Name: Quizon, Nowell Gabriel C.	**Date Performed:** 12/06/2023
Course/Section: CPE31S5	**Date Submitted:** 12/06/2023
Instructor: Engr. Roman Richard	**Semester and SY:** 1st semester – 2023-2024

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)

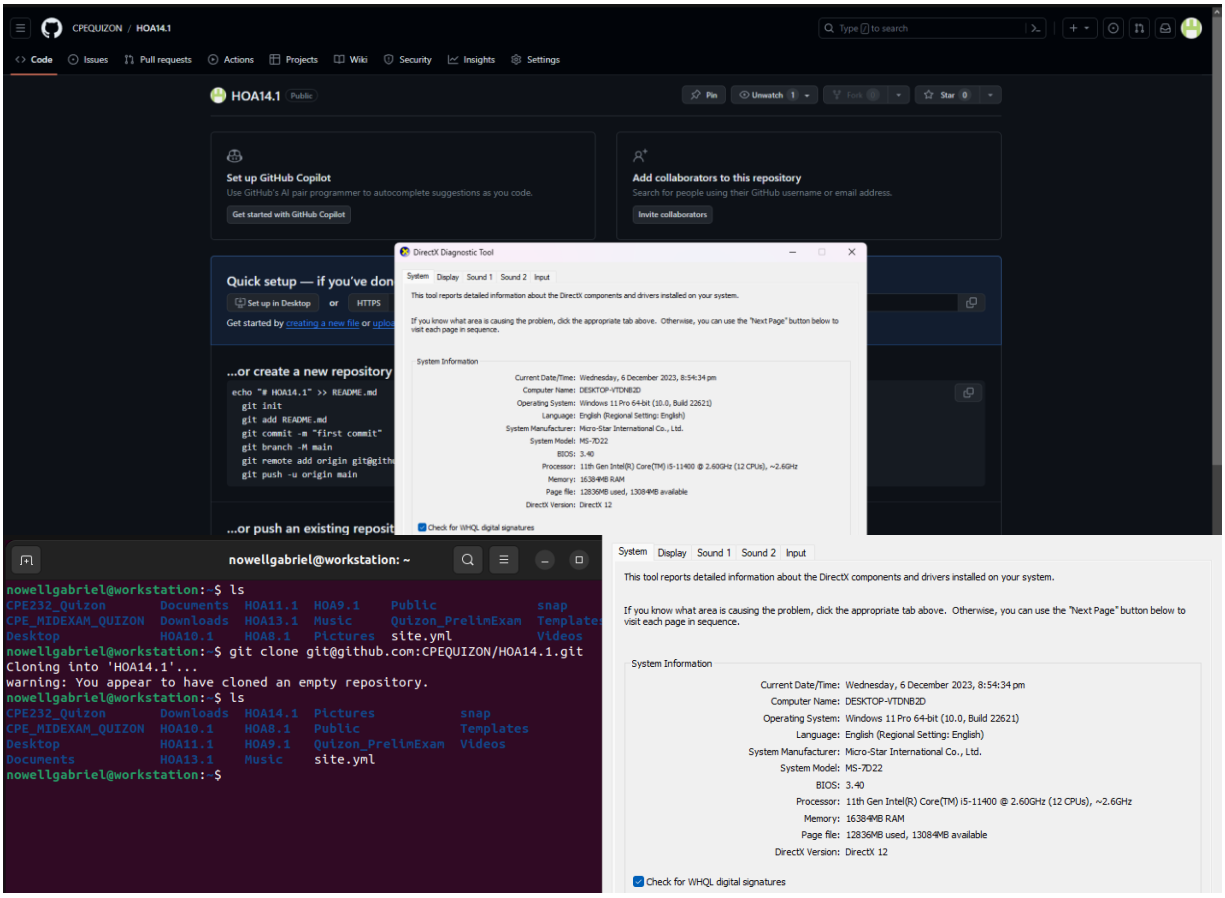
1x Ubuntu VM or Centos VM

4. Tasks

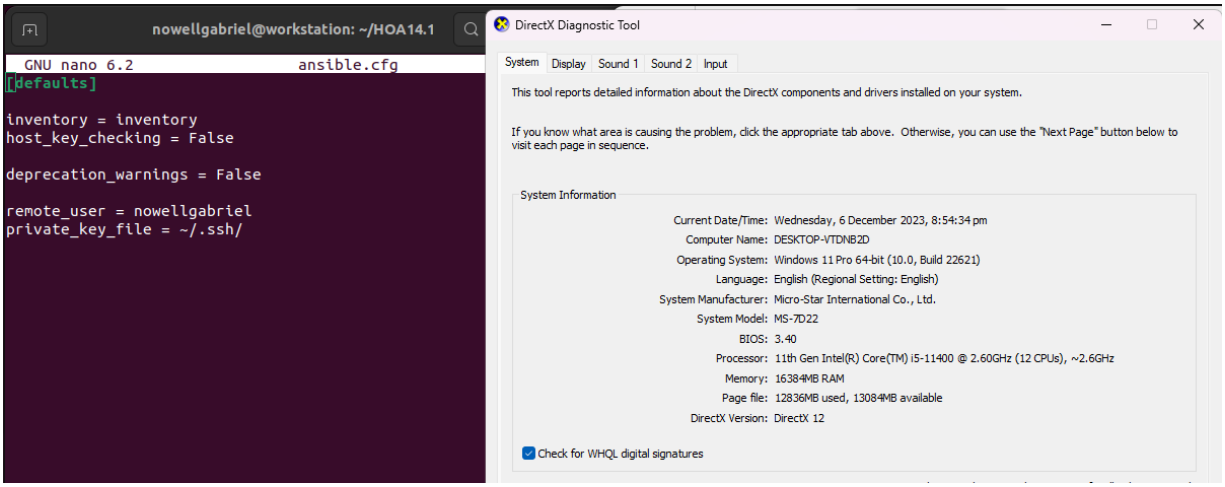
1. Create a new repository for this activity.
2. Create a playbook that converts the steps in the following items in https://docs.openstack.org/install-guide/
    a. Keystone (Identity Service)
    b. Glance (Imaging Service)
    c. Nova (Compute Service)
    d. Create different plays in installing per 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)

