Name: Victor Ortega	Date Performed: 12/03/2023
Course/Section: CPE232 S5	Date Submitted: 12/03/2023
Instructor: Engr. Roman Richard	Semester and SY: 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)

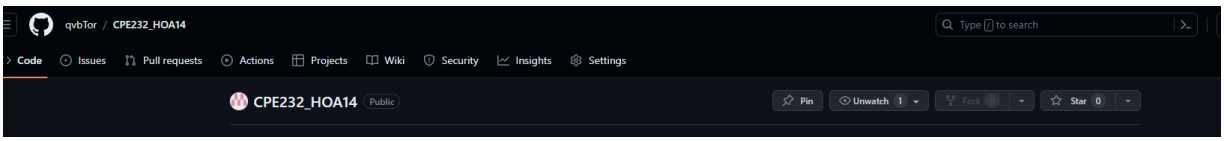
1x Ubuntu VM or Centos VM

4. Tasks

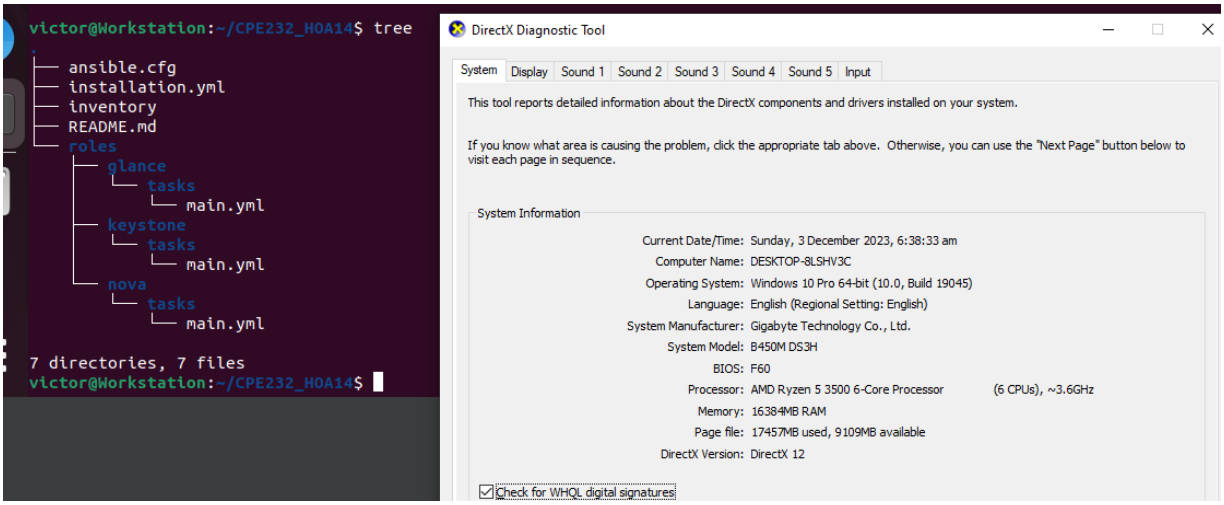
1. Create a new repository for this activity.
2. Create a playbook that converts the steps in the following items in https://docs.openstack.org/install-guide/
   a. Keystone (Identity Service)
   b. Glance (Imaging Service)
   c. Nova (Compute Service)
   d. Create different plays in installing per server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

