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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)

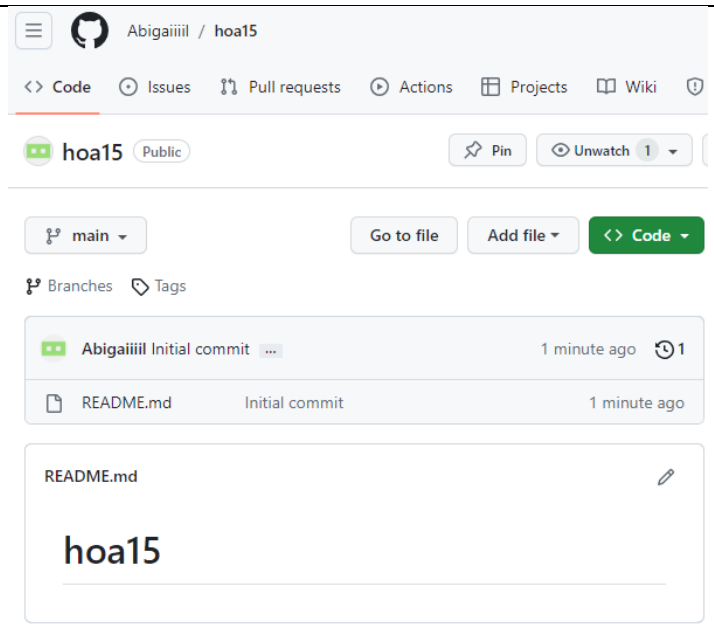
1x Ubuntu VM or Centos VM

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)

Step 1. Create a new repository for this activity in Github.



Step 2. Clone your repository to your workstation using **git clone** command along with the link of your newly created github repository.

```
laxamana_ubuntu@workstation:~$ git clone git@github.com:Abigaiiiil/hoa15.git
Cloning into 'hoa15'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
```

Step 3. Create an inventory file that contains the addresses of the servers to be used, and create an ansible file which contains the settings.

```
laxamana_ubuntu@workstation:~/hoa15$ sudo nano inventory
[sudo] password for laxamana_ubuntu:
laxamana_ubuntu@workstation:~/hoa15$ cat inventory
[ubuntu]
192.168.56.103
laxamana_ubuntu@workstation:~/hoa15$ sudo nano ansible.cfg
laxamana_ubuntu@workstation:~/hoa15$ cat ansible.cfg
[defaults]

inventory = inventory
host_key_checking = False

deprecation_warnings = False

remote_user = laxamana_ubuntu

private_key_file = ~/.ssh/
```

Step 4. Create roles and files/folders for each prerequisite. Inside those, create a directory named **tasks** that contain **main.yml** file.

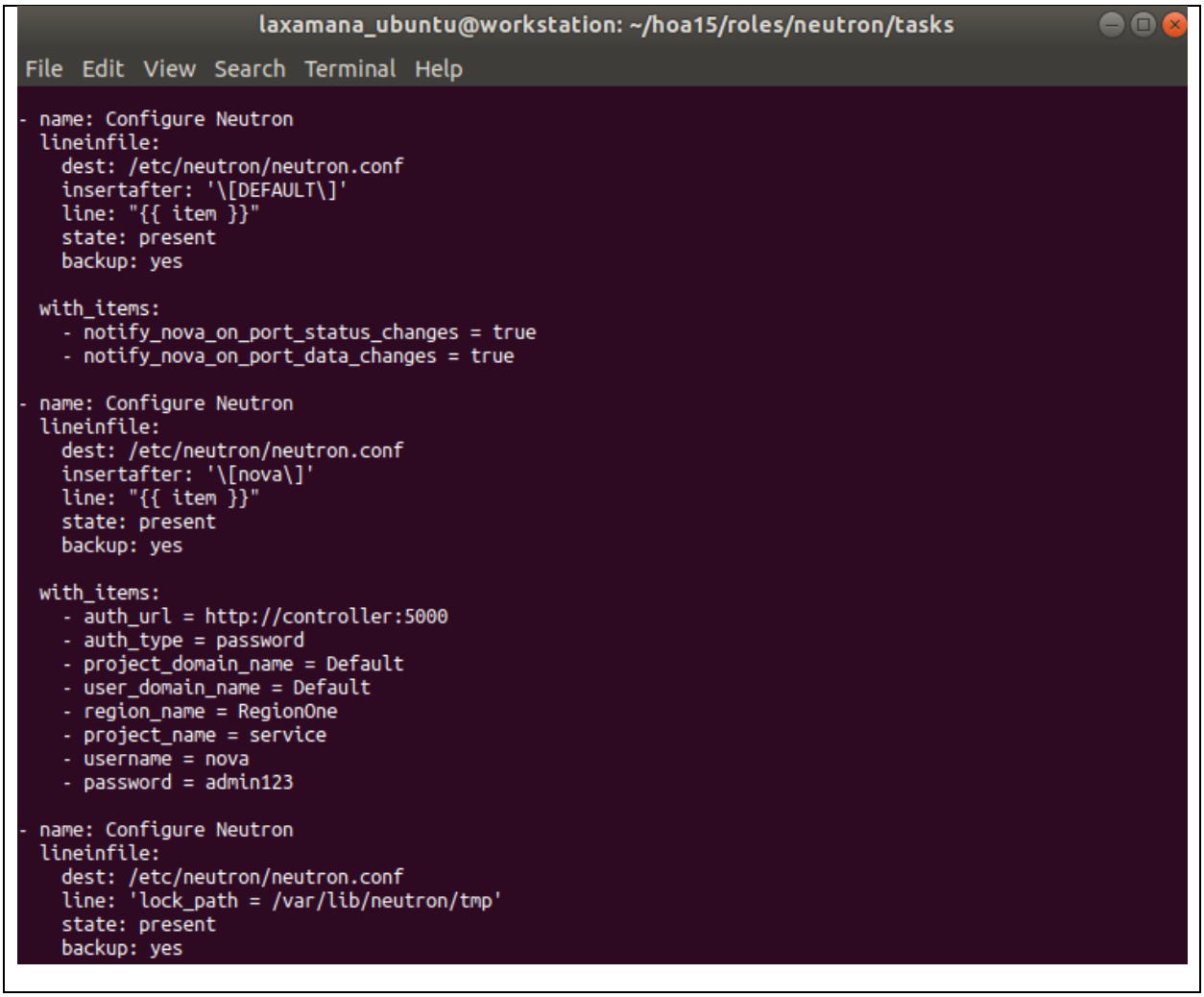
```
laxamana_ubuntu@workstation:~/hoa15$ mkdir roles
laxamana_ubuntu@workstation:~/hoa15$ cd roles
laxamana_ubuntu@workstation:~/hoa15/roles$ mkdir neutron
laxamana_ubuntu@workstation:~/hoa15/roles$ cd neutron
laxamana_ubuntu@workstation:~/hoa15/roles/neutron$ mkdir tasks
laxamana_ubuntu@workstation:~/hoa15/roles/neutron$ cd tasks
laxamana_ubuntu@workstation:~/hoa15/roles/neutron/tasks$ main.yml
main.yml: command not found
laxamana_ubuntu@workstation:~/hoa15/roles/neutron/tasks$ sudo nano main.yml
laxamana_ubuntu@workstation:~/hoa15/roles/neutron/tasks$ cd ~/hoa15/roles
laxamana_ubuntu@workstation:~/hoa15/roles$ mkdir horizon
laxamana_ubuntu@workstation:~/hoa15/roles$ cd horizon
laxamana_ubuntu@workstation:~/hoa15/roles/horizon$ mkdir tasks
laxamana_ubuntu@workstation:~/hoa15/roles/horizon$ cd tasks
laxamana_ubuntu@workstation:~/hoa15/roles/horizon/tasks$ sudo nano main.yml
laxamana_ubuntu@workstation:~/hoa15/roles/horizon/tasks$ cd ~/hoa15/roles
laxamana_ubuntu@workstation:~/hoa15/roles$ mkdir cinder
laxamana_ubuntu@workstation:~/hoa15/roles$ cd cinder
laxamana_ubuntu@workstation:~/hoa15/roles/cinder$ mkdir tasks
laxamana_ubuntu@workstation:~/hoa15/roles/cinder$ cd tasks
laxamana_ubuntu@workstation:~/hoa15/roles/cinder/tasks$ sudo nano main.yml
laxamana_ubuntu@workstation:~/hoa15/roles/cinder/tasks$ cd ~/hoa15/roles
laxamana_ubuntu@workstation:~/hoa15/roles$ cd ..
laxamana_ubuntu@workstation:~/hoa15$ sudo nano hoa15laxamana.yml
```