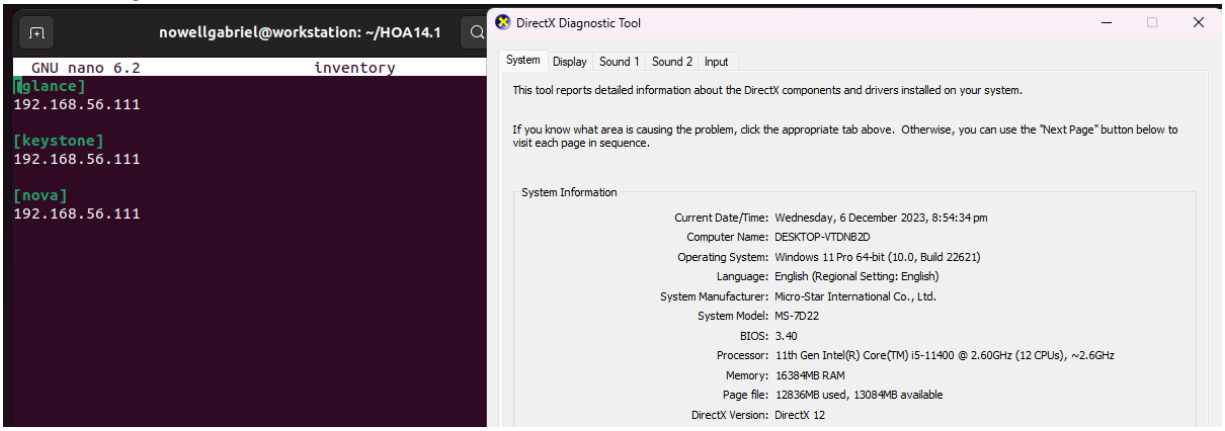
1) Create a new repository for this activity.



