Name: Karlo D. Santos	**Date Performed:12/14/2023**
Course/Section: CPE31S5	**Date Submitted:12/15/2023**
Instructor: Engr. Roman Ricahrd	**Semester and SY: 1st 23-24**

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

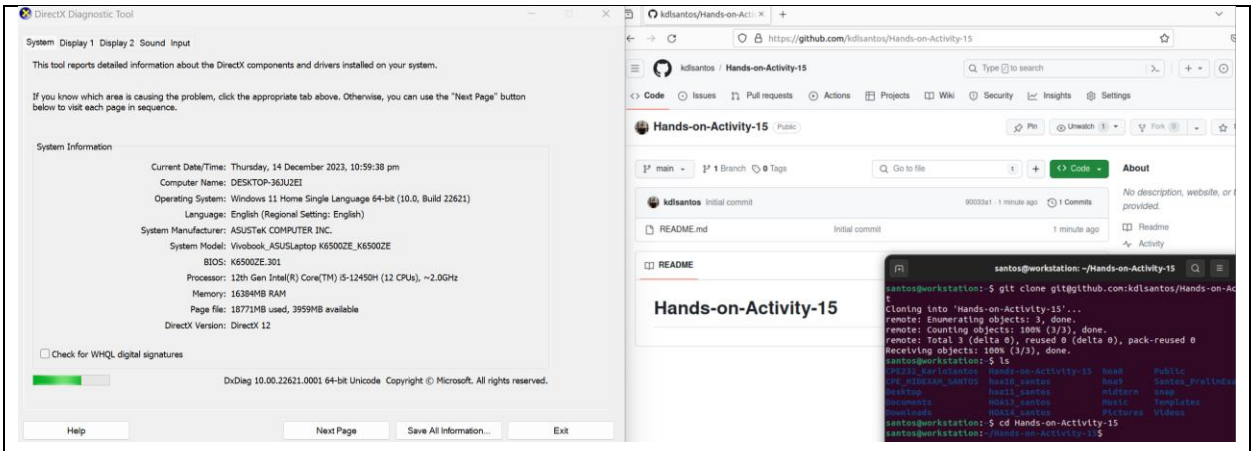
Oracle VirtualBox (Hypervisor)

1x Ubuntu VM or Centos VM

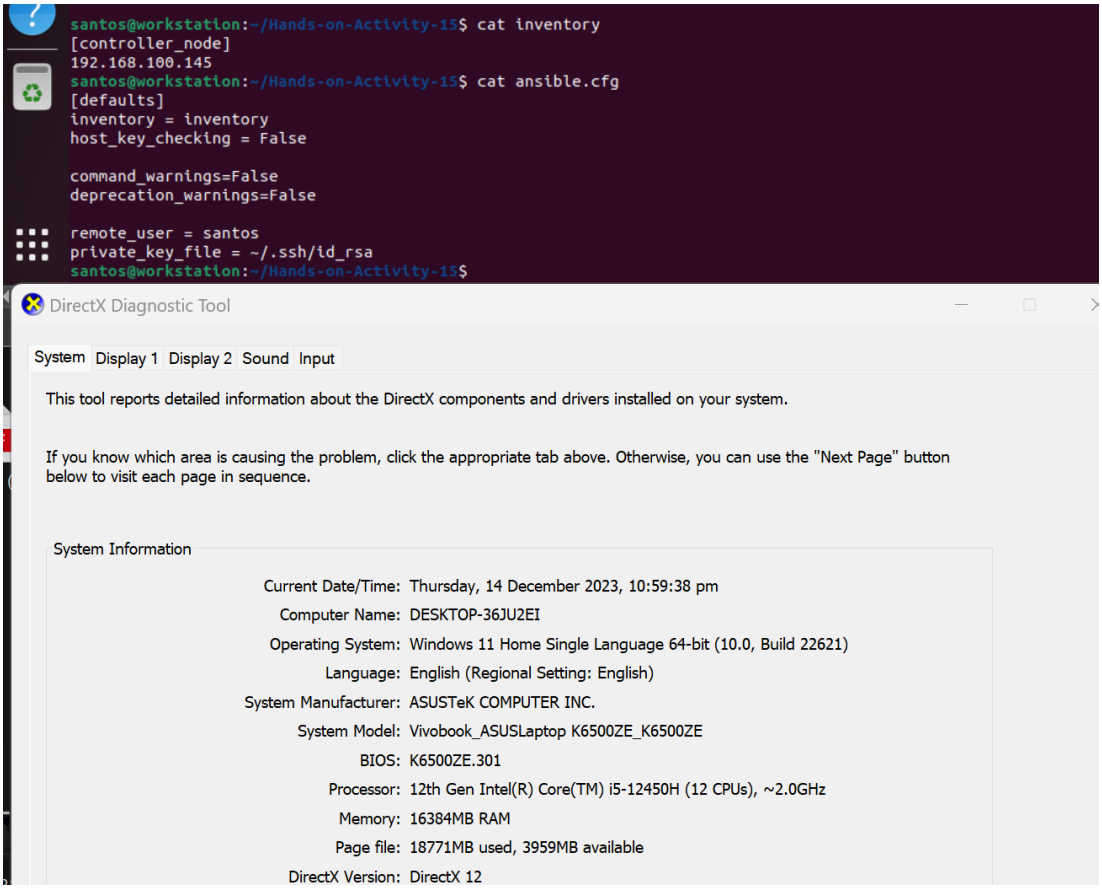
4. Tasks

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.