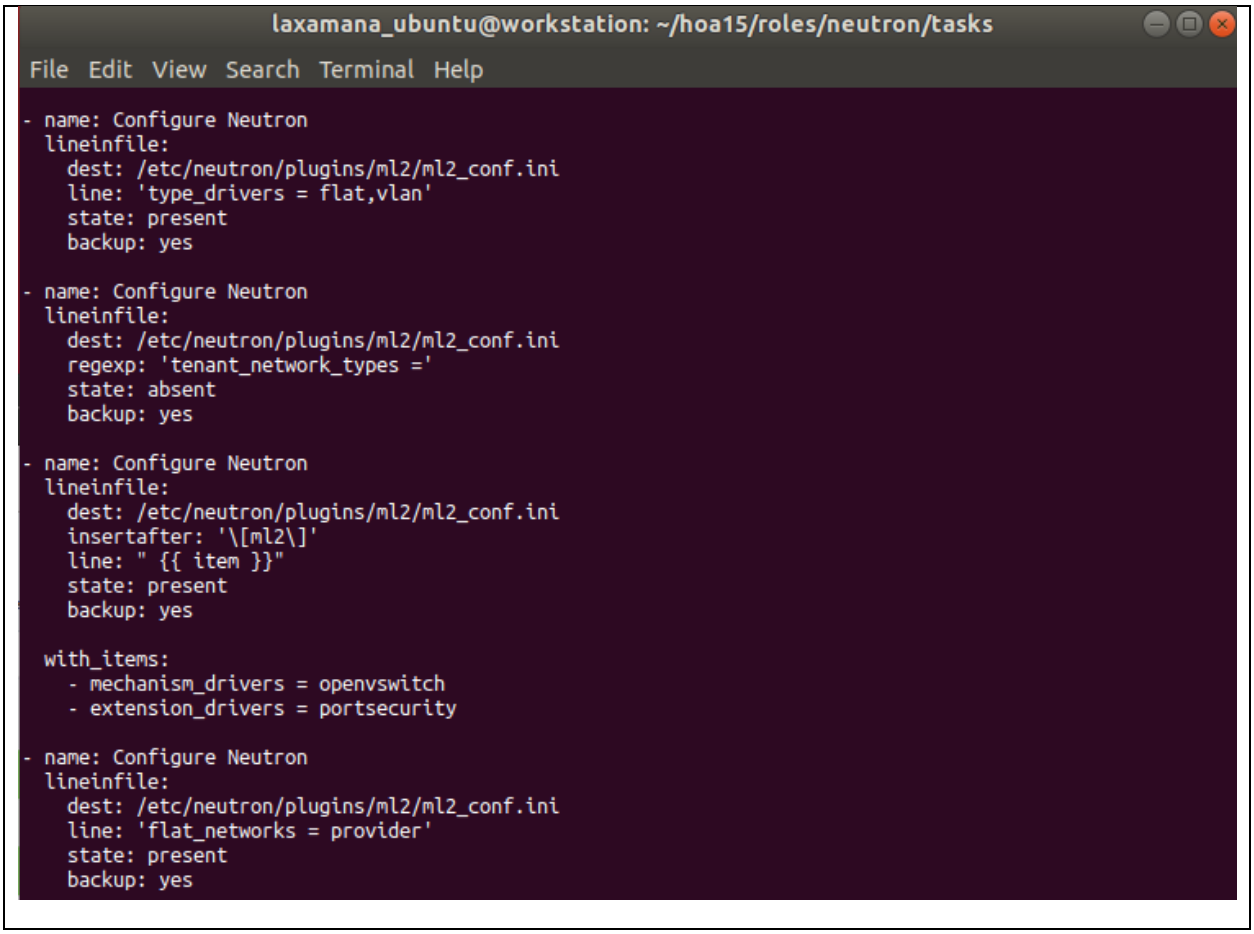
```
laxamana_ubuntu@workstation:~/hoa15$ tree
.
├── ansible.cfg
├── hoa15laxamana.yml
├── inventory
├── README.md
└── roles
    ├── cinder
    │   └── tasks
    │       └── main.yml
    ├── horizon
    │   └── tasks
    │       └── main.yml
    └── neutron
        └── tasks
            └── main.yml

7 directories, 7 files
```

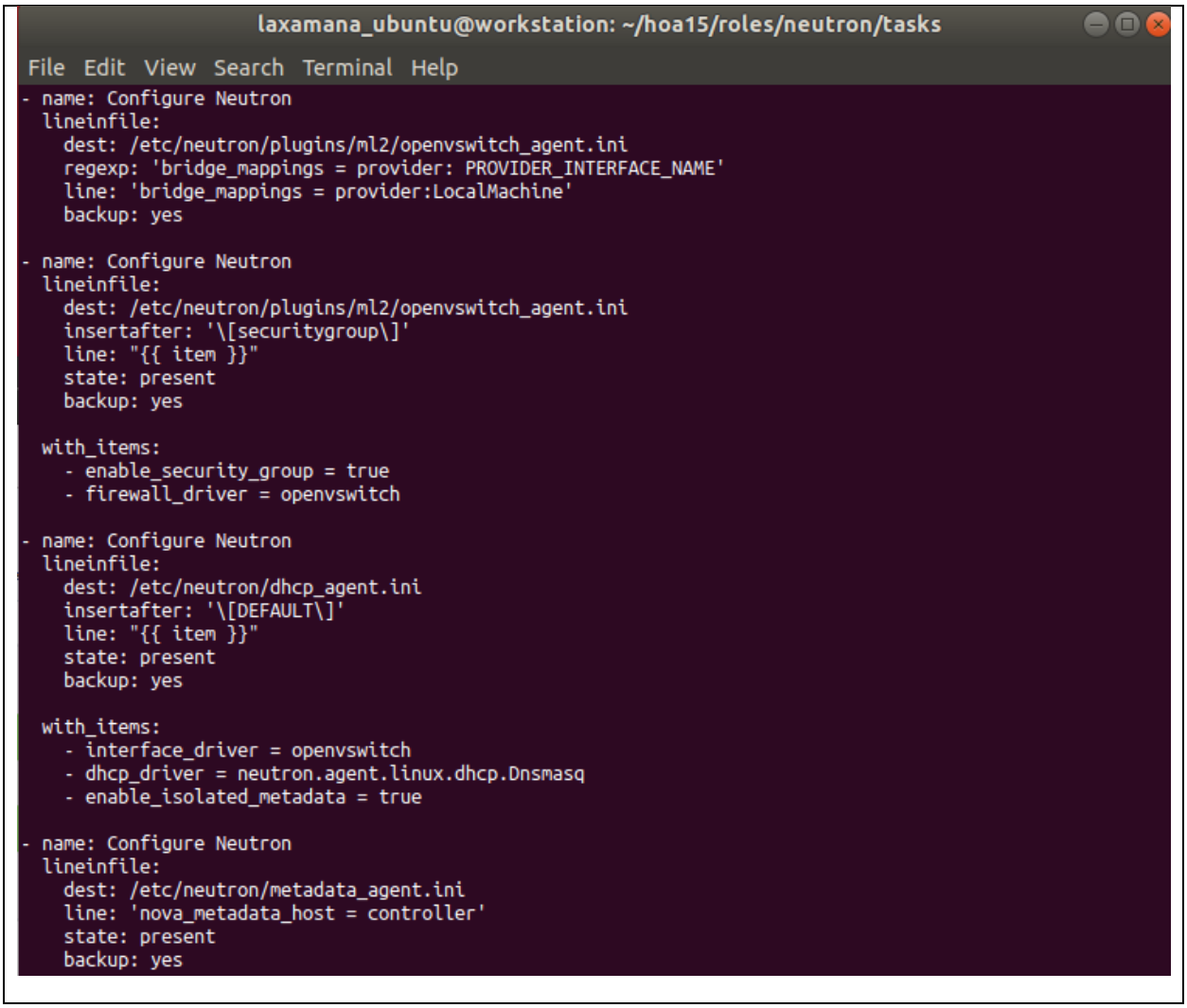
Neutron's main.yml file

```
laxamana_ubuntu@workstation:~/hoa15/roles/neutron/tasks$ cat main.yml

- name: Installing Neutron (Ubuntu)
  apt:
    name:
      - neutron-server
      - neutron-plugin-ml2
      - neutron-openvswitch-agent
      - neutron-dhcp-agent
      - neutron-metadata-agent
    state: latest

- name: Configure Neutron
  replace:
    dest: /etc/neutron/neutron.conf
    regexp: connection = mysql+pymysql://neutron:NEUTRON_DBPASS@controller/neutron
    replace: connection = mysql+pymysql://neutron:admin123@controller/neutron
    backup: yes

- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/neutron.conf
    line: core_plugin = ml2
    state: present
    backup: yes

- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/neutron.conf
    regexp: 'service_plugins = '
    state: absent
    backup: yes
```

```
laxamana_ubuntu@workstation: ~/hoa15/roles/neutron/tasks
File  Edit  View  Search  Terminal  Help

- name: Conf Neutron
  replace:
    dest: /etc/neutron/neutron.conf
    regexp: transport_url = rabbit://openstack:RABBIT_PASS@controller
    replace: transport_url = rabbit://openstack:admin123@controller
    backup: yes

- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/neutron.conf
    line: 'auth_strategy = keystone'
    state: present
    backup: yes

- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/neutron.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 = neutron
    - password = admin123
```


laxamana_ubuntu@workstation: ~/hoa15/roles/neutron/tasks
File Edit View Search Terminal Help
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/neutron.conf
    insertafter: '\[DEFAULT\]'
    line: "{{ item }}"
    state: present
    backup: yes
  with_items:
    - notify_nova_on_port_status_changes = true
    - notify_nova_on_port_data_changes = true
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/neutron.conf
    insertafter: '\[nova\]'
    line: "{{ item }}"
    state: present
    backup: yes
  with_items:
    - auth_url = http://controller:5000
    - auth_type = password
    - project_domain_name = Default
    - user_domain_name = Default
    - region_name = RegionOne
    - project_name = service
    - username = nova
    - password = admin123
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/neutron.conf
    line: 'lock_path = /var/lib/neutron/tmp'
    state: present
    backup: yes


laxamana_ubuntu@workstation: ~/hoa15/roles/neutron/tasks
File Edit View Search Terminal Help
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/plugins/ml2/ml2_conf.ini
    line: 'type_drivers = flat,vlan'
    state: present
    backup: yes
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/plugins/ml2/ml2_conf.ini
    regexp: 'tenant_network_types ='
    state: absent
    backup: yes
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/plugins/ml2/ml2_conf.ini
    insertafter: '\[ml2\]'
    line: " {{ item }}"
    state: present
    backup: yes
  with_items:
    - mechanism_drivers = openvswitch
    - extension_drivers = portsecurity
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/plugins/ml2/ml2_conf.ini
    line: 'flat_networks = provider'
    state: present
    backup: yes


laxamana_ubuntu@workstation: ~/hoa15/roles/neutron/tasks
File Edit View Search Terminal Help
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/plugins/ml2/openvswitch_agent.ini
    regexp: 'bridge_mappings = provider: PROVIDER_INTERFACE_NAME'
    line: 'bridge_mappings = provider:LocalMachine'
    backup: yes

- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/plugins/ml2/openvswitch_agent.ini
    insertafter: '\[securitygroup\]'
    line: "{{ item }}"
    state: present
    backup: yes

  with_items:
    - enable_security_group = true
    - firewall_driver = openvswitch

- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/dhcp_agent.ini
    insertafter: '\[DEFAULT\]'
    line: "{{ item }}"
    state: present
    backup: yes

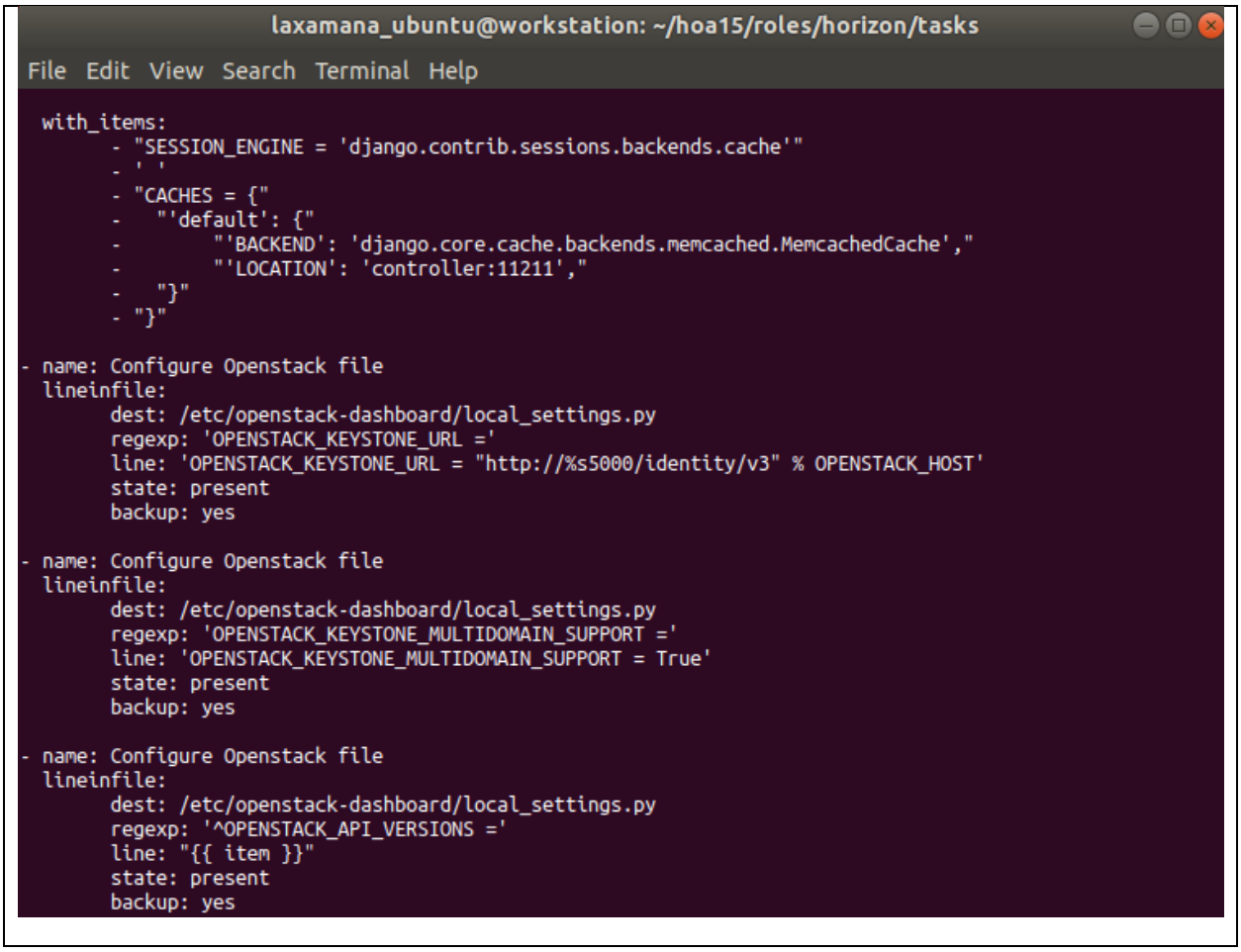
  with_items:
    - interface_driver = openvswitch
    - dhcp_driver = neutron.agent.linux.dhcp.Dnsmasq
    - enable_isolated_metadata = true

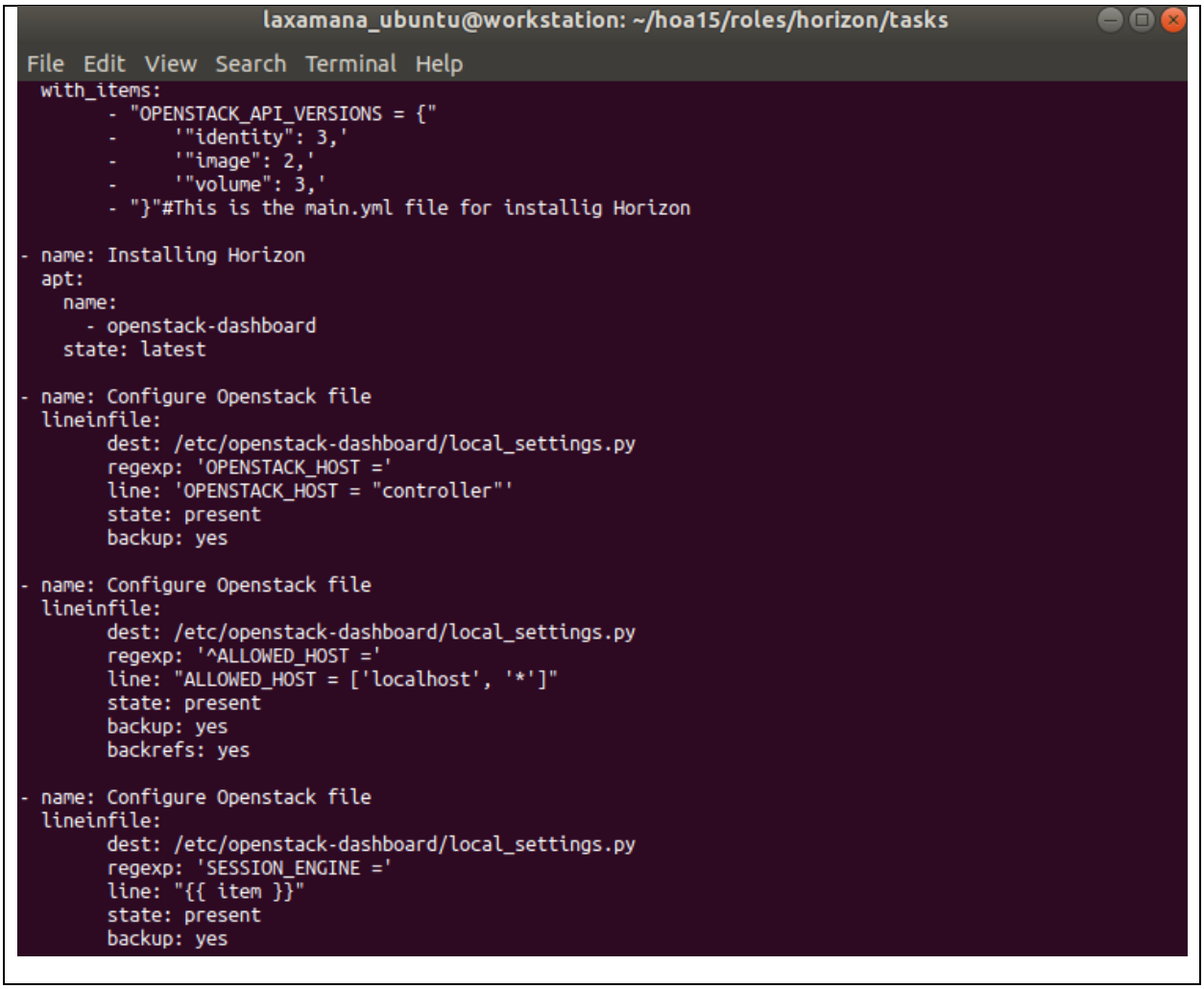
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/metadata_agent.ini
    line: 'nova_metadata_host = controller'
    state: present
    backup: yes