ansible.cfg

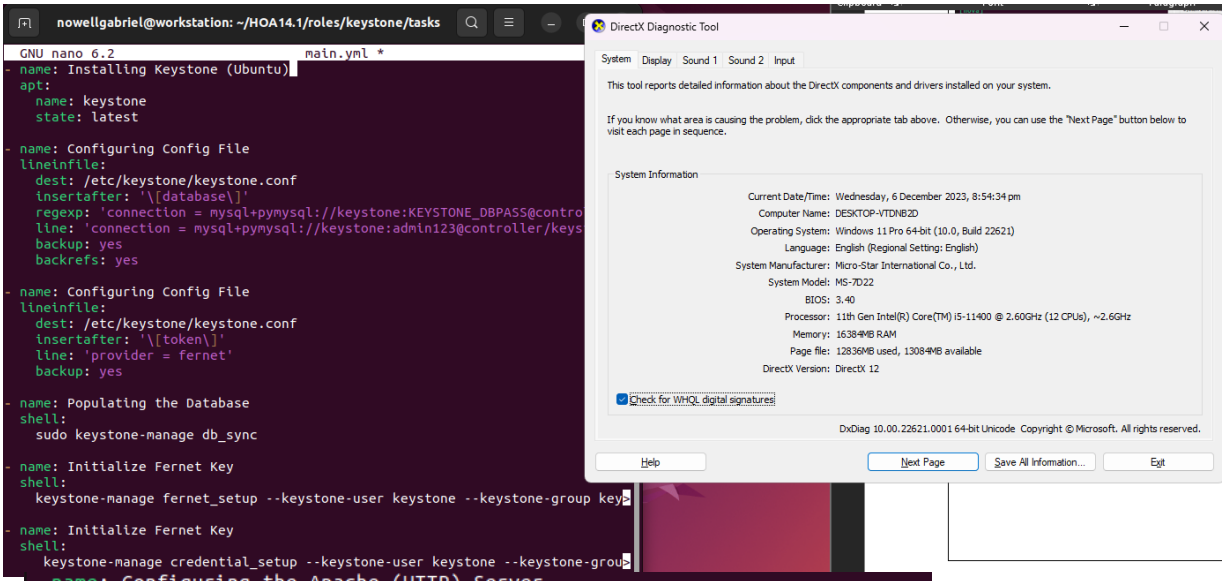


inventory



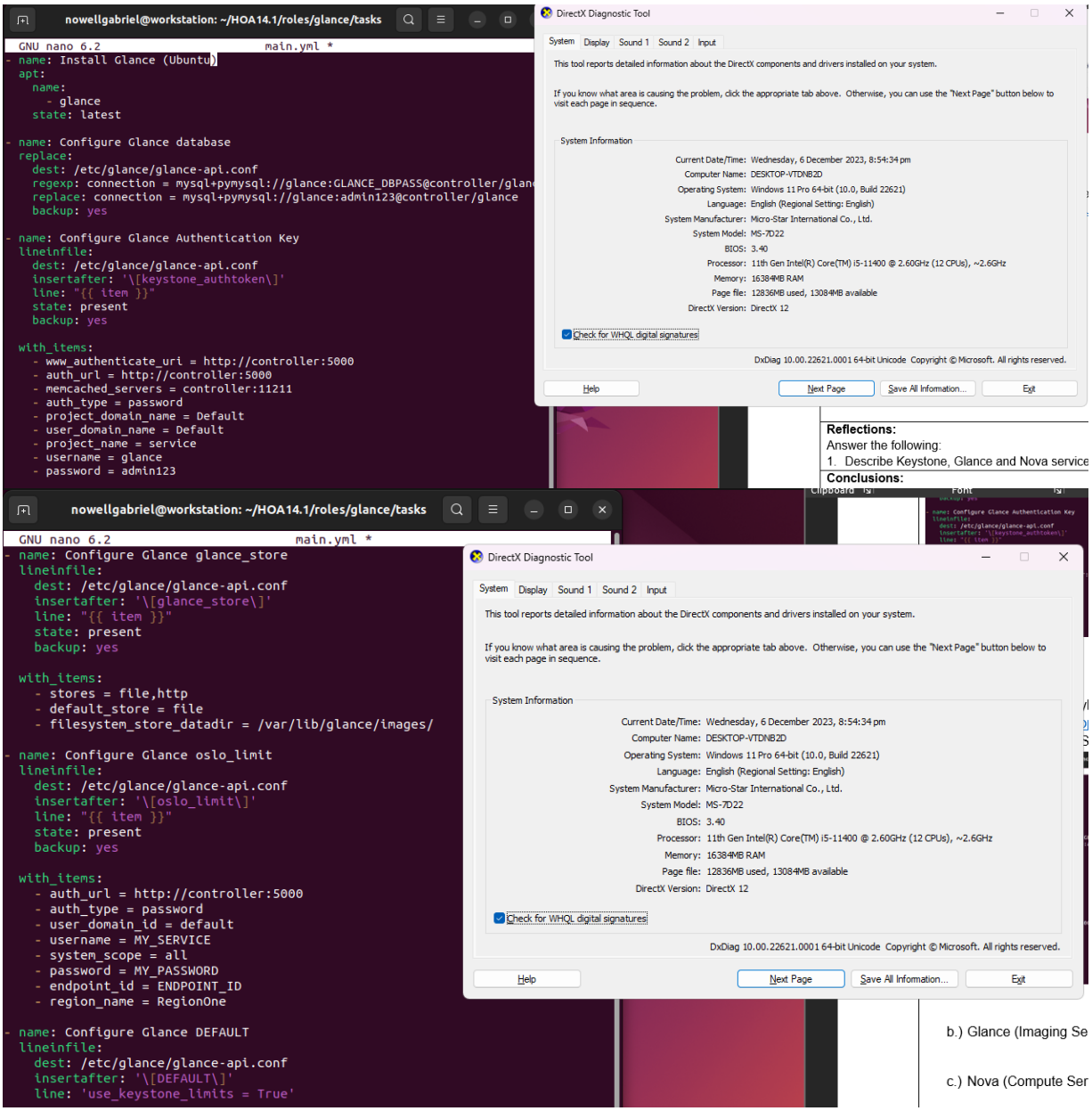
2) Create a playbook that converts the steps in the following items in https://docs.openstack.org/install-guide/

a.) Keystone (Identity Service)



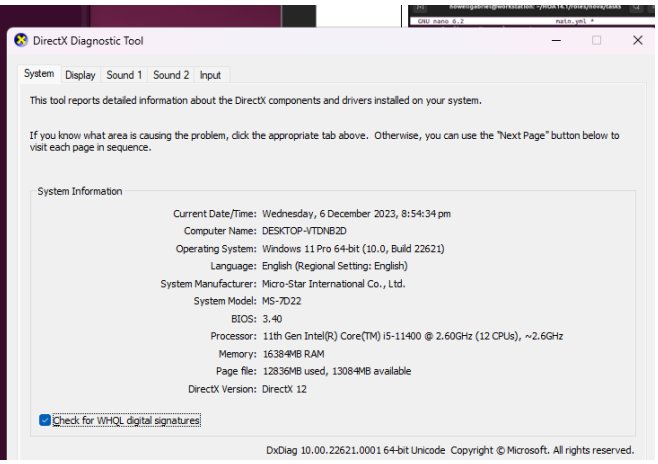

```
- name: Configuring the Apache (HTTP) Server
  lineinfile:
    dest: /etc/apache2/apache2.conf
    line: 'ServerName controller'
    state: present
    backup: yes

- name: Configure Administrative Account Environmental Variables
  shell:
    export OS_USERNAME=admin
    export OS_PASSWORD=ADMIN_PASS
    export OS_PROJECT_NAME=admin
    export OS_USER_DOMANI_NAME=Default
    export OS_PROJECT_DOMAIN_NAME=Default
    export OS_AUTH_URL=http://controller:5000/v3
    export OS_IDENTITY_API_VERSION=3
```

b.) Glance (Imaging Service)