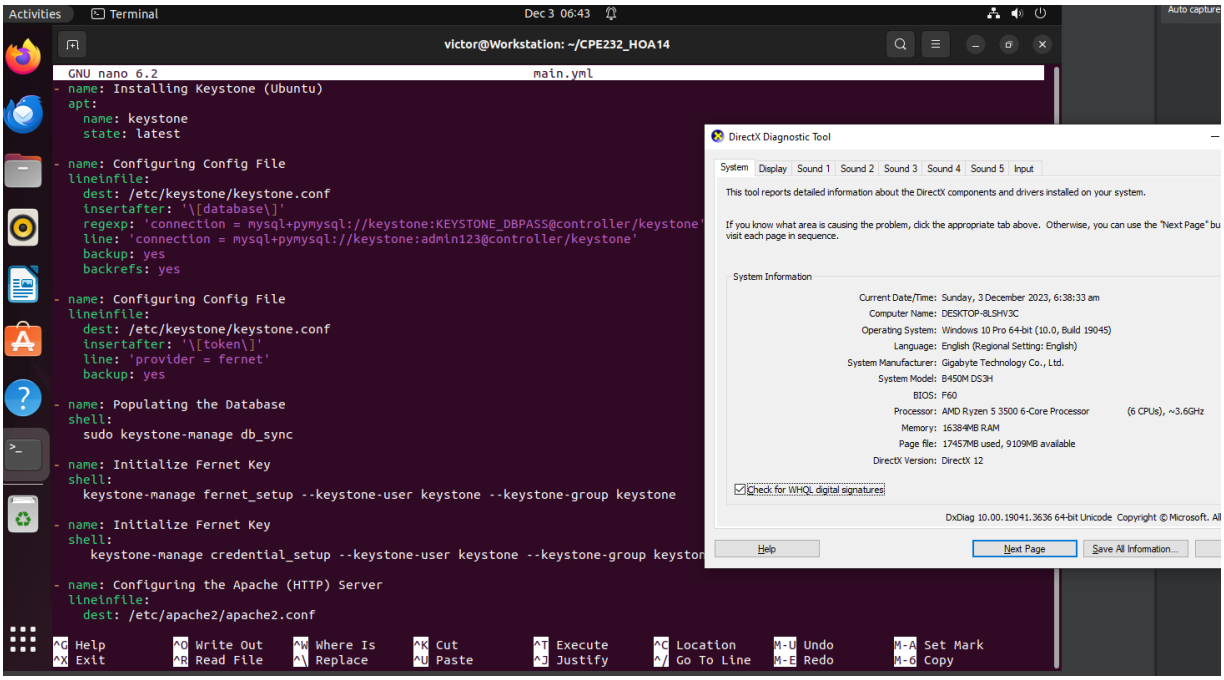
1. Creating new repository



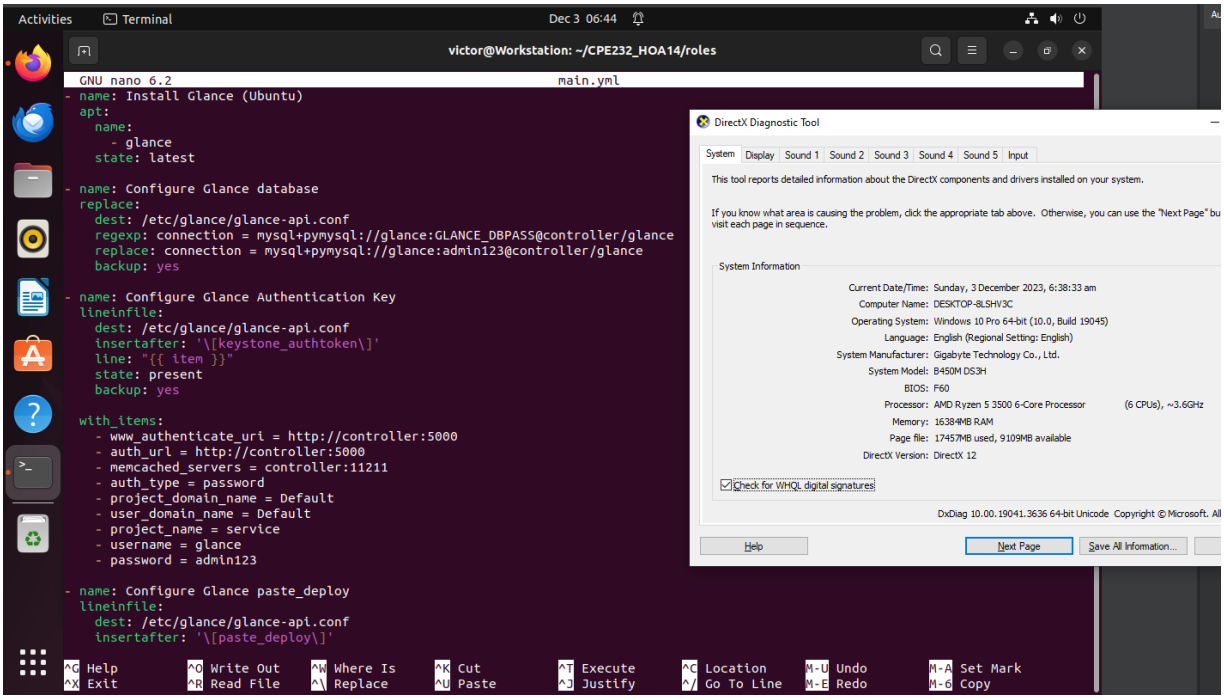
2. Overall of repository

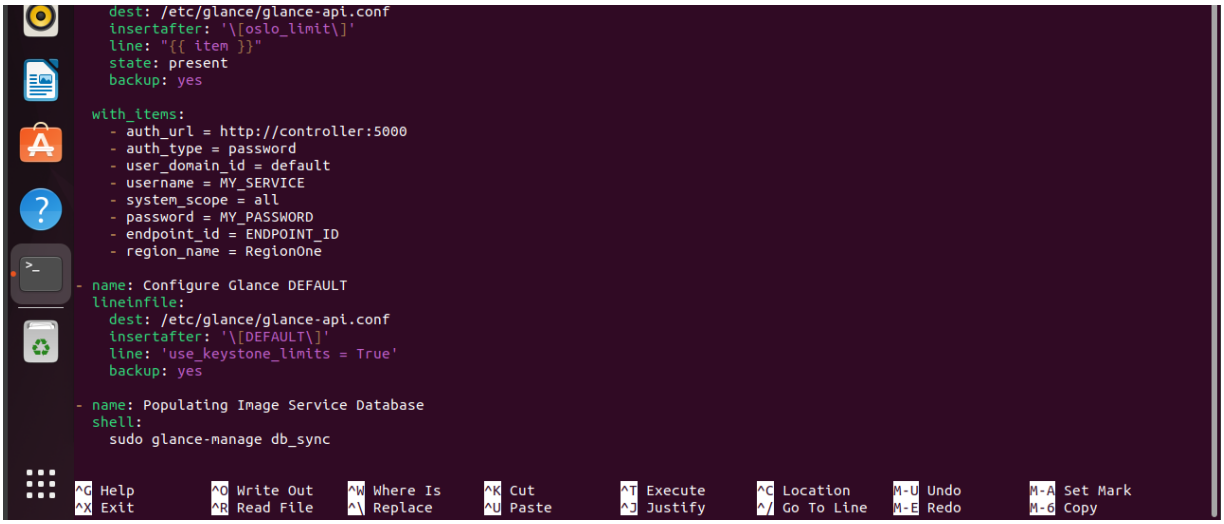


a. Keystone

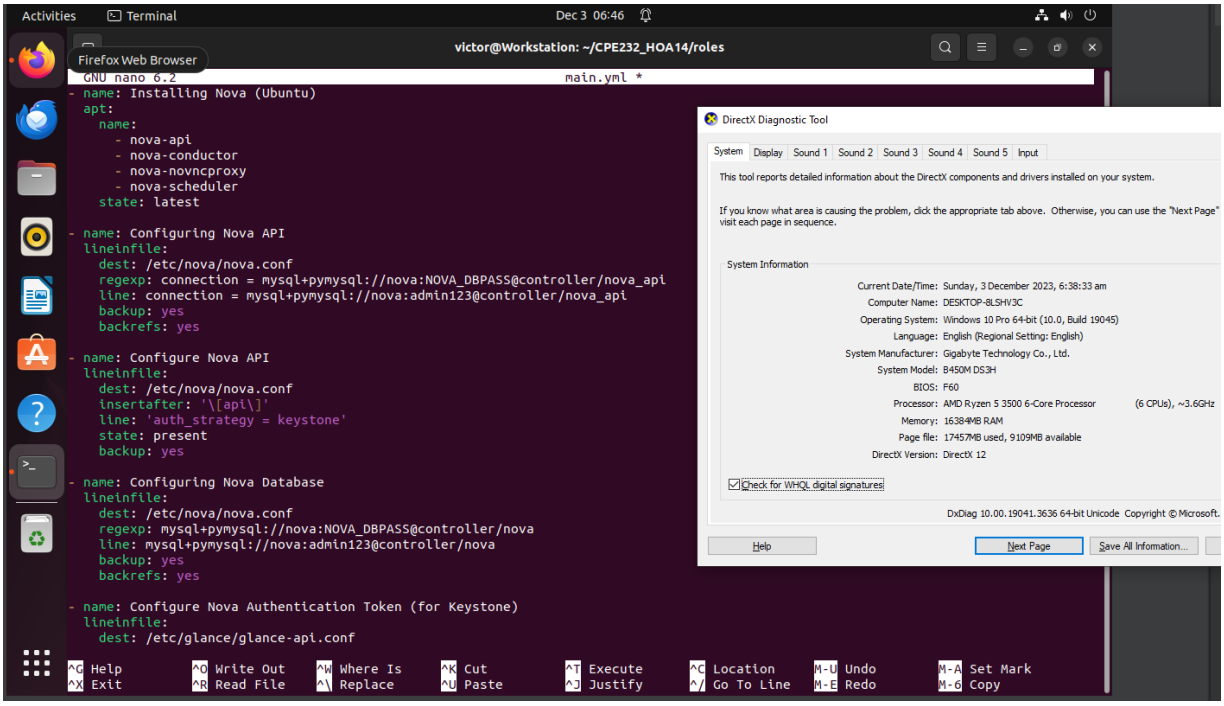


b. Glance


Activities
Terminal
Dec 3 06:44
victor@Workstation: ~/CPE232_HOA14/roles
GNU nano 6.2
main.yml
- name: Install Glance (Ubuntu)
apt:
name:
- glance
state: latest
- name: Configure Glance database
replace:
dest: /etc/glance/glance-api.conf
regexp: connection = mysql+pymysql://glance:GLANCE_DBPASS@controller/glance
replace: connection = mysql+pymysql://glance:admin123@controller/glance
backup: yes
- name: Configure Glance Authentication Key
lineinfile:
dest: /etc/glance/glance-api.conf
insertafter: '\[keystone_authtoken\]'
line: "{{ item }}"
state: present
backup: yes
with_items:
- 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 = glance
- password = admin123
- name: Configure Glance paste_deploy
lineinfile:
dest: /etc/glance/glance-api.conf
insertafter: '\[paste_deploy\]'
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo M-A Set Mark
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line M-E Redo M-6 Copy
DirectX Diagnostic Tool
System Display Sound 1 Sound 2 Sound 3 Sound 4 Sound 5 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" bu
visit each page in sequence.
System Information
Current Date/Time: Sunday, 3 December 2023, 6:38:33 am
Computer Name: DESKTOP-8LSHV3C
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: Gigabyte Technology Co., Ltd.
System Model: B450M DS3H
BIOS: F60
Processor: AMD Ryzen 5 3500 6-Core Processor (6 CPUs), ~3.6GHz
Memory: 16384MB RAM
Page file: 17457MB used, 9109MB available
DirectX Version: DirectX 12
Check for WHQL digital signatures
DxDiag 10.00.19041.3636 64-bit Unicode Copyright © Microsoft. All
Help
Next Page
Save All Information...