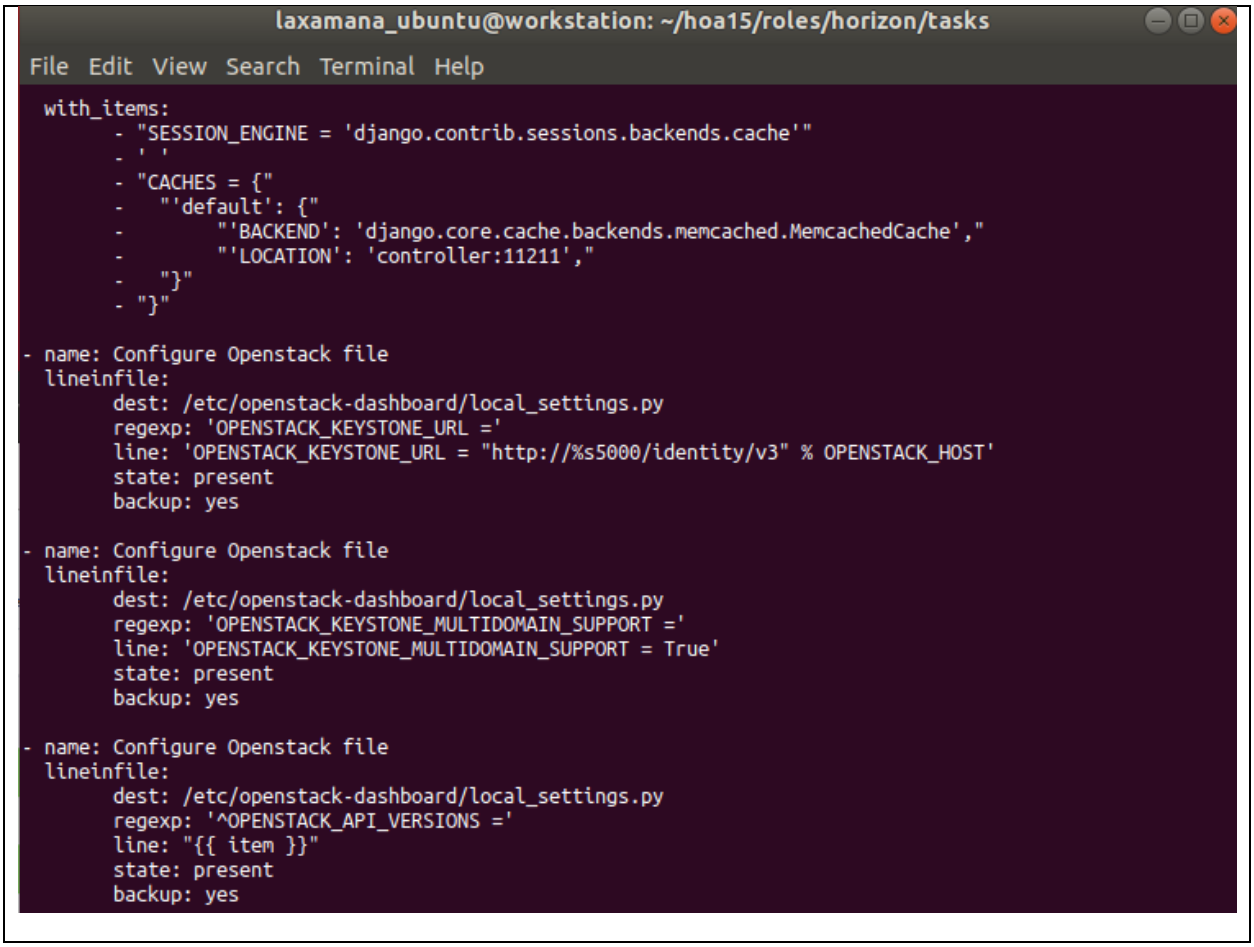
```
laxamana_ubuntu@workstation: ~/hoa15/roles/neutron/tasks
File  Edit  View  Search  Terminal  Help
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/metadata_agent.ini
    regexp: 'metadata_proxy_shared_secret = METADATA_SECRET'
    line: 'metadata_proxy_shared_secret = admin123'
    state: present
    backup: yes

- name: Confgiure Neutron
  lineinfile:
    dest: /etc/nova/nova.conf
    insertafter: '\[neutron\]'
    line: "{{ item }}"
    state: present
    backup: yes

  with_items:
    - auth_url = http://controller:5000
    - auth_type = password
    - project_domain_name = Default
    - user_domain_name = Default
    - region_name = RegionOne
    - project_name = service
    - username = neutron
    - password = admin123
    - service_metadata_proxy = true
    - metadata_proxy_shared_secret = admin123
```

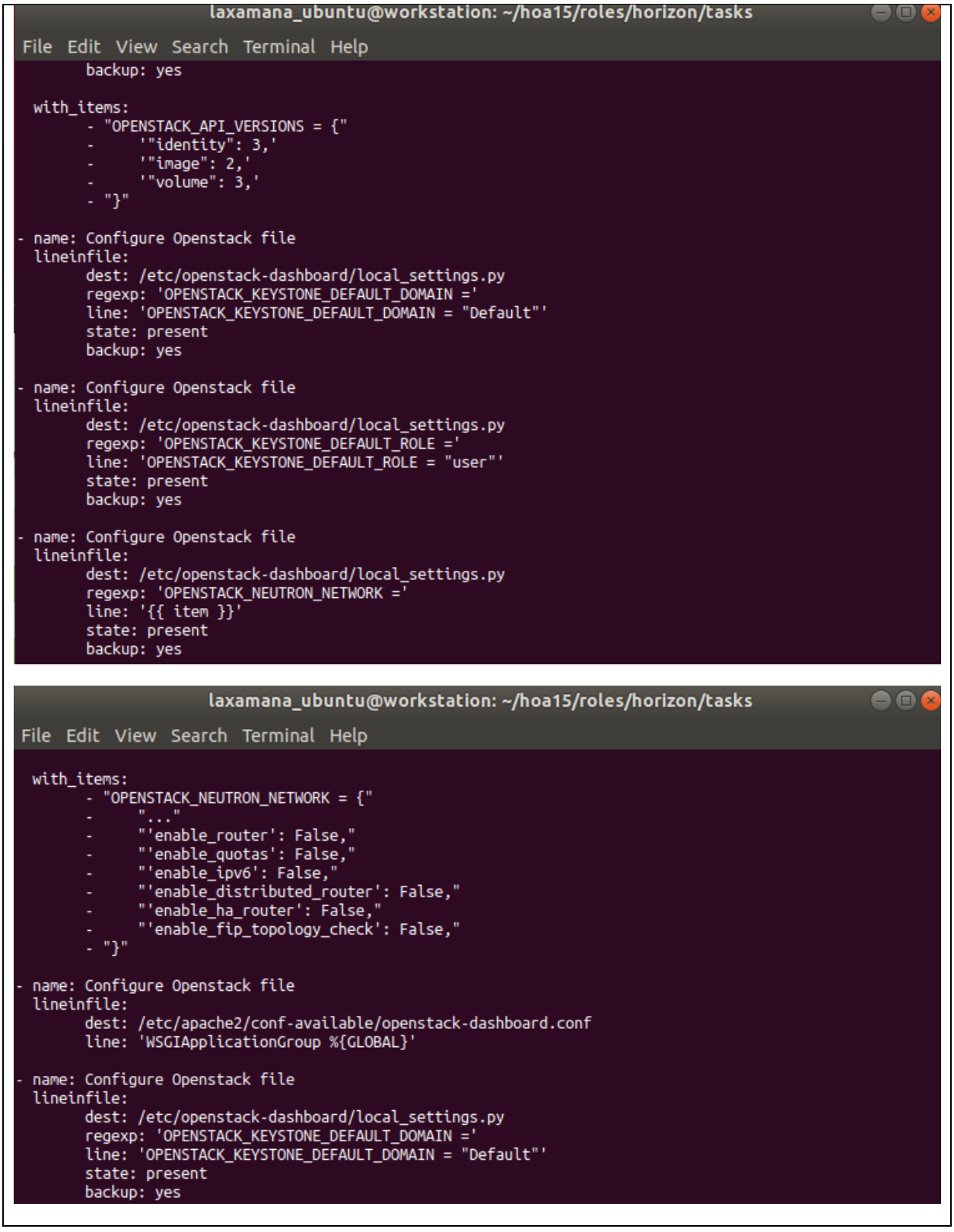
Horizon's main.yml file

```
laxamana_ubuntu@workstation:~/hoa15$ cd ~/hoa15/roles/horizon/tasks
laxamana_ubuntu@workstation:~/hoa15/roles/horizon/tasks$ cat main.yml

- name: Installing Horizon
  apt:
    name:
      - openstack-dashboard
    state: latest

- name: Configure Openstack file
  lineinfile:
        dest: /etc/openstack-dashboard/local_settings.py
        regexp: 'OPENSTACK_HOST ='
        line: 'OPENSTACK_HOST = "controller"'
        state: present
        backup: yes

- name: Configure Openstack file
  lineinfile:
        dest: /etc/openstack-dashboard/local_settings.py
        regexp: '^ALLOWED_HOST ='
        line: "ALLOWED_HOST = ['localhost', '*']"
        state: present
        backup: yes
        backrefs: yes

- name: Configure Openstack file
  lineinfile:
        dest: /etc/openstack-dashboard/local_settings.py
        regexp: 'SESSION_ENGINE ='
        line: "{{ item }}"
        state: present
        backup: yes
```


laxamana_ubuntu@workstation: ~/hoa15/roles/horizon/tasks
File Edit View Search Terminal Help
with_items:
- "SESSION_ENGINE = 'django.contrib.sessions.backends.cache'"
- ' '
- "CACHES = {"
- "'default': {"
- "'BACKEND': 'django.core.cache.backends.memcached.MemcachedCache',"
- "'LOCATION': 'controller:11211',"
- "}"
- "}"
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: 'OPENSTACK_KEYSTONE_URL ='
line: 'OPENSTACK_KEYSTONE_URL = "http://%s5000/identity/v3" % OPENSTACK_HOST'
state: present
backup: yes
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: 'OPENSTACK_KEYSTONE_MULTIDOMAIN_SUPPORT ='
line: 'OPENSTACK_KEYSTONE_MULTIDOMAIN_SUPPORT = True'
state: present
backup: yes
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: '^OPENSTACK_API_VERSIONS ='
line: "{{ item }}"
state: present
backup: yes