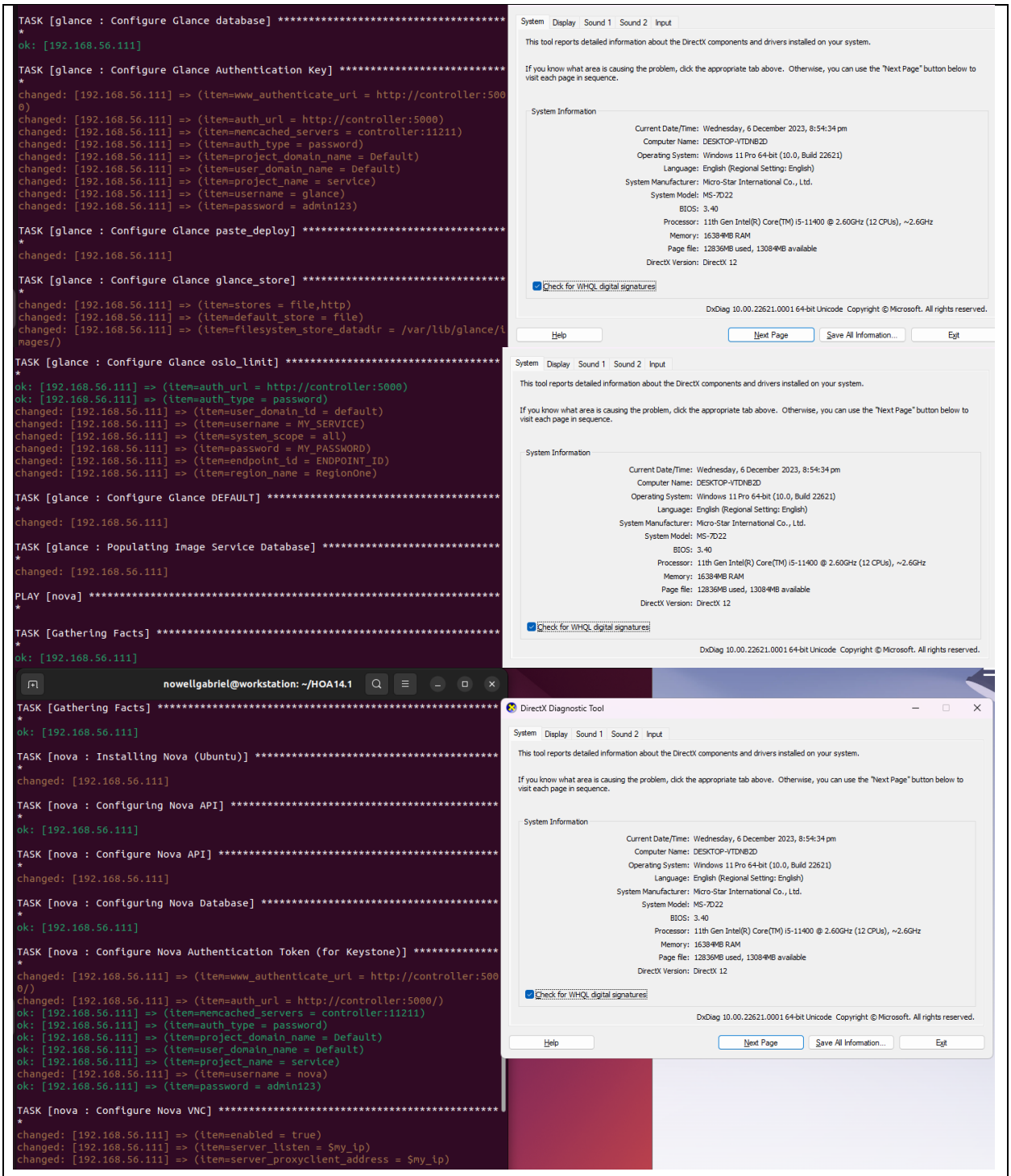
c.) Nova (Compute Service)

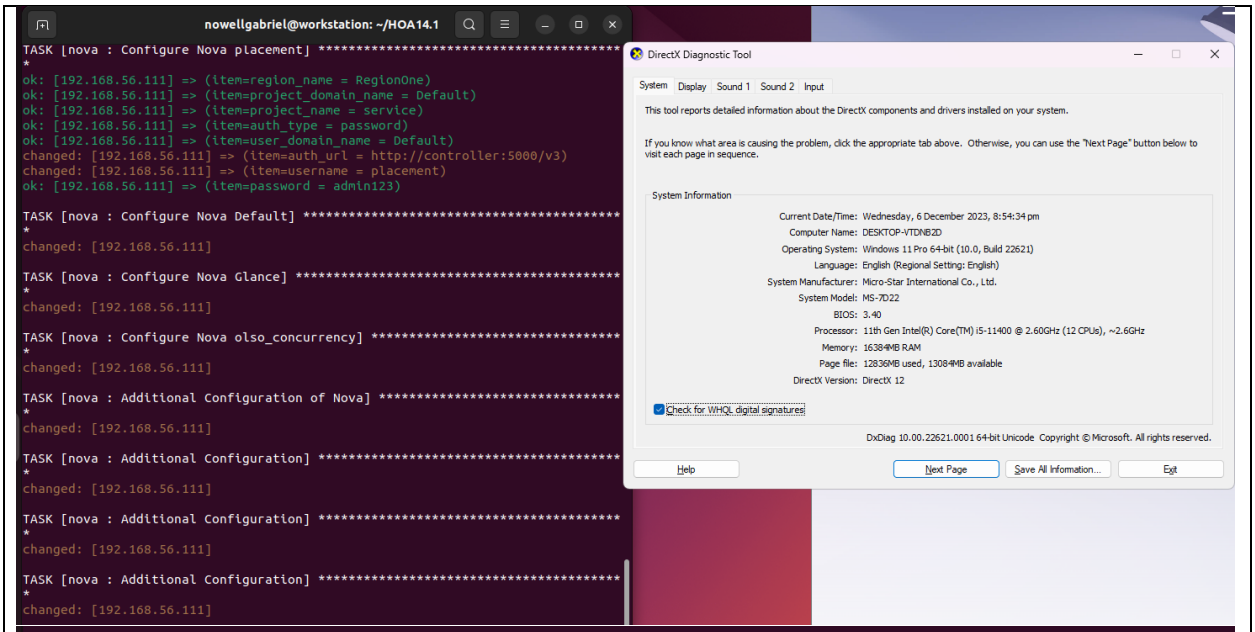
```
- name: Configure Nova olso_concurrency
  lineinfile:
    dest: /etc/nova/nova.conf
    line: 'lock_path = /var/lib/nova/tmp'
    state: present
    backup: yes

- name: Additional Configuration of Nova
  shell:
    sudo nova-manage api_db sync

- name: Additional Configuration
  shell:
    sudo nova-manage cell_v2 map_cell0

#- name: Additional Configuration
 # shell:
  #  sudo nova-manage cell_v2 create_cell --name=cell1 --verbose

- name: Additional Configuration
  shell:
    sudo nova-manage db sync

- name: Additional Configuration
  shell:
    sudo nova-manage cell_v2 list_cells
```