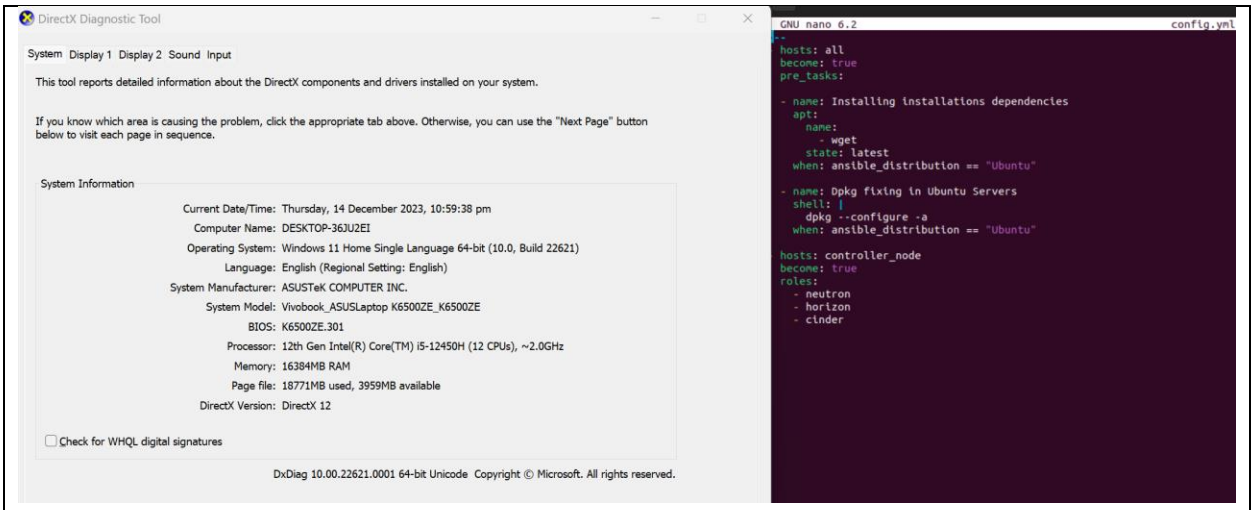
5. Output (screenshots and explanations)



This is the creation of new repository and also cloning it to the terminal.

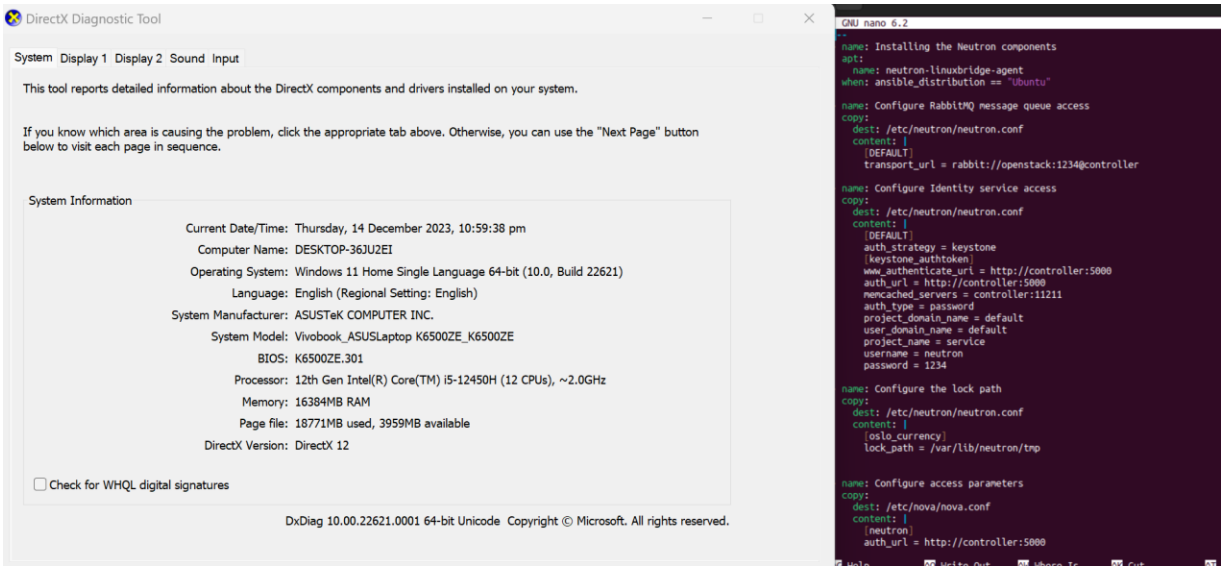


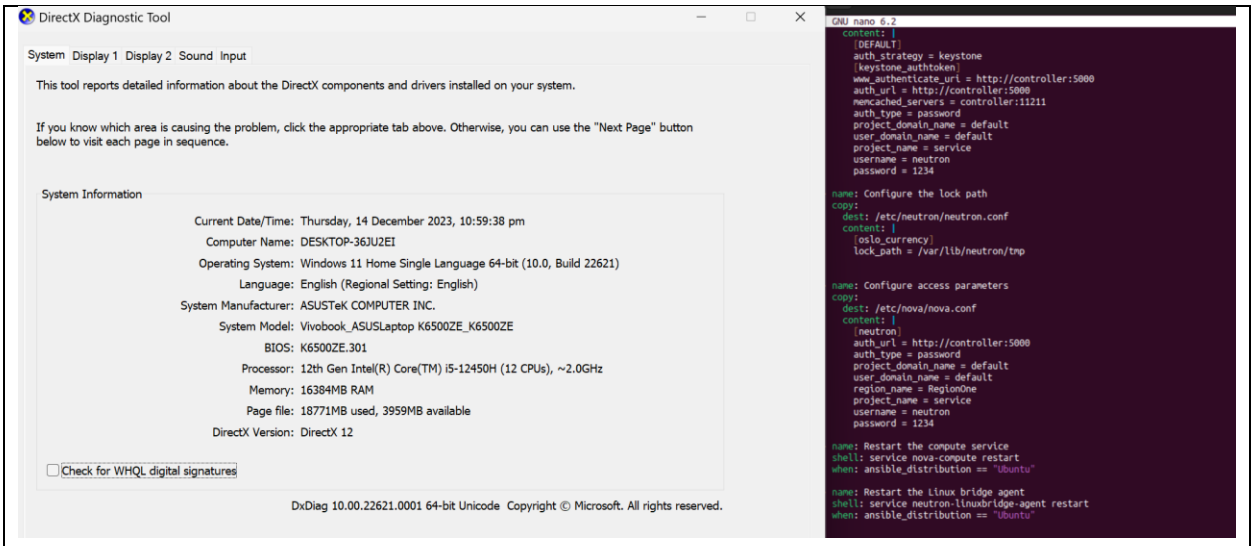
This is the content of the inventory, that contain the IP address of the remote server that will use in this activity. Also, it shows the content of the ansible.cfg, that will help in running the ansible playbook in this activity.



This is the content of config.yml, it shows the pre-tasks that is about the installation of dependencies and also the main tasks which will calls the different roles that is needed like neuron, horizon, and cinder.