laxamana_ubuntu@workstation: ~/hoa15/roles/horizon/tasks
File Edit View Search Terminal Help
with_items:
- "OPENSTACK_API_VERSIONS = {"
- '"identity": 3,'
- '"image": 2,'
- '"volume": 3,'
- "}"#This is the main.yml file for installig Horizon
- name: Installing Horizon
apt:
name:
- openstack-dashboard
state: latest
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: 'OPENSTACK_HOST ='
line: 'OPENSTACK_HOST = "controller"'
state: present
backup: yes
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: '^ALLOWED_HOST ='
line: "ALLOWED_HOST = ['localhost', '*']"
state: present
backup: yes
backrefs: yes
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: 'SESSION_ENGINE ='
line: "{{ item }}"
state: present
backup: yes


laxamana_ubuntu@workstation: ~/hoa15/roles/horizon/tasks
File Edit View Search Terminal Help
with_items:
- "SESSION_ENGINE = 'django.contrib.sessions.backends.cache'"
- ' '
- "CACHES = {"
- "'default': {"
- "'BACKEND': 'django.core.cache.backends.memcached.MemcachedCache',"
- "'LOCATION': 'controller:11211',"
- "}"
- "}"
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: 'OPENSTACK_KEYSTONE_URL ='
line: 'OPENSTACK_KEYSTONE_URL = "http://%s5000/identity/v3" % OPENSTACK_HOST'
state: present
backup: yes
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: 'OPENSTACK_KEYSTONE_MULTIDOMAIN_SUPPORT ='
line: 'OPENSTACK_KEYSTONE_MULTIDOMAIN_SUPPORT = True'
state: present
backup: yes
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: '^OPENSTACK_API_VERSIONS ='
line: "{{ item }}"
state: present
backup: yes


laxamana_ubuntu@workstation: ~/hoa15/roles/horizon/tasks
File Edit View Search Terminal Help
backup: yes
with_items:
- "OPENSTACK_API_VERSIONS = {"
- '"identity": 3,'
- '"image": 2,'
- '"volume": 3,'
- "}"
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: 'OPENSTACK_KEYSTONE_DEFAULT_DOMAIN ='
line: 'OPENSTACK_KEYSTONE_DEFAULT_DOMAIN = "Default"'
state: present
backup: yes
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: 'OPENSTACK_KEYSTONE_DEFAULT_ROLE ='
line: 'OPENSTACK_KEYSTONE_DEFAULT_ROLE = "user"'
state: present
backup: yes
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: 'OPENSTACK_NEUTRON_NETWORK ='
line: '{{ item }}'
state: present
backup: yes
laxamana_ubuntu@workstation: ~/hoa15/roles/horizon/tasks
File Edit View Search Terminal Help
with_items:
- "OPENSTACK_NEUTRON_NETWORK = {"
- "..."
- "'enable_router': False,"
- "'enable_quotas': False,"
- "'enable_ipv6': False,"
- "'enable_distributed_router': False,"
- "'enable_ha_router': False,"
- "'enable_fip_topology_check': False,"
- "}"
- name: Configure Openstack file
lineinfile:
dest: /etc/apache2/conf-available/openstack-dashboard.conf
line: 'WSGIApplicationGroup %{GLOBAL}'
- name: Configure Openstack file
lineinfile:
dest: /etc/openstack-dashboard/local_settings.py
regexp: 'OPENSTACK_KEYSTONE_DEFAULT_DOMAIN ='
line: 'OPENSTACK_KEYSTONE_DEFAULT_DOMAIN = "Default"'
state: present
backup: yes

laxamana_ubuntu@workstation: ~/hoa15/roles/horizon/tasks

File Edit View Search Terminal Help

```
- name: Configure Openstack file
  lineinfile:
        dest: /etc/openstack-dashboard/local_settings.py
        regexp: 'OPENSTACK_KEYSTONE_DEFAULT_ROLE ='
        line: 'OPENSTACK_KEYSTONE_DEFAULT_ROLE = "user"'
        state: present
        backup: yes

- name: Configure Openstack file
  lineinfile:
        dest: /etc/openstack-dashboard/local_settings.py
        regexp: 'OPENSTACK_NEUTRON_NETWORK ='
        line: '{{ item }}'
        state: present
        backup: yes

  with_items:
        - "OPENSTACK_NEUTRON_NETWORK = {"
        -     "..."
        -     "'enable_router': False,"
        -     "'enable_quotas': False,"
        -     "'enable_ipv6': False,"
        -     "'enable_distributed_router': False,"
        -     "'enable_ha_router': False,"
        -     "'enable_fip_topology_check': False,"
        - "}"

- name: Configure Openstack file
  lineinfile:
        dest: /etc/apache2/conf-available/openstack-dashboard.conf
        line: 'WSGIApplicationGroup %{GLOBAL}'
```

Cinder's main.yml file

```
laxamana_ubuntu@workstation:~/hoa15$ cd ~/hoa15/roles/cinder/tasks
laxamana_ubuntu@workstation:~/hoa15/roles/cinder/tasks$ cat main.yml

- name: Installing Cinder (Ubuntu)
  apt:
    name:
      - cinder-api
      - cinder-scheduler
    state: latest

- name: Configure Cinder
  replace:
        dest: /etc/cinder/cinder.conf
        regexp: connection = mysql+pymysql://cinder:CINDER_DBPASS@controller/cinder
        replace: connection = mysql+pymysql://cinder:admin123@controller/cinder
        backup: yes

- name: Configure Cinder
  replace:
        dest: /etc/cinder/cinder.conf
        regexp: transport_url = rabbit://openstack:RABBIT_PASS@controller
        replace: transport_url = rabbit://openstack:admin123@controller
        backup: yes

- name: Configure Cinder
  lineinfile:
        dest: /etc/cinder/cinder.conf
        line: 'auth_strategy = keystone'
        state: present
        backup: yes

- name: Configure Cinder
  lineinfile:
        dest: /etc/cinder/cinder.conf
        insertafter: '\[keystone_authtoken\]'
        line: '{{ item }}'
        state: present
        backup: yes
```

```
laxamana_ubuntu@workstation: ~/hoa15/roles/cinder/tasks
File  Edit  View  Search  Terminal  Help
  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 = cinder
        - password = pass123

- name: Configure Cinder
  lineinfile:
        dest: /etc/cinder/cinder.conf
        line: 'my_ip = 192.168.52.103'
        state: present
        backup: yes

- name: Configure Cinder
  lineinfile:
        dest: /etc/cinder/cinder.conf
        line: 'lock_path = /var/lib/cinder/tmp'
        state: present
        backup: yes

- name: Populate the Database
  shell: |
    sudo cinder-manage db sync

- name: Configure Cinder
  lineinfile:
        dest: /etc/nova/nova.conf
        line: 'os_region_name = RegionOne'
        state: present
        backup: yes
```

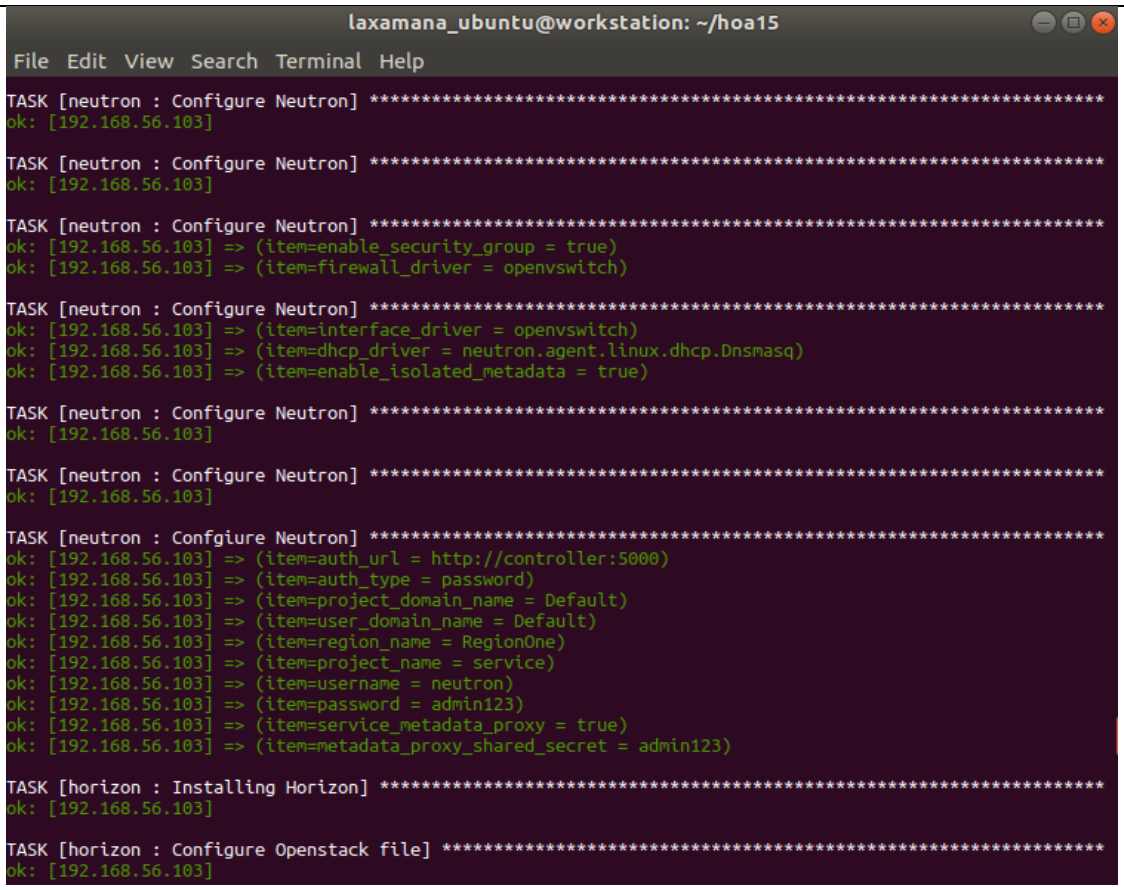
Step 5. outside roles, create the main yml file.