- Proof

```
nowellgabriel@workstation:~/HOA14.1$ ansible-playbook --ask-become-pass install
_kgn.yml
BECOME password:

PLAY [keystone] ********************************
*

TASK [Gathering Facts] *************************
*
ok: [192.168.56.111]

TASK [keystone : Installing Keystone (Ubuntu)] **
*
changed: [192.168.56.111]

TASK [keystone : Configuring Config File] ******
*
ok: [192.168.56.111]

TASK [keystone : Configuring Config File] ******
*
changed: [192.168.56.111]

TASK [keystone : Populating the Database] ******
*
changed: [192.168.56.111]

TASK [keystone : Initialize Fernet Key] ********
*
changed: [192.168.56.111]

TASK [keystone : Initialize Fernet Key] ********
*
changed: [192.168.56.111]

TASK [keystone : Configuring the Apache (HTTP) Server] *****
*
changed: [192.168.56.111]

TASK [keystone : Configure Administrative Account Environmental Variables] *
*
changed: [192.168.56.111]

PLAN [glance] **********************************
*

TASK [Gathering Facts] *************************
*
ok: [192.168.56.111]

TASK [glance : Install Glance (Ubuntu)] ********
*
changed: [192.168.56.111]
```


TASK [glance : Configure Glance database] ********
ok: [192.168.56.111]
TASK [glance : Configure Glance Authentication Key] ********
changed: [192.168.56.111] => (item=www_authenticate_uri = http://controller:5000)
changed: [192.168.56.111] => (item=auth_url = http://controller:5000)
changed: [192.168.56.111] => (item=memcached_servers = controller:11211)
changed: [192.168.56.111] => (item=auth_type = password)
changed: [192.168.56.111] => (item=project_domain_name = Default)
changed: [192.168.56.111] => (item=user_domain_name = Default)
changed: [192.168.56.111] => (item=project_name = service)
changed: [192.168.56.111] => (item=username = glance)
changed: [192.168.56.111] => (item=password = admin123)
TASK [glance : Configure Glance paste_deploy] ********
changed: [192.168.56.111]
TASK [glance : Configure Glance glance_store] ********
changed: [192.168.56.111] => (item=stores = file,http)
changed: [192.168.56.111] => (item=default_store = file)
changed: [192.168.56.111] => (item=filesystem_store_datadir = /var/lib/glance/images/)
TASK [glance : Configure Glance oslo_limit] ********
ok: [192.168.56.111] => (item=auth_url = http://controller:5000)
ok: [192.168.56.111] => (item=auth_type = password)
changed: [192.168.56.111] => (item=user_domain_id = default)
changed: [192.168.56.111] => (item=username = MY_SERVICE)
changed: [192.168.56.111] => (item=system_scope = all)
changed: [192.168.56.111] => (item=password = MY_PASSWORD)
changed: [192.168.56.111] => (item=endpoint_id = ENDPOINT_ID)
changed: [192.168.56.111] => (item=region_name = RegionOne)
TASK [glance : Configure Glance DEFAULT] ********
changed: [192.168.56.111]
TASK [glance : Populating Image Service Database] ********
changed: [192.168.56.111]
PLAY [nova] ********
TASK [Gathering Facts] ********
ok: [192.168.56.111]
System Display Sound 1 Sound 2 Input
This tool reports detailed information about the DirectX components and drivers installed on your system.
If you know what 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: Wednesday, 6 December 2023, 8:54:34 pm
Computer Name: DESKTOP-VTDNB2D
Operating System: Windows 11 Pro 64-bit (10.0, Build 22621)
Language: English (Regional Setting: English)
System Manufacturer: Micro-Star International Co., Ltd.
System Model: MS-7D22
BIOS: 3.40
Processor: 11th Gen Intel(R) Core(TM) i5-11400 @ 2.60GHz (12 CPUs), ~2.6GHz
Memory: 16384MB RAM
Page file: 12836MB used, 13084MB available
DirectX Version: DirectX 12
Check for WHQL digital signatures
DxDiag 10.00.22621.0001 64-bit Unicode Copyright © Microsoft. All rights reserved.
Help
Next Page
Save All Information...
Exit
nowellgabriel@workstation: ~/HOA14.1
TASK [Gathering Facts] ********
ok: [192.168.56.111]
TASK [nova : Installing Nova (Ubuntu)] ********
changed: [192.168.56.111]
TASK [nova : Configuring Nova API] ********
ok: [192.168.56.111]
TASK [nova : Configure Nova API] ********
changed: [192.168.56.111]
TASK [nova : Configuring Nova Database] ********
ok: [192.168.56.111]
TASK [nova : Configure Nova Authentication Token (for Keystone)] ********
changed: [192.168.56.111] => (item=www_authenticate_uri = http://controller:5000)
changed: [192.168.56.111] => (item=auth_url = http://controller:5000/)
ok: [192.168.56.111] => (item=memcached_servers = controller:11211)
ok: [192.168.56.111] => (item=auth_type = password)
ok: [192.168.56.111] => (item=project_domain_name = Default)
ok: [192.168.56.111] => (item=user_domain_name = Default)
ok: [192.168.56.111] => (item=project_name = service)
changed: [192.168.56.111] => (item=username = nova)
ok: [192.168.56.111] => (item=password = admin123)
TASK [nova : Configure Nova VNC] ********
changed: [192.168.56.111] => (item=enabled = true)
changed: [192.168.56.111] => (item=server_listen = $my_ip)
changed: [192.168.56.111] => (item=server_proxyclient_address = $my_ip)
DirectX Diagnostic Tool