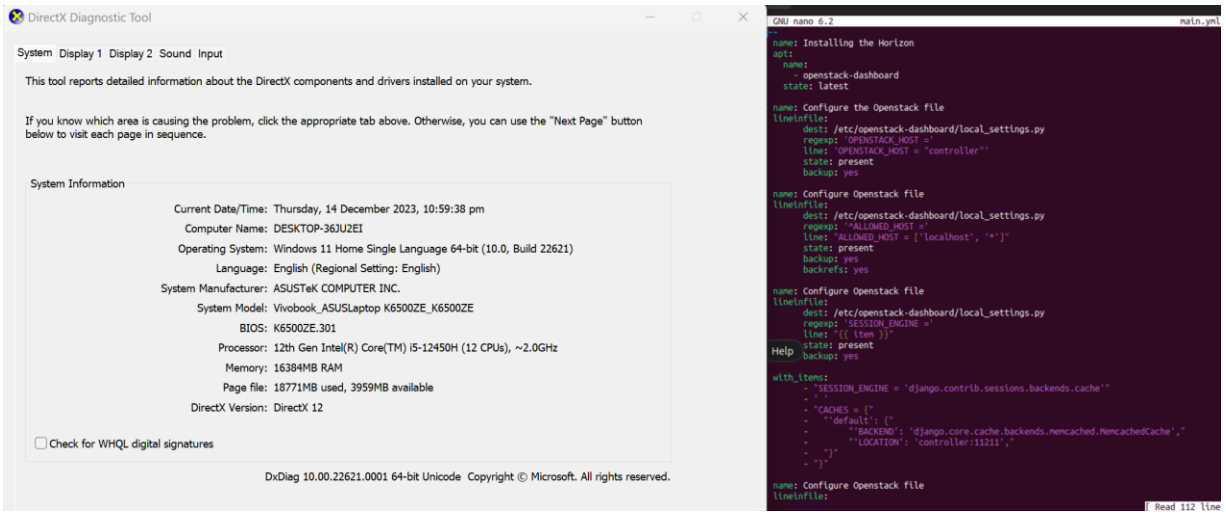
Neutron

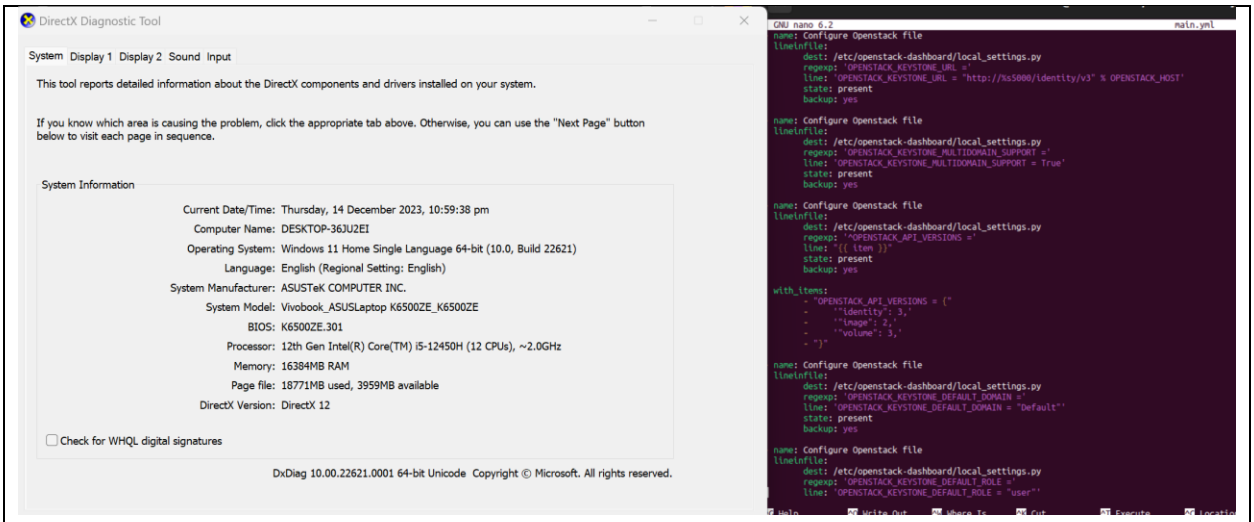


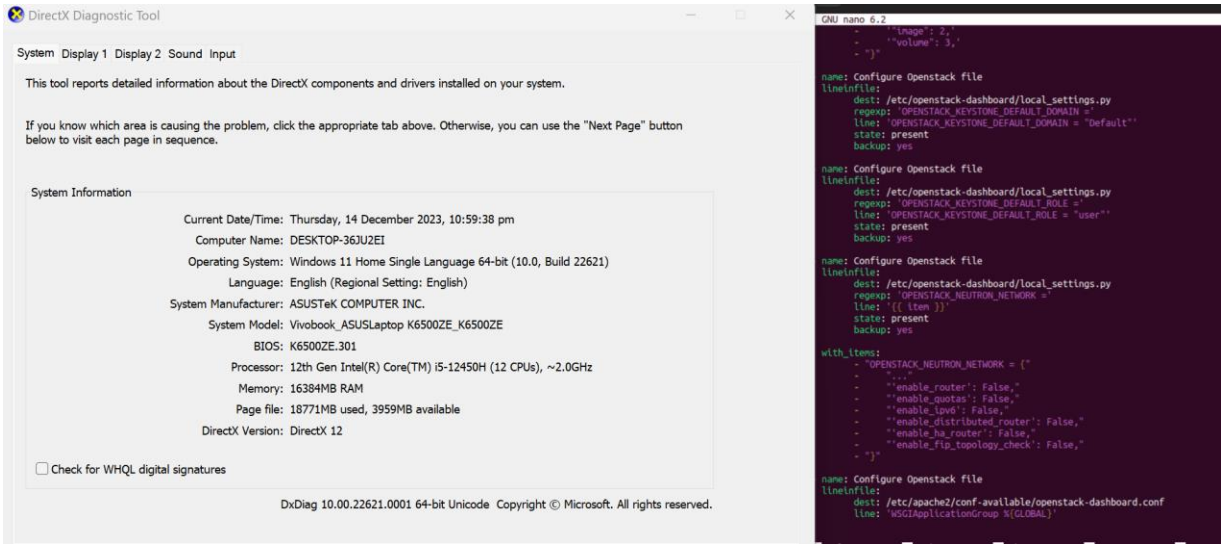


This is the content of the main.yml for the neutron. Its shows its installation to the remote server. It also includes the different configuration like identity service access and the access for different parameters that will help to make neutron work properly.