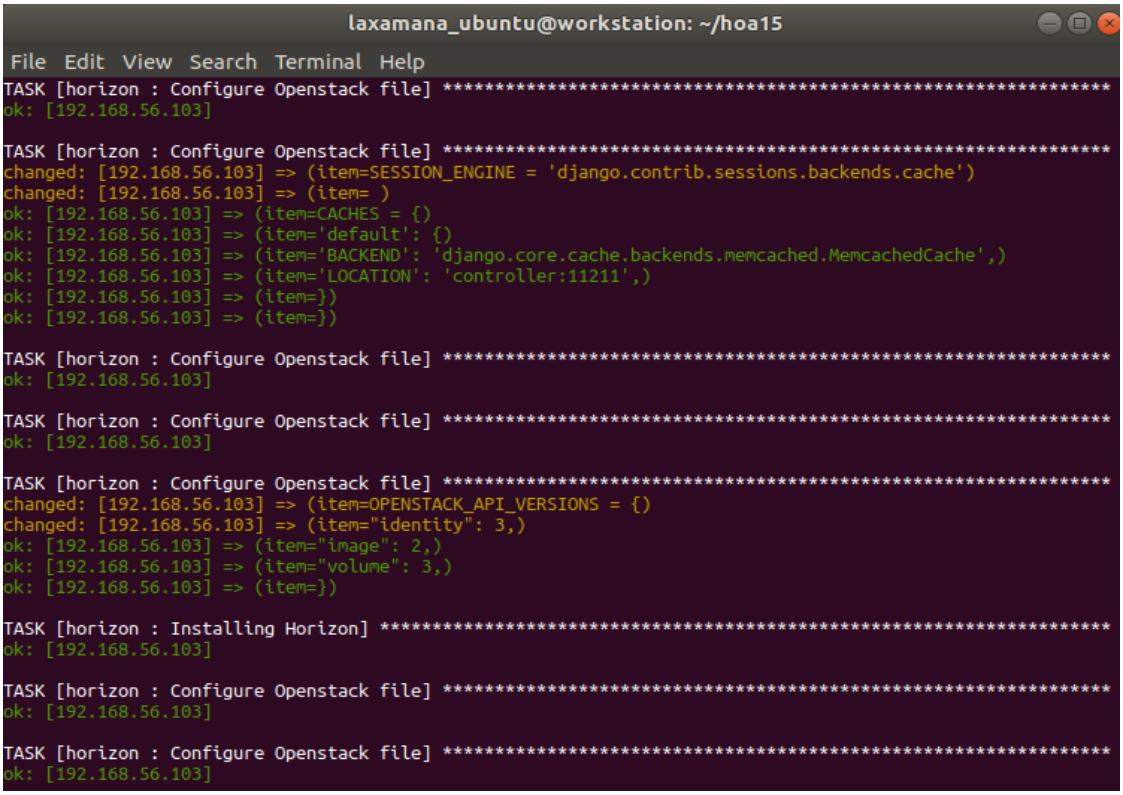
```
laxamana_ubuntu@workstation:~/hoa15$ cat hoa15laxamana.yml
---

- hosts: all
  become: true
  pre_tasks:

  - name: Fixing dpkg errors in ubuntu server
    command: sudo dpkg --configure -a
    when: ansible_distribution == "Ubuntu"

- hosts: Ubuntu
  become: true
  roles:
    - neutron
    - horizon
    - cinder
```

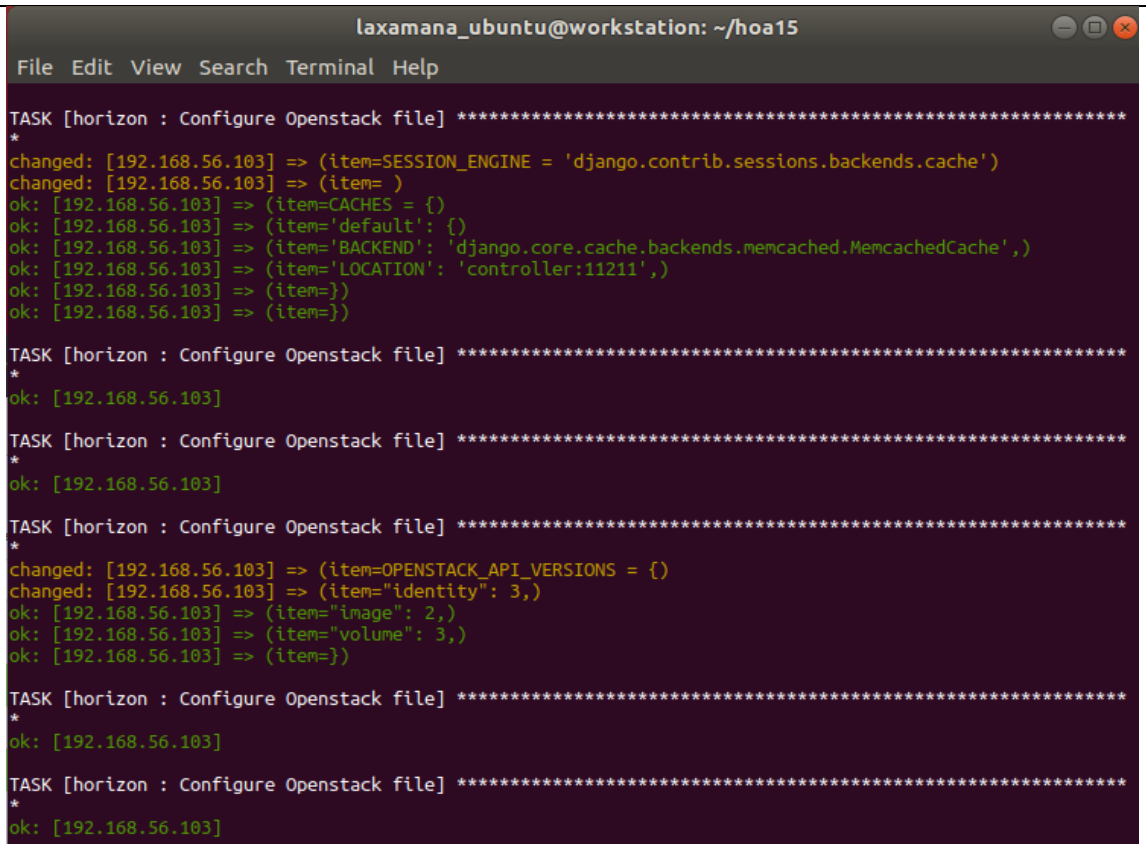
Playbook Process

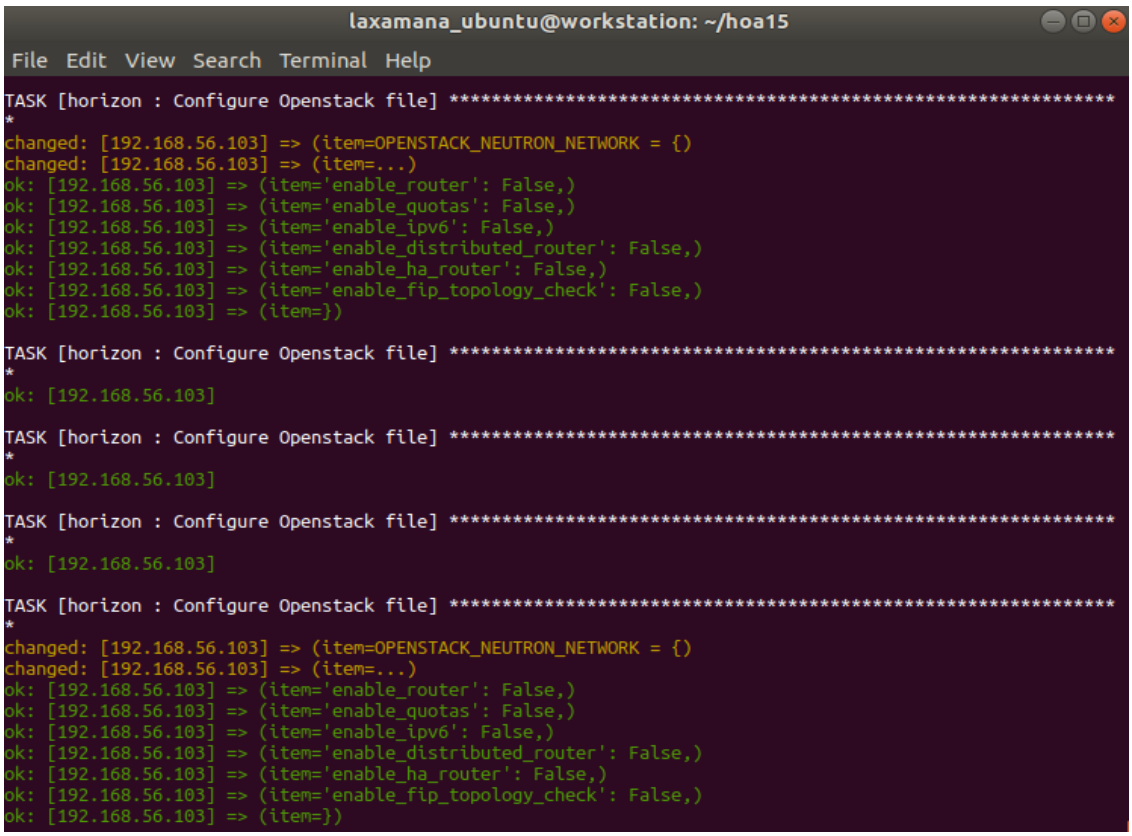
```
laxamana_ubuntu@workstation:~/hoa15$ ansible-playbook --ask-become-pass hoa15laxamana.yml
BECOME password:

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

TASK [Gathering Facts] *********************************************************************************
ok: [192.168.56.103]

TASK [Fixing dpkg errors in ubuntu server] *************************************************************
changed: [192.168.56.103]

PLAY [Ubuntu] ******************************************************************************************

TASK [Gathering Facts] *********************************************************************************
ok: [192.168.56.103]

TASK [neutron : Installing Neutron (Ubuntu)] ***********************************************************
ok: [192.168.56.103]

TASK [neutron : Configure Neutron] *********************************************************************
ok: [192.168.56.103]

TASK [neutron : Configure Neutron] *********************************************************************
ok: [192.168.56.103]

TASK [neutron : Configure Neutron] *********************************************************************
ok: [192.168.56.103]

TASK [neutron : Conf Neutron] **************************************************************************
ok: [192.168.56.103]

TASK [neutron : Configure Neutron] *********************************************************************
ok: [192.168.56.103]
```