dest: /etc/glance/glance-api.conf
insertafter: '\[oslo_limit\]'
line: "{{ item }}"
state: present
backup: yes
with_items:
- auth_url = http://controller:5000
- auth_type = password
- user_domain_id = default
- username = MY_SERVICE
- system_scope = all
- password = MY_PASSWORD
- endpoint_id = ENDPOINT_ID
- region_name = RegionOne
- name: Configure Glance DEFAULT
lineinfile:
dest: /etc/glance/glance-api.conf
insertafter: '\[DEFAULT\]'
line: 'use_keystone_limits = True'
backup: yes
- name: Populating Image Service Database
shell:
sudo glance-manage db_sync
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo M-A Set Mark
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line M-E Redo M-6 Copy

c. Nova


Activities
Terminal
Dec 3 06:46
Firefox Web Browser
victor@Workstation: ~/CPE232_HOA14/roles
GNU nano 6.2
main.yml *
- name: Installing Nova (Ubuntu)
apt:
name:
- nova-api
- nova-conductor
- nova-novncproxy
- nova-scheduler
state: latest
- name: Configuring Nova API
lineinfile:
dest: /etc/nova/nova.conf
regexp: connection = mysql+pymysql://nova:NOVA_DBPASS@controller/nova_api
line: connection = mysql+pymysql://nova:admin123@controller/nova_api
backup: yes
backrefs: yes
- name: Configure Nova API
lineinfile:
dest: /etc/nova/nova.conf
insertafter: '\[api\]'
line: 'auth_strategy = keystone'
state: present
backup: yes
- name: Configuring Nova Database
lineinfile:
dest: /etc/nova/nova.conf
regexp: mysql+pymysql://nova:NOVA_DBPASS@controller/nova