Horizon

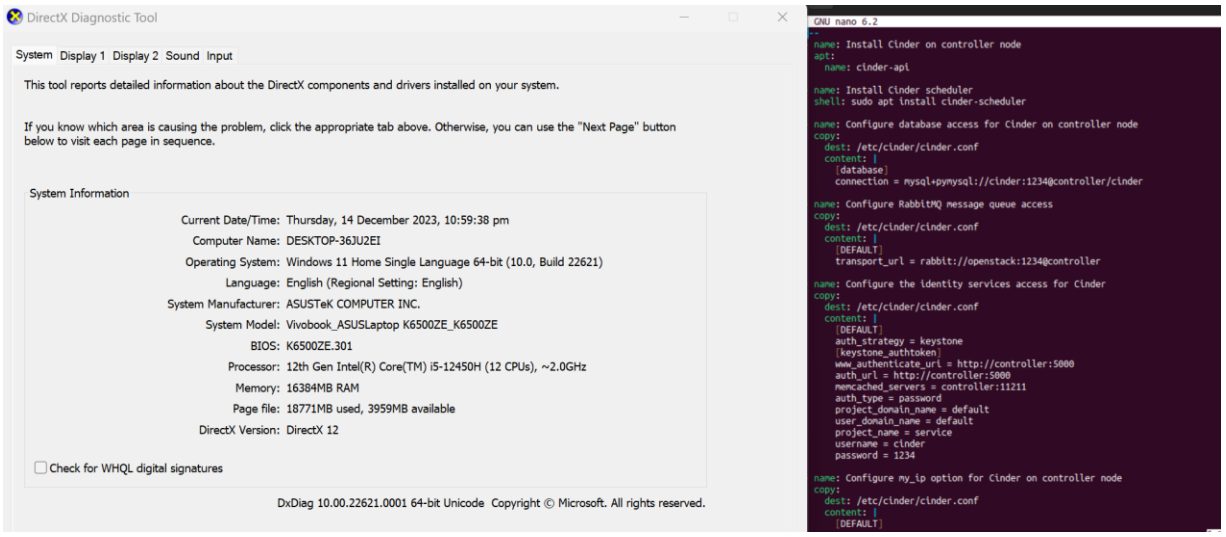


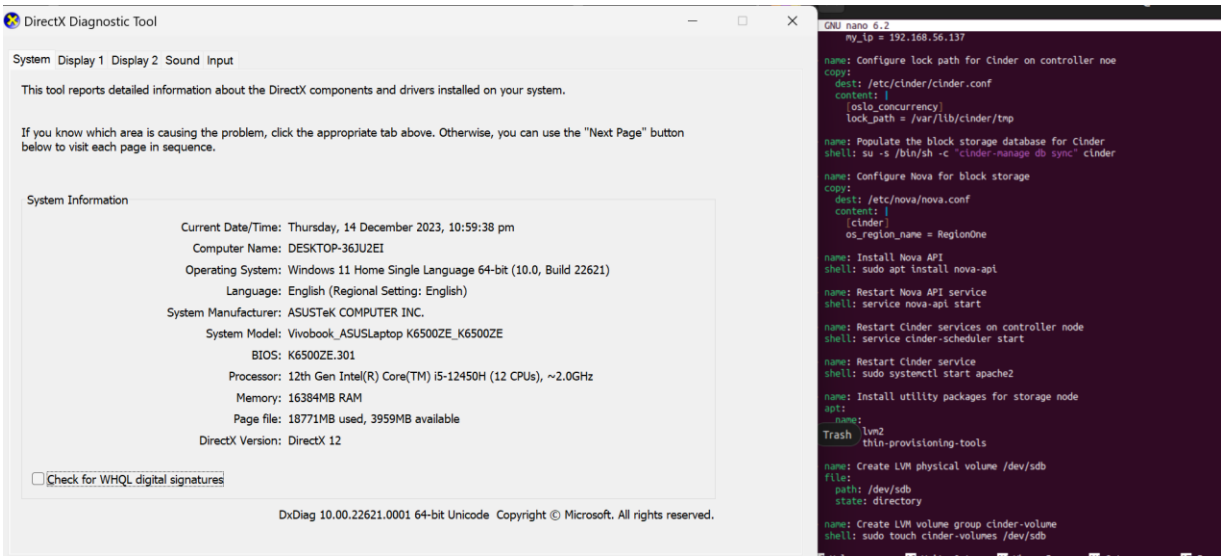




In this part is about the installation of horizon in the remote server. It shows the other play that is for configuring the different OpenStack file that is needed for the installation.