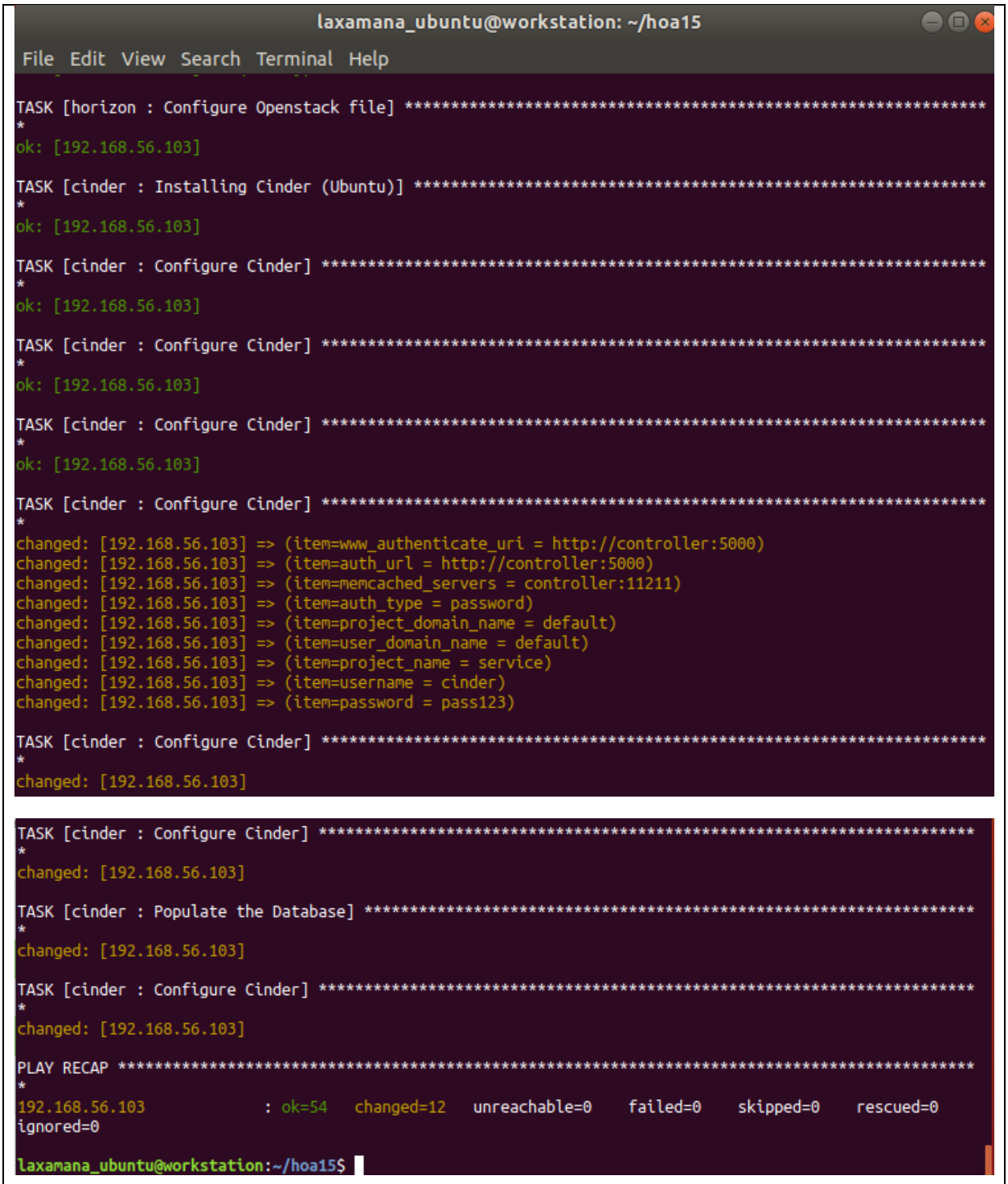
```
laxamana_ubuntu@workstation: ~/hoa15
File  Edit  View  Search  Terminal  Help

TASK [neutron : Configure Neutron] *********************************************************************
ok: [192.168.56.103] => (item=www_authenticate_uri = http://controller:5000)
ok: [192.168.56.103] => (item=auth_url = http://controller:5000)
ok: [192.168.56.103] => (item=memcached_servers = controller:11211)
ok: [192.168.56.103] => (item=auth_type = password)
ok: [192.168.56.103] => (item=project_domain_name = Default)
ok: [192.168.56.103] => (item=user_domain_name = Default)
ok: [192.168.56.103] => (item=project_name = service)
ok: [192.168.56.103] => (item=username = neutron)
ok: [192.168.56.103] => (item=password = admin123)

TASK [neutron : Configure Neutron] *********************************************************************
ok: [192.168.56.103] => (item=notify_nova_on_port_status_changes = true)
ok: [192.168.56.103] => (item=notify_nova_on_port_data_changes = true)

TASK [neutron : Configure Neutron] *********************************************************************
ok: [192.168.56.103] => (item=auth_url = http://controller:5000)
ok: [192.168.56.103] => (item=auth_type = password)
ok: [192.168.56.103] => (item=project_domain_name = Default)
ok: [192.168.56.103] => (item=user_domain_name = Default)
ok: [192.168.56.103] => (item=region_name = RegionOne)
ok: [192.168.56.103] => (item=project_name = service)
ok: [192.168.56.103] => (item=username = nova)
ok: [192.168.56.103] => (item=password = admin123)

TASK [neutron : Configure Neutron] *********************************************************************
ok: [192.168.56.103]

TASK [neutron : Configure Neutron] *********************************************************************
ok: [192.168.56.103]

TASK [neutron : Configure Neutron] *********************************************************************
ok: [192.168.56.103]

TASK [neutron : Configure Neutron] *********************************************************************
ok: [192.168.56.103] => (item=mechanism_drivers = openvswitch)
ok: [192.168.56.103] => (item=extension_drivers = portsecurity)
```


laxamana_ubuntu@workstation: ~/hoa15
File Edit View Search Terminal Help
TASK [neutron : Configure Neutron] **********
ok: [192.168.56.103]
TASK [neutron : Configure Neutron] **********
ok: [192.168.56.103]
TASK [neutron : Configure Neutron] **********
ok: [192.168.56.103] => (item=enable_security_group = true)
ok: [192.168.56.103] => (item=firewall_driver = openvswitch)
TASK [neutron : Configure Neutron] **********
ok: [192.168.56.103] => (item=interface_driver = openvswitch)
ok: [192.168.56.103] => (item=dhcp_driver = neutron.agent.linux.dhcp.Dnsmasq)
ok: [192.168.56.103] => (item=enable_isolated_metadata = true)
TASK [neutron : Configure Neutron] **********
ok: [192.168.56.103]
TASK [neutron : Configure Neutron] **********
ok: [192.168.56.103]
TASK [neutron : Confgiure Neutron] **********
ok: [192.168.56.103] => (item=auth_url = http://controller:5000)
ok: [192.168.56.103] => (item=auth_type = password)
ok: [192.168.56.103] => (item=project_domain_name = Default)
ok: [192.168.56.103] => (item=user_domain_name = Default)
ok: [192.168.56.103] => (item=region_name = RegionOne)
ok: [192.168.56.103] => (item=project_name = service)
ok: [192.168.56.103] => (item=username = neutron)
ok: [192.168.56.103] => (item=password = admin123)
ok: [192.168.56.103] => (item=service_metadata_proxy = true)
ok: [192.168.56.103] => (item=metadata_proxy_shared_secret = admin123)
TASK [horizon : Installing Horizon] **********
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] **********
ok: [192.168.56.103]


laxamana_ubuntu@workstation: ~/hoa15
File Edit View Search Terminal Help
TASK [horizon : Configure Openstack file] **********
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] **********
changed: [192.168.56.103] => (item=SESSION_ENGINE = 'django.contrib.sessions.backends.cache')
changed: [192.168.56.103] => (item=)
ok: [192.168.56.103] => (item=CACHES = {)
ok: [192.168.56.103] => (item='default': {)
ok: [192.168.56.103] => (item='BACKEND': 'django.core.cache.backends.memcached.MemcachedCache',)
ok: [192.168.56.103] => (item='LOCATION': 'controller:11211',)
ok: [192.168.56.103] => (item=})
ok: [192.168.56.103] => (item=})
TASK [horizon : Configure Openstack file] **********
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] **********
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] **********
changed: [192.168.56.103] => (item=OPENSTACK_API_VERSIONS = {)
changed: [192.168.56.103] => (item="identity": 3,)
ok: [192.168.56.103] => (item="image": 2,)
ok: [192.168.56.103] => (item="volume": 3,)
ok: [192.168.56.103] => (item=})
TASK [horizon : Installing Horizon] **********
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] **********
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] **********
ok: [192.168.56.103]


