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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

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)

```
  GNU nano 6.2                          compute-installer.yml
---
- name: Install Glance on CentOS
  hosts: compute
  become: yes
  tasks:

    - name: Install required Glance packages
      yum:
        name:
          - glances
        state: present
```

```
workstation@workstation:~/hoa14$ ansible-playbook --ask-become-pass compute-instal
ler.yml
BECOME password:

PLAY [Install Glance on CentOS] ************************************************

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.106]

TASK [Install required Glance packages] ****************************************
changed: [192.168.56.106]

PLAY RECAP *********************************************************************
192.168.56.106             : ok=2    changed=1    unreachable=0    failed=0    ski
pped=0    rescued=0    ignored=0

workstation@workstation:~/hoa14$
```

- This will install the glance package on the centos server. Glances is a cross-platform monitoring tool which aims to present a maximum of information in a minimum of space through a curses or Web based interface. It can adapt dynamically the displayed information depending on the user interface size.

```
  GNU nano 6.2                    controller-installer.yml
---
- name: Install and configure Keystone
  hosts: controller
  become: true
  tasks:
    - name: Install Keystone packages
      apt:
        name: "{{ item }}"
        state: present
      loop:
        - keystone
        - python3-openstackclient
        - apache2
        - libapache2-mod-php
        - php

  handlers:
    - name: Restart Keystone
      service:
        name: keystone
        state: restarted
```

```
workstation@workstation:~/hoa14$ ansible-playbook --ask-become-pass controller-ins
taller.yml
BECOME password:

PLAY [Install and configure Keystone] ************************************

TASK [Gathering Facts] ***************************************************
ok: [192.168.56.105]

TASK [Install Keystone packages] *****************************************
changed: [192.168.56.105] => (item=keystone)
ok: [192.168.56.105] => (item=python3-openstackclient)
ok: [192.168.56.105] => (item=apache2)
changed: [192.168.56.105] => (item=libapache2-mod-php)
changed: [192.168.56.105] => (item=php)

PLAY RECAP ***************************************************************
192.168.56.105             : ok=2    changed=1    unreachable=0    failed=0    ski
pped=0    rescued=0    ignored=0

workstation@workstation:~/hoa14$
```

- This playbook allows you to install the keystone and enable it on ubuntu server.

```
workstation@workstation:~/hoa14$ ansible-playbook --ask-become-pass etc-installer.ym
l
BECOME password:

PLAY [Install Nova on Ubuntu] ****************************************************

TASK [Gathering Facts] ***********************************************************
ok: [192.168.56.106]
ok: [192.168.56.105]

TASK [Install Nova packages] *****************************************************
skipping: [192.168.56.106]
changed: [192.168.56.105]

TASK [Install Nova packages] *****************************************************
skipping: [192.168.56.105]
changed: [192.168.56.106]

PLAY RECAP ***********************************************************************
192.168.56.105             : ok=2    changed=1    unreachable=0    failed=0    skipp
ed=1    rescued=0    ignored=0
192.168.56.106             : ok=2    changed=1    unreachable=0    failed=0    skipp
ed=1    rescued=0    ignored=0

workstation@workstation:~/hoa14$
```

- This playbook installs the nova packages on both centos and ubuntu servers.

```
workstation@workstation:~/hoa14$ git push origin main
Everything up-to-date
workstation@workstation:~/hoa14$
```

```
workstation@workstation:~/hoa14$ git push origin main
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 293 bytes | 293.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To github.com:yorehh/hoa14.git
   f917cce..9450cf7  main -> main
workstation@workstation:~/hoa14$
```

- This is when i pushed the code into the github to save it.

Reflections:
Answer the following:

1. Describe Keystone, Glance and Nova services
   - Keystone, Glance, and Nova are one of the important components of the OpenStack cloud computing platform. Each service plays an important role in managing different aspects of the infrastructure and making sure of the smooth operation of the cloud environment.

Conclusions:

In this activity, I have learned how to analyze the advantages and disadvantages of the cloud services. I was also able to evaluate the different cloud environment services and was able create a workflow that will install and configure OpenStack services using the ansible playbook for documentation and execution. Overall, this helped me gain more knowledge and help me enhance my skills on managing servers.