Cinder


DirectX Diagnostic Tool
System Display 1 Display 2 Sound Input
This tool reports detailed information about the DirectX components and drivers installed on your system.
If you know which area is causing the problem, click the appropriate tab above. Otherwise, you can use the "Next Page" button below to visit each page in sequence.
System Information
Current Date/Time: Thursday, 14 December 2023, 10:59:38 pm
Computer Name: DESKTOP-36JU2EI
Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
Language: English (Regional Setting: English)
System Manufacturer: ASUSTeK COMPUTER INC.
System Model: Vivobook_ASUSLaptop K6500ZE_K6500ZE
BIOS: K6500ZE.301
Processor: 12th Gen Intel(R) Core(TM) i5-12450H (12 CPUs), ~2.0GHz
Memory: 16384MB RAM
Page file: 18771MB used, 3959MB available
DirectX Version: DirectX 12
Check for WHQL digital signatures
DxDiag 10.00.22621.0001 64-bit Unicode Copyright © Microsoft. All rights reserved.
GNU nano 6.2
name: Install Cinder on controller node
apt:
name: cinder-api
name: Install Cinder scheduler
shell: sudo apt install cinder-scheduler
name: Configure database access for Cinder on controller node
copy:
dest: /etc/cinder/cinder.conf
content: |
[database]
connection = mysql+pymysql://cinder:1234@controller/cinder
name: Configure RabbitMQ message queue access
copy:
dest: /etc/cinder/cinder.conf
content: |
[DEFAULT]
transport_url = rabbit://openstack:1234@controller
name: Configure the identity services access for Cinder
copy:
dest: /etc/cinder/cinder.conf
content: |
[DEFAULT]
auth_strategy = keystone
[keystone_authtoken]
www_authenticate_uri = http://controller:5000
auth_url = http://controller:5000
memcached_servers = controller:11211
auth_type = password
project_domain_name = default
user_domain_name = default
project_name = service
username = cinder
password = 1234
name: Configure my_ip option for Cinder on controller node
copy:
dest: /etc/cinder/cinder.conf
content: |
[DEFAULT]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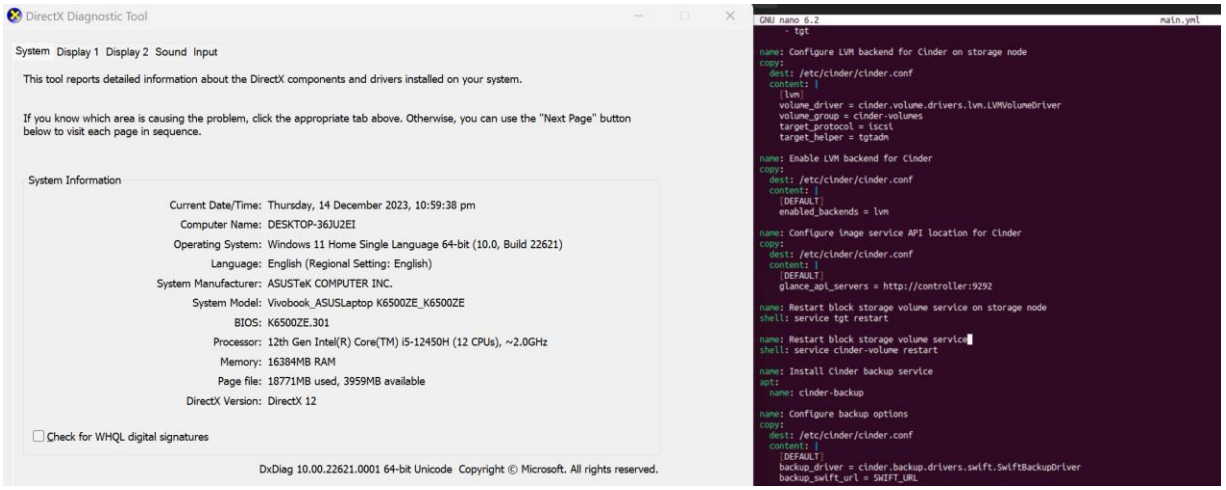
DirectX Version: DirectX 12
Check for WHQL digital signatures
DxDiag 10.00.22621.0001 64-bit Unicode Copyright © Microsoft. All rights reserved.
GNU nano 6.2
my_ip = 192.168.56.137
name: Configure lock path for Cinder on controller noe
copy:
dest: /etc/cinder/cinder.conf
content: |
[oslo_concurrency]
lock_path = /var/lib/cinder/tmp
name: Populate the block storage database for Cinder
shell: su -s /bin/sh -c "cinder-manage db sync" cinder
name: Configure Nova for block storage
copy:
dest: /etc/nova/nova.conf
content: |
[cinder]
os_region_name = RegionOne
name: Install Nova API
shell: sudo apt install nova-api
name: Restart Nova API service
shell: service nova-api start
name: Restart Cinder services on controller node
shell: service cinder-scheduler start
name: Restart Cinder service
shell: sudo systemctl start apache2
name: Install utility packages for storage node
apt:
name:
Trash
lvm2
thin-provisioning-tools
name: Create LVM physical volume /dev/sdb
file:
path: /dev/sdb
state: directory
name: Create LVM volume group cinder-volume
shell: sudo touch cinder-volumes /dev/sdb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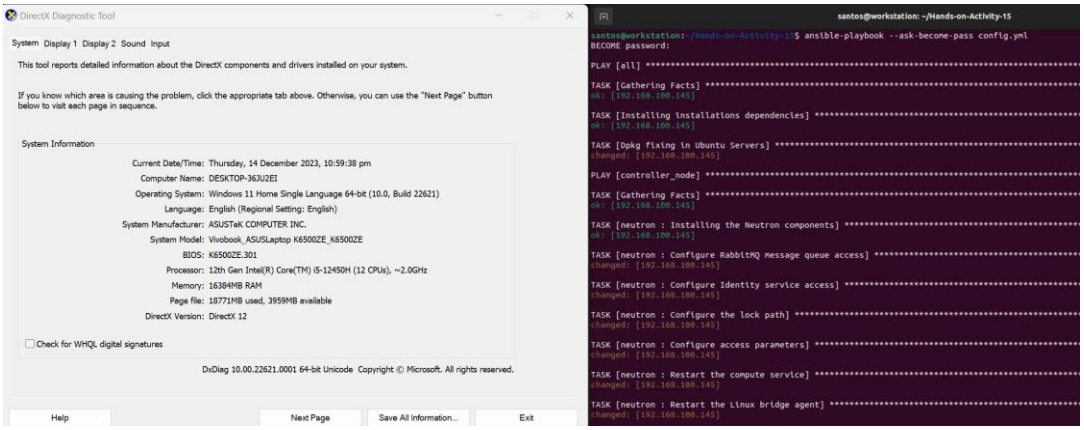
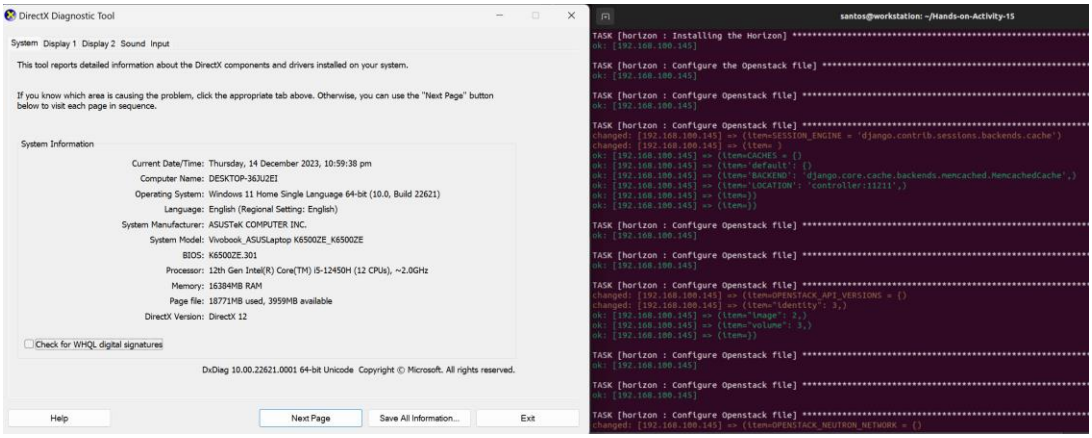
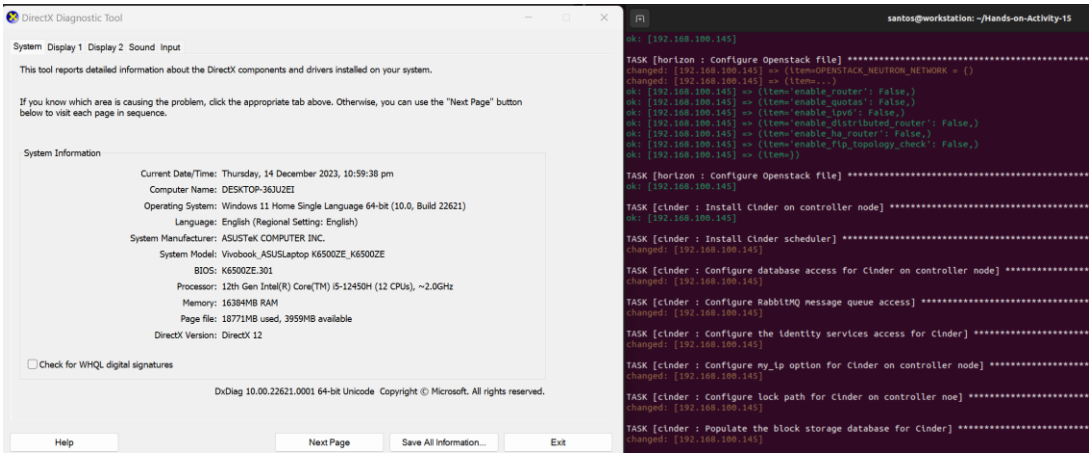
Page file: 18771MB used, 3959MB available
DirectX Version: DirectX 12
Check for WHQL digital signatures
DxDiag 10.00.22621.0001 64-bit Unicode Copyright © Microsoft. All rights reserved.
GNU nano 6.2 main.yml
- tgt
name: Configure LVM backend for Cinder on storage node
copy:
dest: /etc/cinder/cinder.conf
content: |
[lvm]
volume_driver = cinder.volume.drivers.lvm.LVMVolumeDriver
volume_group = cinder-volumes
target_protocol = iscsi
target_helper = tgtadm
name: Enable LVM backend for Cinder
copy:
dest: /etc/cinder/cinder.conf
content: |
[DEFAULT]
enabled_backends = lvm
name: Configure Image service API location for Cinder
copy:
dest: /etc/cinder/cinder.conf
content: |
[DEFAULT]
glance_api_servers = http://controller:9292
name: Restart block storage volume service on storage node
shell: service tgt restart
name: Restart block storage volume service
shell: service cinder-volume restart
name: Install Cinder backup service
apt:
name: cinder-backup
name: Configure backup options
copy:
dest: /etc/cinder/cinder.conf
content: |
[DEFAULT]
backup_driver = cinder.backup.drivers.swift.SwiftBackupDriver
backup_swift_url = SWIFT_URL