nowellgabriel@workstation: ~/HOA14.1
TASK [nova : Configure Nova placement] **
*
ok: [192.168.56.111] => (item=region_name = RegionOne)
ok: [192.168.56.111] => (item=project_domain_name = Default)
ok: [192.168.56.111] => (item=project_name = service)
ok: [192.168.56.111] => (item=auth_type = password)
ok: [192.168.56.111] => (item=user_domain_name = Default)
changed: [192.168.56.111] => (item=auth_url = http://controller:5000/v3)
changed: [192.168.56.111] => (item=username = placement)
ok: [192.168.56.111] => (item=password = admin123)
TASK [nova : Configure Nova Default] **
*
changed: [192.168.56.111]
TASK [nova : Configure Nova Glance] ***
*
changed: [192.168.56.111]
TASK [nova : Configure Nova olso_concurrency] *********************************
*
changed: [192.168.56.111]
TASK [nova : Additional Configuration of Nova] ********************************
*
changed: [192.168.56.111]
TASK [nova : Additional Configuration] **
*
changed: [192.168.56.111]
TASK [nova : Additional Configuration] **
*
changed: [192.168.56.111]
TASK [nova : Additional Configuration] **
*
changed: [192.168.56.111]
DirectX Diagnostic Tool
System Display Sound 1 Sound 2 Input
This tool reports detailed information about the DirectX components and drivers installed on your system.
If you know what 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
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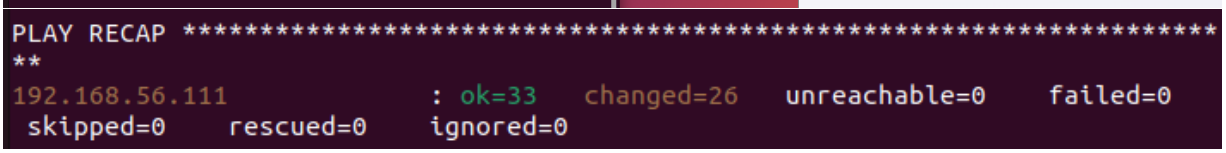
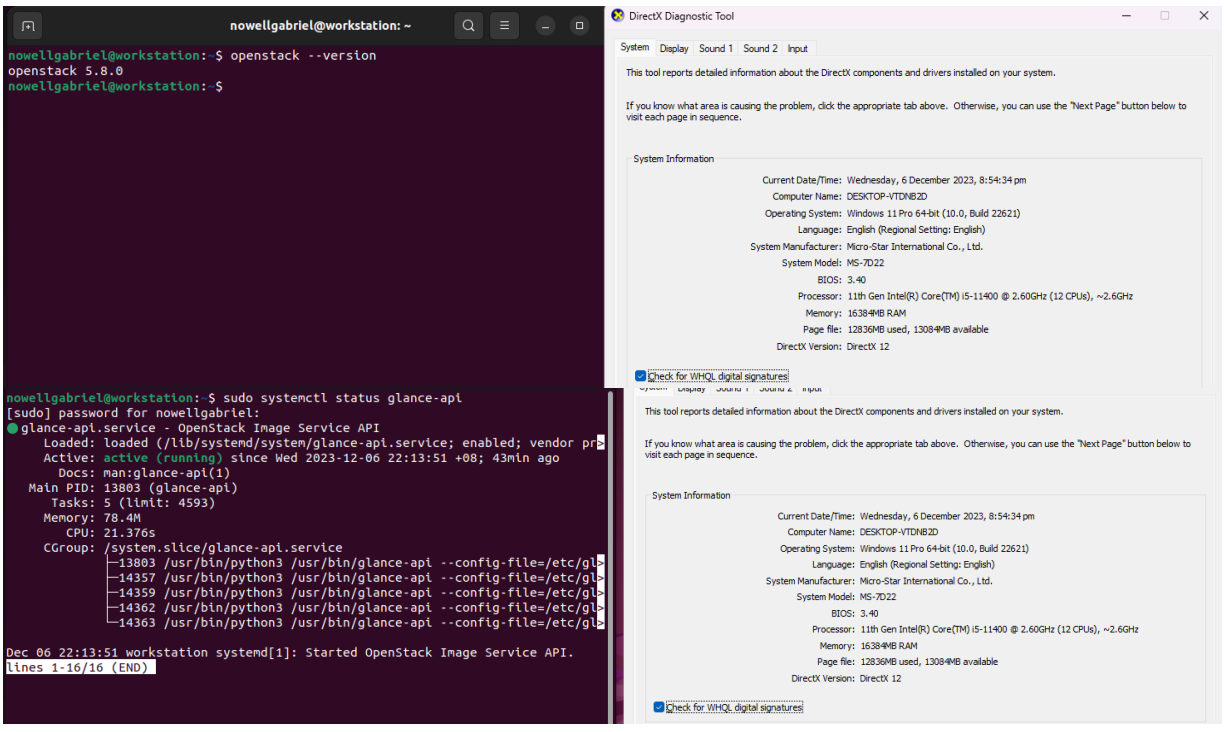
System Manufacturer: Micro-Star International Co., Ltd.
System Model: MS-7D22
BIOS: 3.40
Processor: 11th Gen Intel(R) Core(TM) i5-11400 @ 2.60GHz (12 CPUs), ~2.6GHz
Memory: 16384MB RAM
Page file: 12836MB used, 13084MB available
DirectX Version: DirectX 12
Check for WHQL digital signatures
DxDiag 10.00.22621.0001 64-bit Unicode Copyright © Microsoft. All rights reserved.
Help
Next Page
Save All Information...
Exit


