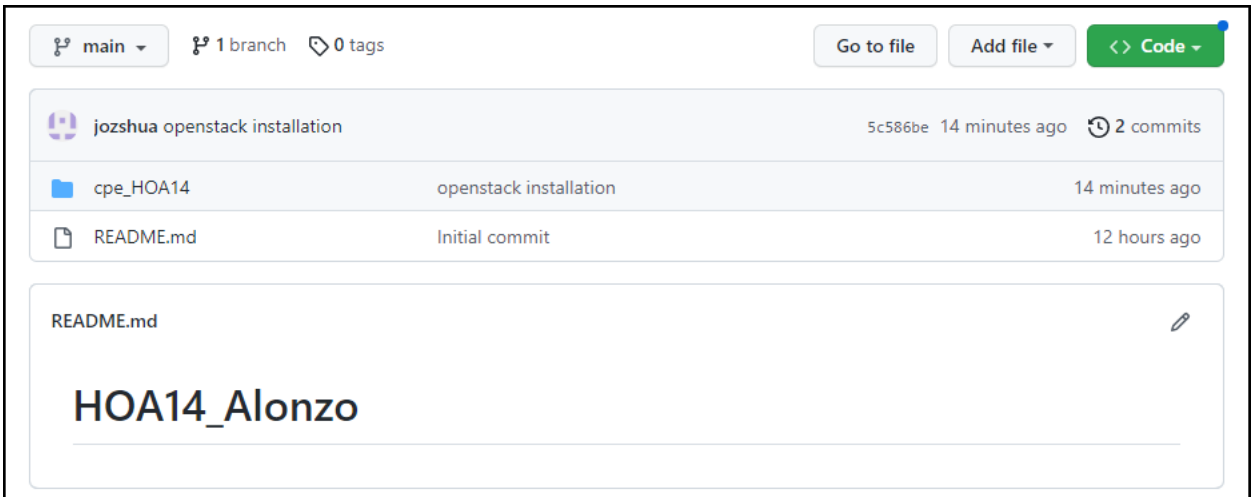
1x Ubuntu VM or Centos VM

Github Link: https://github.com/jozshua/HOA14_Alonzo.git

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. Keystone (Identity Service)
    b. Glance (Imaging Service)
    c. Nova (Compute Service)
    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)



Created the new repository for this activity.

```
 GNU nano 6.2                                site.
---

- hosts: all
  become: true
  pre_tasks:

  - name: Installation of Glance
    apt:
      name:
        - glance
      state: latest
    when: ansible_distribution == "Ubuntu"

  - name: Installation of Keystone
    apt:
      name:
        - keystone
      state: latest
    when: ansible_distribution == "Ubuntu"
```

```
  - name: Installation of Nova
    apt:
      name:
        - nova-compute
      state: latest
    when: ansible_distribution == "Ubuntu"
```

Created the site.yml for the installation packages of certain OpenStack services.

Executing the playbook:

```
jozshua@workstation-VirtualBox:~/HOA14_Alonzo/cpe_HOA14$ ansible-playbook --ask
-become-pass site.yml
BECOME password:

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

TASK [Gathering Facts] *********************************************************
*
ok: [192.168.56.102]

TASK [Installation of Glance] **************************************************
*
changed: [192.168.56.102]

TASK [Installation of Keystone] ************************************************
*
changed: [192.168.56.102]

TASK [Installation of Nova] ****************************************************
*
ok: [192.168.56.102]

PLAY RECAP *********************************************************************
*
192.168.56.102             : ok=4    changed=2    unreachable=0    failed=0
skipped=0    rescued=0    ignored=0
```

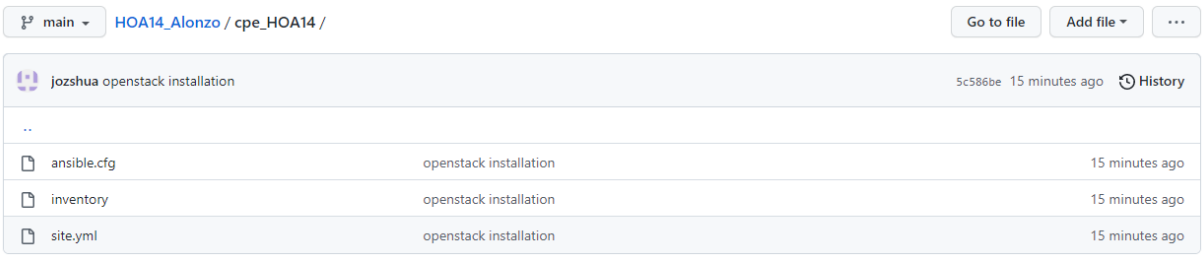
There are 4 successfully executed tasks and 2 changed states from running this playbook with site.yml file.

Proof of Installations:

```
jozshua@server2-VirtualBox:~$ glance --version
3.6.0
jozshua@server2-VirtualBox:~$ keystone-manage --version
21.0.0
```

```
jozshua@server2-VirtualBox:~$ sudo systemctl status nova-compute
● nova-compute.service - OpenStack Compute
     Loaded: loaded (/lib/systemd/system/nova-compute.service; enabled; vendor>
     Active: active (running) since Tue 2022-12-06 17:21:03 PST; 1h 5min ago
   Main PID: 1977 (nova-compute)
      Tasks: 2 (limit: 1075)
     Memory: 10.2M
        CPU: 15.097s
     CGroup: /system.slice/nova-compute.service
             └─1977 /usr/bin/python3 /usr/bin/nova-compute --config-file=/etc/>
```

To confirm the installations I used the terminal and confirm their version installed and their status.



The codes were pushed and committed into the GitHub repository.

Reflections:

Answer the following:

1. Describe Keystone, Glance and Nova services

   Keystone - It is an OpenStack service that implements the OpenStack Identity API and supports LDAP, OAuth, OpenID Connect, SAML, and SQL. It enables distributed multi-tenant authorization, service discovery, and API client authentication.

   Glance - It offers disk and server image discovery, registration, and delivery services. Additionally, Glance allows end users or Nova components to request pictures via its API, and it can save its disk files in Swift, the object storage service, or another storage repository.

   Nova - On demand, it delivers virtual servers. The part of OpenStack with the most moving parts and complexity is called Nova. To convert API requests from end users into virtual machines that are running, many processes work together.

Conclusions:

In this activity, I created inventory, ansible.cfg, and site.yml files for the playbook. The installations were successfully installed by running the site.yml file through the playbook. I also, check the proof of installations through the terminal by checking their status and the version that was installed. I also created a new repository to push and committed the codes to my GitHub account.