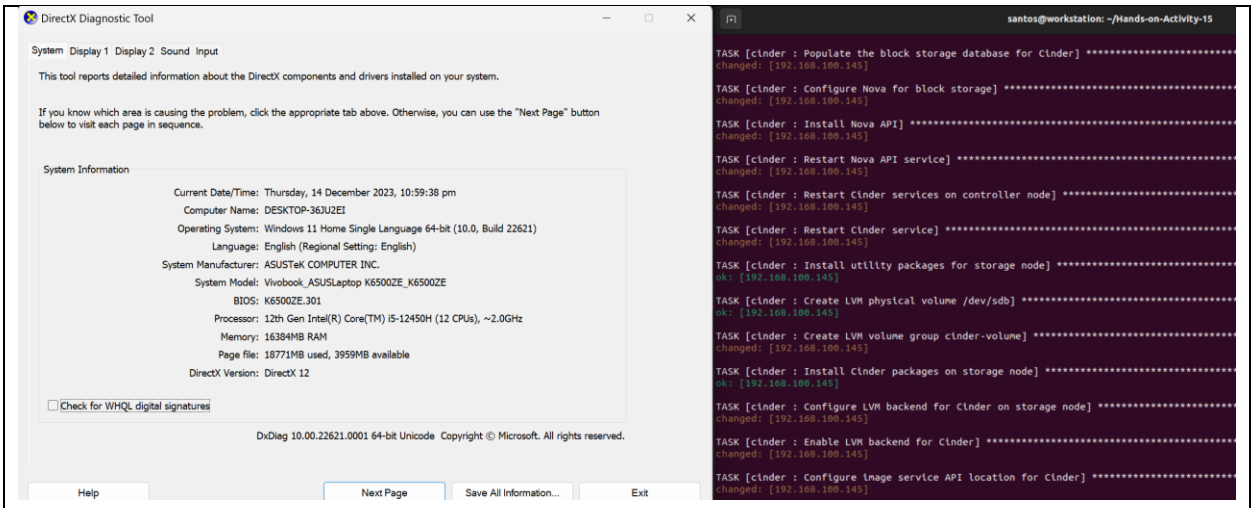
This is for the installation of cinder. It contains the different configuration like installing cinder backups, cinder scheduler and other things that is needed to fully use the cinder in the remote server.