PLAY RECAP **
**
192.168.56.111 : ok=33 changed=26 unreachable=0 failed=0
skipped=0 rescued=0 ignored=0


nowellgabriel@workstation: ~
nowellgabriel@workstation:~$ openstack --version
openstack 5.8.0
nowellgabriel@workstation:~$
nowellgabriel@workstation:~$ sudo systemctl status glance-api
[sudo] password for nowellgabriel:
glance-api.service - OpenStack Image Service API
Loaded: loaded (/lib/systemd/system/glance-api.service; enabled; vendor pr
Active: active (running) since Wed 2023-12-06 22:13:51 +08; 43min ago
Docs: man:glance-api(1)
Main PID: 13803 (glance-api)
Tasks: 5 (limit: 4593)
Memory: 78.4M
CPU: 21.376s
CGroup: /system.slice/glance-api.service
├─13803 /usr/bin/python3 /usr/bin/glance-api --config-file=/etc/gl
├─14357 /usr/bin/python3 /usr/bin/glance-api --config-file=/etc/gl
├─14359 /usr/bin/python3 /usr/bin/glance-api --config-file=/etc/gl
├─14362 /usr/bin/python3 /usr/bin/glance-api --config-file=/etc/gl
└─14363 /usr/bin/python3 /usr/bin/glance-api --config-file=/etc/gl
Dec 06 22:13:51 workstation systemd[1]: Started OpenStack Image Service API.
lines 1-16/16 (END)
DirectX Diagnostic Tool
System Display Sound 1 Sound 2 Input
This tool reports detailed information about the DirectX components and drivers installed on your system.