line: mysql+pymysql://nova:admin123@controller/nova
backup: yes
backrefs: yes
- name: Configure Nova Authentication Token (for Keystone)
lineinfile:
dest: /etc/glance/glance-api.conf
^G Help
^X Exit
^O Write Out
^R Read File
^W Where Is
^\ Replace
^K Cut
^U Paste
^T Execute
^J Justify
^C Location
^/ Go To Line
M-U Undo
M-E Redo
M-A Set Mark
M-6 Copy
DirectX Diagnostic Tool
System
Display
Sound 1
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Sound 5
Input
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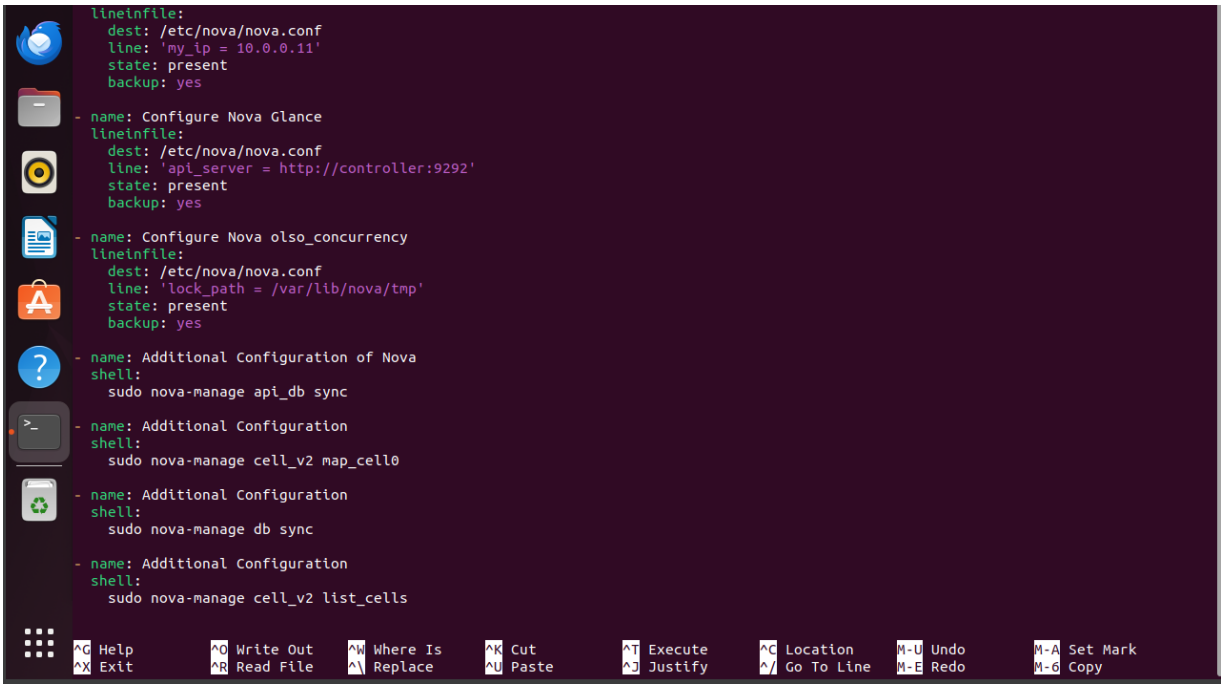
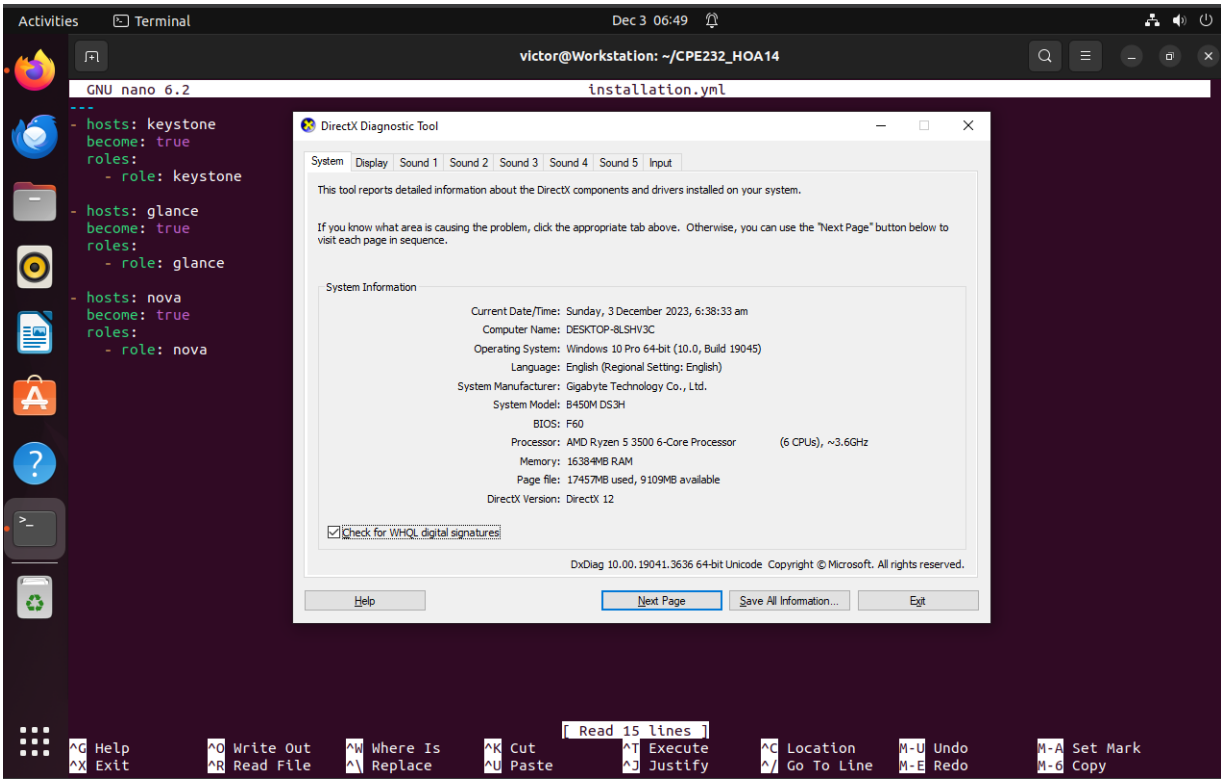
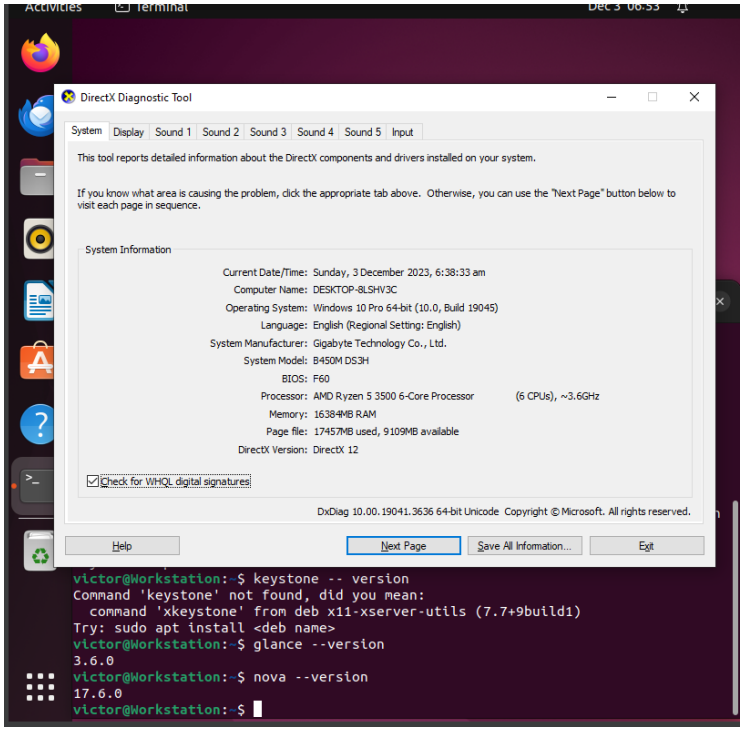
DxDiag 10.00.19041.3636 64-bit Unicode Copyright © Microsoft.
Help
Next Page
Save All Information...