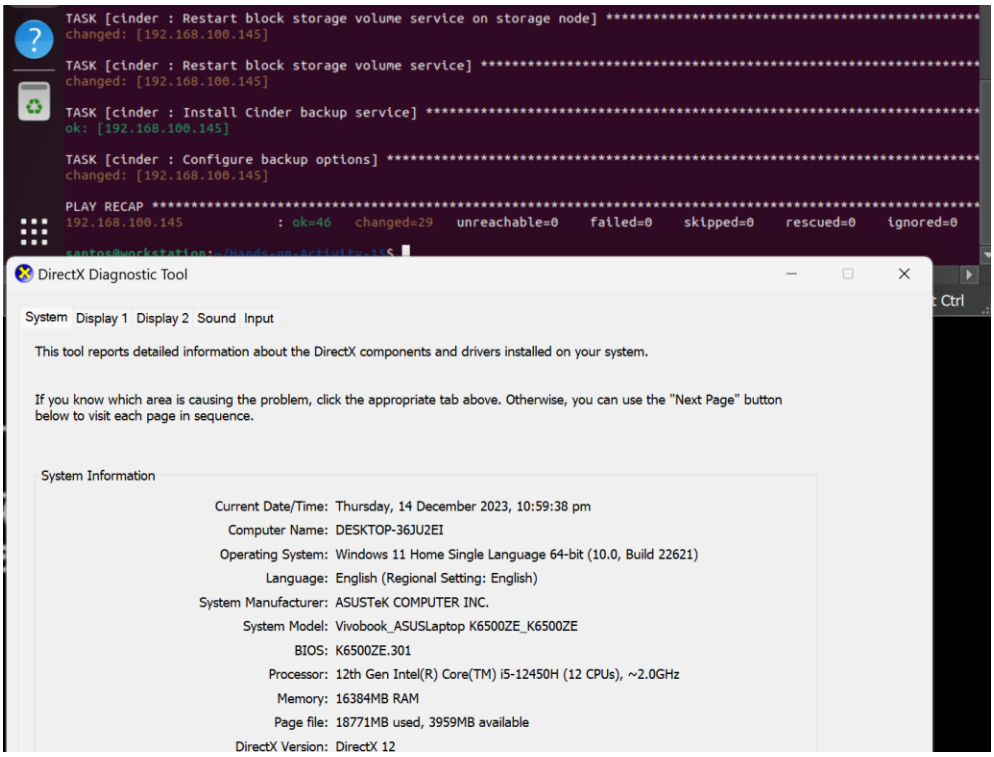
Running the playbook







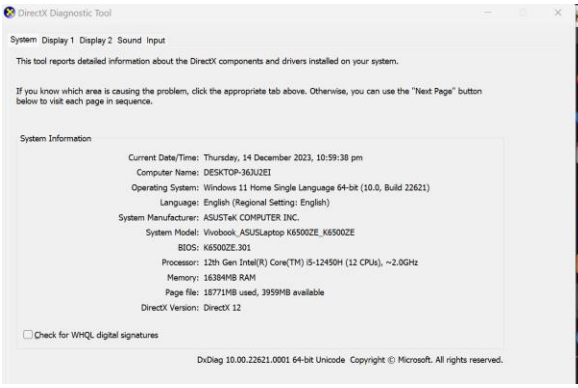


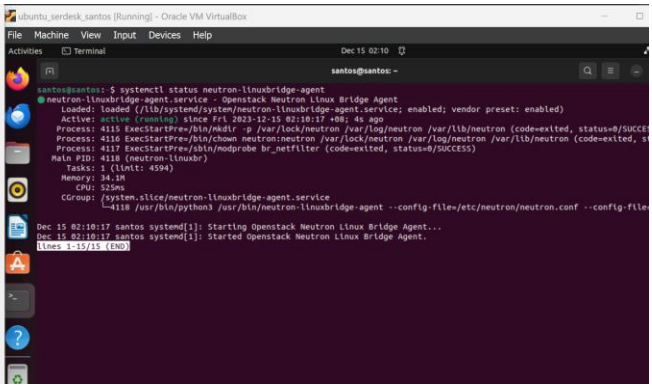


This part shows the screenshot of output after I run the playbook config.yml, it shows that all the plays and tasks execute successfully. It shows in the play recap that all task is in ok and changed category, and shows 0 in the failed.

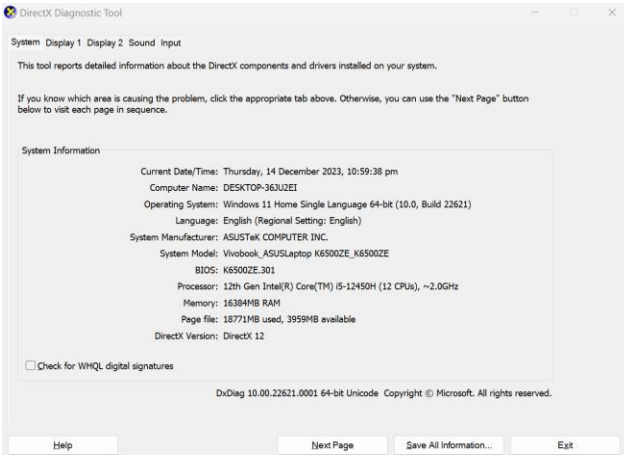
Verification (using systemctl command to show that they are running and active)