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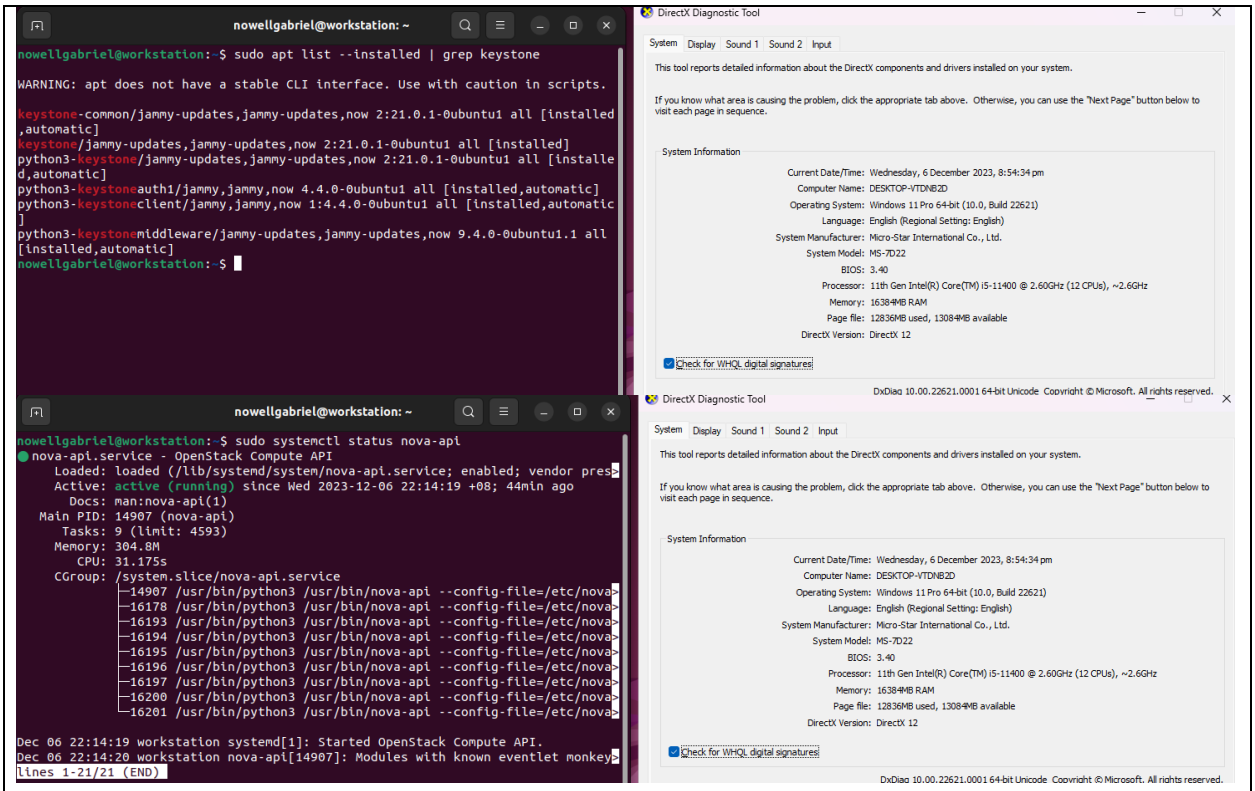
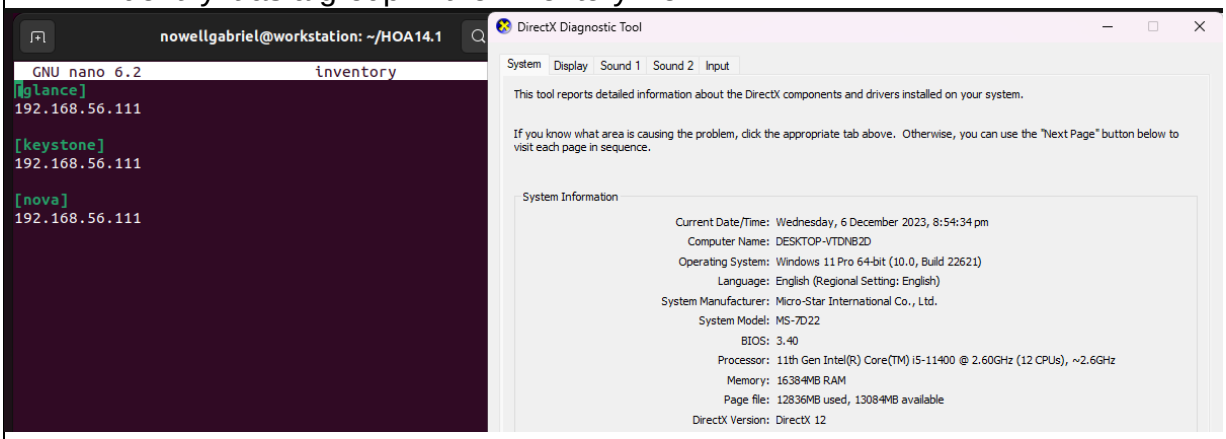
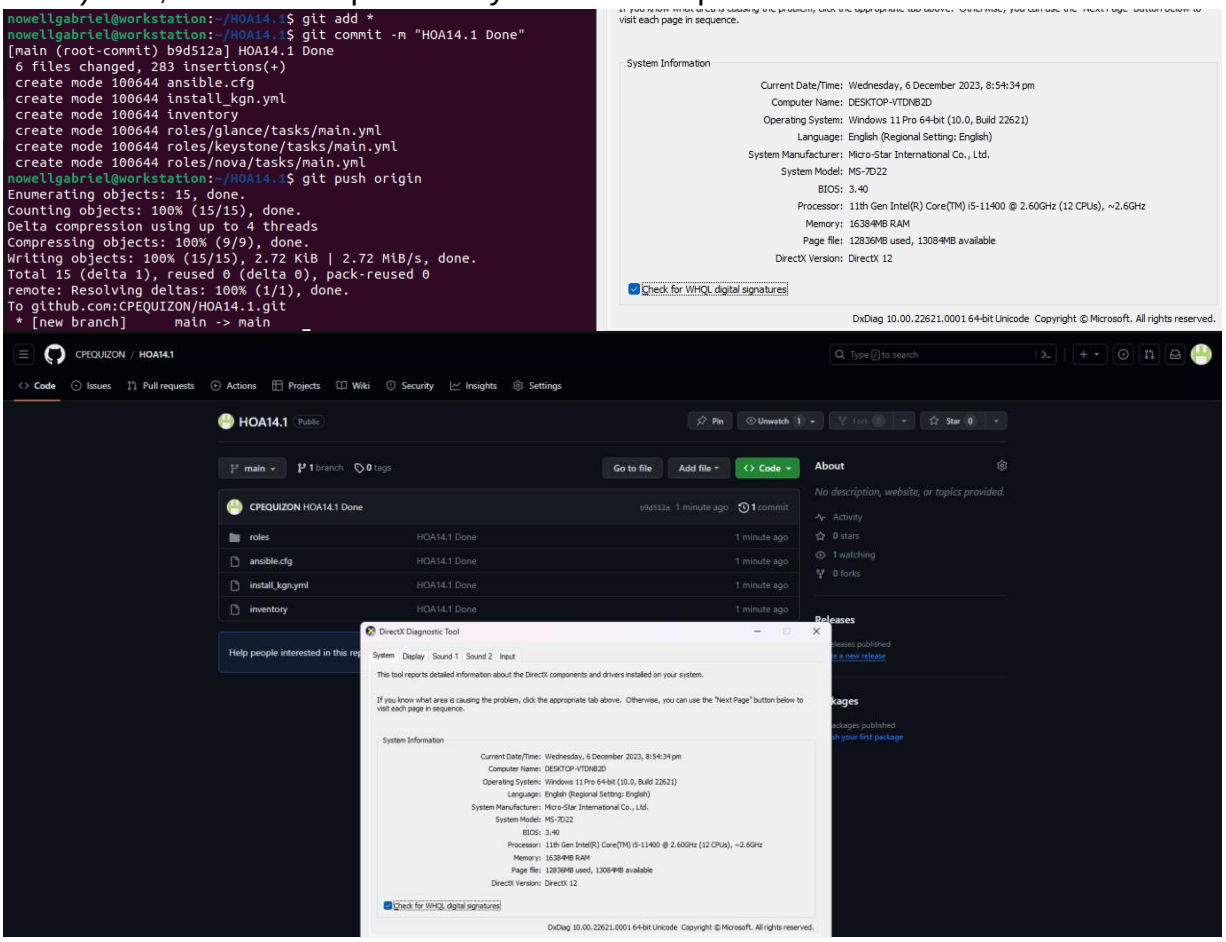
Language: English (Regional Setting: English)
System Manufacturer: Micro-Star International Co., Ltd.
System Model: MS-7D22
BIOS: 3.40
Processor: 11th Gen Intel(R) Core(TM) i5-11400 @ 2.60GHz (12 CPUs), ~2.6GHz
Memory: 16384MB RAM
Page file: 12836MB used, 13084MB available
DirectX Version: DirectX 12
Check for WHQL digital signatures



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.



Reflections:

Answer the following:

1. Describe Keystone, Glance and Nova services

   Users are authenticated and authorized through the keystone service, virtual machine access is provided by the nova service, and the glance service manages various virtual machine images.

Conclusions:

This activity involved installing OpenStack on a server, choosing either Ubuntu or CentOS. I opted for Ubuntu due to my familiarity with it and the workstation being an Ubuntu machine. Using available online resources, tutorials, and reference GitHub repositories, I successfully installed Glance, Keystone, and Nova through a playbook, achieving the activity's goals.