lineinfile:
dest: /etc/nova/nova.conf
line: 'my_ip = 10.0.0.11'
state: present
backup: yes
- name: Configure Nova Glance
lineinfile:
dest: /etc/nova/nova.conf
line: 'api_server = http://controller:9292'
state: present
backup: yes
- 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 db sync
- name: Additional Configuration
shell:
sudo nova-manage cell_v2 list_cells
^G Help
^X Exit
^O Write Out
^R Read File
^W Where Is
^\ Replace
^K Cut
^U Paste
^T Execute
^J Justify
^C Location
^/ Go To Line
M-U Undo
M-E Redo
M-A Set Mark
M-6 Copy

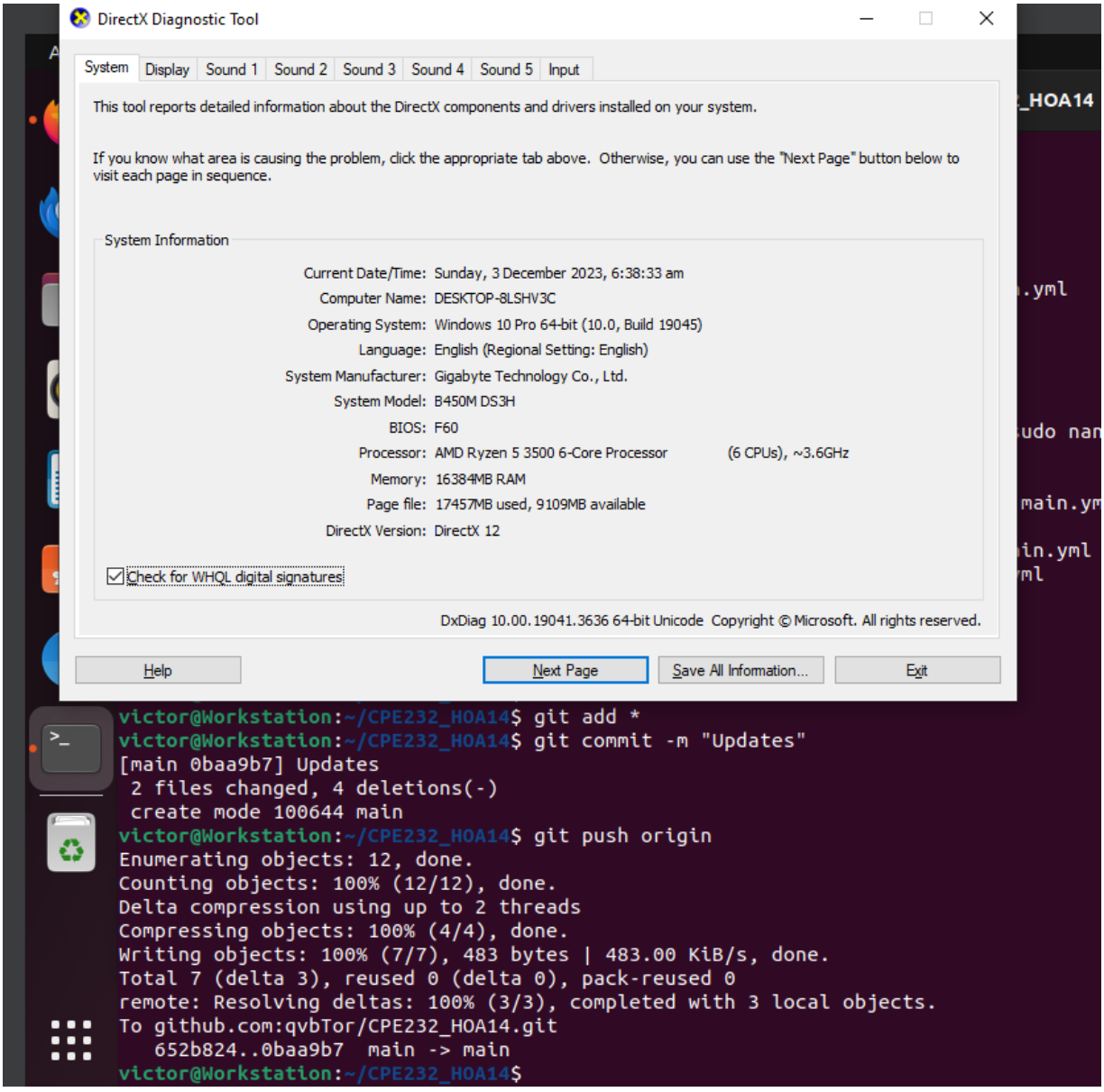
3. Playbook.



4. Verifying all the requirements are installed.



5. Pushing into GitHub repository



Reflections:

Answer the following:

1. Describe Keystone, Glance and Nova services

a. Keystone:

Keystone functions as OpenStack's identity service, overseeing user authentication and authorization. It manages roles, users, and projects to ensure secure access to OpenStack resources.

b. Glance

Glance serves as OpenStack's image service, tasked with storing and overseeing virtual machine images. Its role involves the discovery, registration, and retrieval of virtual machine images, facilitating efficient image distribution within the cloud environment.

c. Nova:

Nova, the compute service in OpenStack, manages the provisioning and administration of virtual machines or instances. It provides a scalable and adaptable platform for running and coordinating virtualized workloads within the OpenStack cloud.

Conclusions:

Therefore, employing an Ansible playbook simplifies the installation of Keystone, Glance, and Nova services in OpenStack. This method guarantees a smooth deployment, minimizing complications, and fine-tuning the configuration of these vital components. Through the playbook's effectiveness, organizations can quickly set up a strong and seamlessly integrated OpenStack infrastructure, enabling them to leverage secure identity management (Keystone), effective image services (Glance), and scalable compute capabilities (Nova).