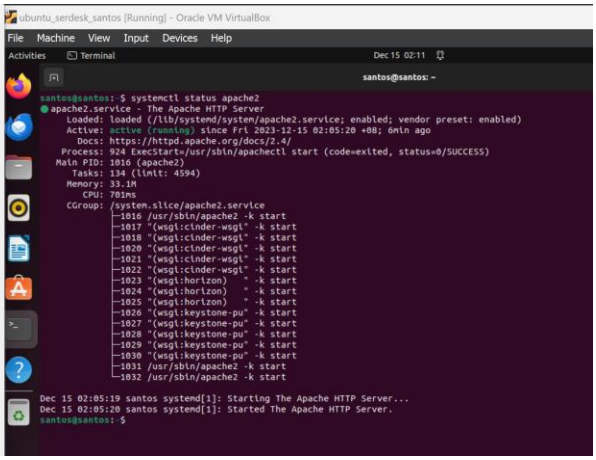
Neutron



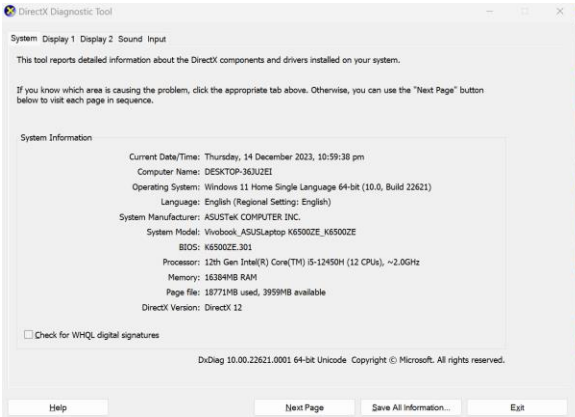


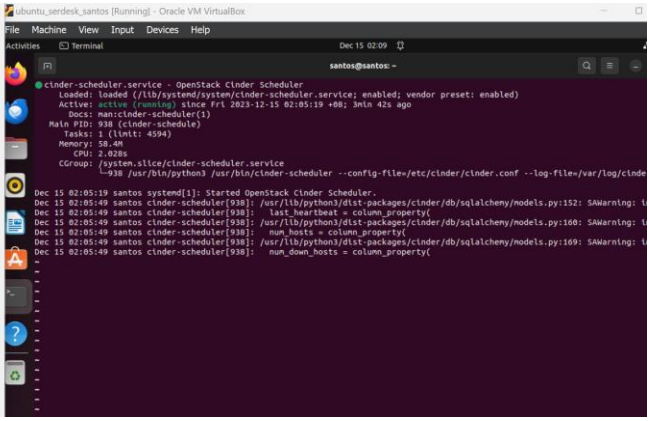
Horizon



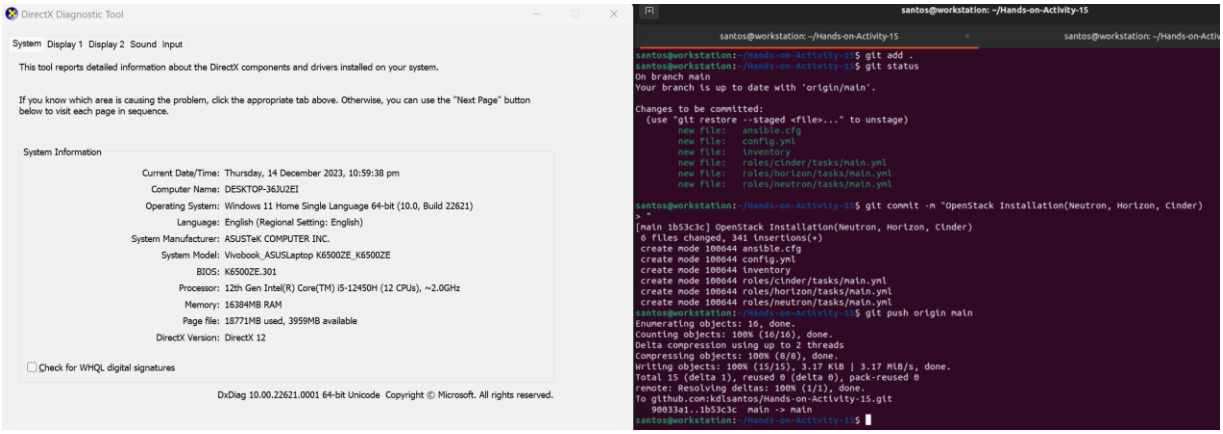


Cinder

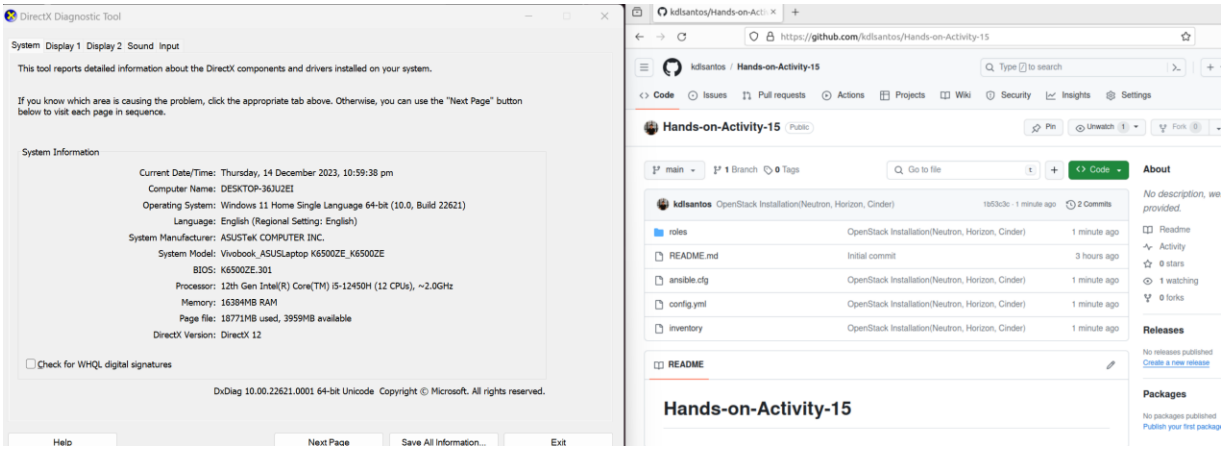




Add, commit and push it to your GitHub repo.



Screenshot of GitHub Repository



GitHub repository link:

https://github.com/kdlsantos/Hands-on-Activity-15

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services
    - **Neutron**: it is the networking component for the OpenStack. It helps in providing network connection that serve as a service and allow the users to manage and also create networks for the virtual machine.
    - **Horizon**: is an interface that is for managing of cloud resources. It is considered as an user-friendly interface since it can use by the user easily.

- **Cinder:** it is the storage service in OpenStack. It gives the user the freedom to manage and attach block storage volume to the virtual machine.

Conclusions:

In this activity, I able to learn and installed other OpenStack services which is Neutron, Horizon and Cinder. I able to know how to install it and know the different things that is needed for its to work properly. This activity also helps me to enhance my thinking skills in terms of troubleshooting, since it is needed once I encounter errors while running the playbook. In the reflection part, I able to know the differences between the 3 services and be able to identify one from another. This activity helps me to learn more about OpenStack and I hope to use this more in the future.