laxamana_ubuntu@workstation: ~/hoa15
File Edit View Search Terminal Help
TASK [horizon : Configure Openstack file] ***
*
changed: [192.168.56.103] => (item=SESSION_ENGINE = 'django.contrib.sessions.backends.cache')
changed: [192.168.56.103] => (item=)
ok: [192.168.56.103] => (item=CACHES = {)
ok: [192.168.56.103] => (item='default': {)
ok: [192.168.56.103] => (item='BACKEND': 'django.core.cache.backends.memcached.MemcachedCache',)
ok: [192.168.56.103] => (item='LOCATION': 'controller:11211',)
ok: [192.168.56.103] => (item=})
ok: [192.168.56.103] => (item=})
TASK [horizon : Configure Openstack file] ***
*
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] ***
*
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] ***
*
changed: [192.168.56.103] => (item=OPENSTACK_API_VERSIONS = {)
changed: [192.168.56.103] => (item="identity": 3,)
ok: [192.168.56.103] => (item="image": 2,)
ok: [192.168.56.103] => (item="volume": 3,)
ok: [192.168.56.103] => (item=})
TASK [horizon : Configure Openstack file] ***
*
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] ***
*
ok: [192.168.56.103]


laxamana_ubuntu@workstation: ~/hoa15
File Edit View Search Terminal Help
TASK [horizon : Configure Openstack file] ***
*
changed: [192.168.56.103] => (item=OPENSTACK_NEUTRON_NETWORK = {)
changed: [192.168.56.103] => (item=...)
ok: [192.168.56.103] => (item='enable_router': False,)
ok: [192.168.56.103] => (item='enable_quotas': False,)
ok: [192.168.56.103] => (item='enable_ipv6': False,)
ok: [192.168.56.103] => (item='enable_distributed_router': False,)
ok: [192.168.56.103] => (item='enable_ha_router': False,)
ok: [192.168.56.103] => (item='enable_fip_topology_check': False,)
ok: [192.168.56.103] => (item=})
TASK [horizon : Configure Openstack file] ***
*
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] ***
*
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] ***
*
ok: [192.168.56.103]
TASK [horizon : Configure Openstack file] ***
*
changed: [192.168.56.103] => (item=OPENSTACK_NEUTRON_NETWORK = {)
changed: [192.168.56.103] => (item=...)
ok: [192.168.56.103] => (item='enable_router': False,)
ok: [192.168.56.103] => (item='enable_quotas': False,)
ok: [192.168.56.103] => (item='enable_ipv6': False,)
ok: [192.168.56.103] => (item='enable_distributed_router': False,)
ok: [192.168.56.103] => (item='enable_ha_router': False,)
ok: [192.168.56.103] => (item='enable_fip_topology_check': False,)
ok: [192.168.56.103] => (item=})


laxamana_ubuntu@workstation: ~/hoa15
File Edit View Search Terminal Help
TASK [horizon : Configure Openstack file] **
*
ok: [192.168.56.103]
TASK [cinder : Installing Cinder (Ubuntu)] ***
*
ok: [192.168.56.103]
TASK [cinder : Configure Cinder] ***
*
ok: [192.168.56.103]
TASK [cinder : Configure Cinder] ***
*
ok: [192.168.56.103]
TASK [cinder : Configure Cinder] ***
*
ok: [192.168.56.103]
TASK [cinder : Configure Cinder] ***
*
changed: [192.168.56.103] => (item=www_authenticate_uri = http://controller:5000)
changed: [192.168.56.103] => (item=auth_url = http://controller:5000)
changed: [192.168.56.103] => (item=memcached_servers = controller:11211)
changed: [192.168.56.103] => (item=auth_type = password)
changed: [192.168.56.103] => (item=project_domain_name = default)
changed: [192.168.56.103] => (item=user_domain_name = default)
changed: [192.168.56.103] => (item=project_name = service)
changed: [192.168.56.103] => (item=username = cinder)
changed: [192.168.56.103] => (item=password = pass123)
TASK [cinder : Configure Cinder] ***
*
changed: [192.168.56.103]
TASK [cinder : Configure Cinder] ***
*
changed: [192.168.56.103]
TASK [cinder : Populate the Database] **
*
changed: [192.168.56.103]
TASK [cinder : Configure Cinder] ***
*
changed: [192.168.56.103]
PLAY RECAP ***
*
192.168.56.103 : ok=54 changed=12 unreachable=0 failed=0 skipped=0 rescued=0
ignored=0
laxamana_ubuntu@workstation:~/hoa15$

Proofs

```
laxamana_ubuntu@server1:~$ sudo apt list --installed | grep neutron
[sudo] password for laxamana_ubuntu:

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

neutron-common/bionic-updates,bionic-updates,bionic-security,bionic-security,no
w 2:12.1.1-0ubuntu8.1 all [installed,automatic]
neutron-dhcp-agent/bionic-updates,bionic-updates,bionic-security,bionic-securit
y,now 2:12.1.1-0ubuntu8.1 all [installed]
neutron-metadata-agent/bionic-updates,bionic-updates,bionic-security,bionic-sec
urity,now 2:12.1.1-0ubuntu8.1 all [installed]
neutron-openvswitch-agent/bionic-updates,bionic-updates,bionic-security,bionic-
security,now 2:12.1.1-0ubuntu8.1 all [installed]
neutron-plugin-ml2/bionic-updates,bionic-updates,bionic-security,bionic-securit
y,now 2:12.1.1-0ubuntu8.1 all [installed]
neutron-server/bionic-updates,bionic-updates,bionic-security,bionic-security,no
w 2:12.1.1-0ubuntu8.1 all [installed]
python-neutron/bionic-updates,bionic-updates,bionic-security,bionic-security,no
w 2:12.1.1-0ubuntu8.1 all [installed,automatic]
python-neutron-fwaas/bionic-updates,bionic-updates,now 1:12.0.2-0ubuntu1 all [i
nstalled,automatic]
python-neutron-lib/bionic,bionic,now 1.13.0-0ubuntu1 all [installed,automatic]
python-neutronclient/bionic,bionic,now 1:6.7.0-0ubuntu1 all [installed,automati
c]
python3-neutronclient/bionic,bionic,now 1:6.7.0-0ubuntu1 all [installed,automat
ic]
```

```
laxamana_ubuntu@server1:~$ sudo apt list --installed | grep horizon

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

python-django-horizon/bionic-updates,bionic-updates,bionic-security,bionic-secu
rity,now 3:13.0.3-0ubuntu2 all [installed,automatic]
```

```
laxamana_ubuntu@server1:~$ sudo apt list --installed | grep cinder

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

cinder-api/bionic-updates,bionic-updates,bionic-security,bionic-security,now 2:
12.0.10-0ubuntu2.2 all [installed]
cinder-common/bionic-updates,bionic-updates,bionic-security,bionic-security,now
 2:12.0.10-0ubuntu2.2 all [installed,automatic]
cinder-scheduler/bionic-updates,bionic-updates,bionic-security,bionic-security,
now 2:12.0.10-0ubuntu2.2 all [installed]
python-cinder/bionic-updates,bionic-updates,bionic-security,bionic-security,now
 2:12.0.10-0ubuntu2.2 all [installed,automatic]
python-cinderclient/bionic,bionic,now 1:3.5.0-0ubuntu1 all [installed,automatic
]
python3-cinderclient/bionic,bionic,now 1:3.5.0-0ubuntu1 all [installed,automati
c]
```

```
laxamana_ubuntu@workstation:~/hoa15$ git add .
laxamana_ubuntu@workstation:~/hoa15$ git commit -m "HOA 15 success!"
[main 82a0957] HOA 15 success!
 6 files changed, 414 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 hoa15laxamana.yml
 create mode 100644 inventory
 create mode 100644 roles/cinder/tasks/main.yml
 create mode 100644 roles/horizon/tasks/main.yml
 create mode 100644 roles/neutron/tasks/main.yml
laxamana_ubuntu@workstation:~/hoa15$ git push origin
Counting objects: 15, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (8/8), done.
Writing objects: 100% (15/15), 3.30 KiB | 3.30 MiB/s, done.
Total 15 (delta 0), reused 0 (delta 0)
To github.com:Abigaiiiil/hoa15.git
   ee499be..82a0957  main -> main
```

Github link

https://github.com/Abigaiiiil/hoa15.git

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services

   Neutron - The OpenStack networking service Neutron is in charge of giving other OpenStack services networking capabilities. It makes network resources like simulated networks, subnets, routers, and safety groups easier to create and administer. Neutron facilitates communication between multiple instances and services inside the OpenStack cloud, lets users build and manage network topologies, and implements diverse networking types including overlay, VLAN, and flat. In addition to enabling administrators to establish and manage network regulations and guarantee isolation and security inside the cloud architecture, it provides a flexible and scalable networking environment.

   Horizon - In an OpenStack cloud infrastructure, Horizon functions as the internet-based dashboard or GUI for organizing and controlling diverse resources and services. It offers a single interface via which users, administrators, and tenants may access and administer various OpenStack components, such as identity,

computation, storage, and networking. Users are able to deploy and manage virtual machines, configure networking, manage storage resources, create access controls, keep an eye on consumption, and access payment details via Horizon. With its simple and easy-to-use interface, Horizon makes cloud administration simpler by providing easy accessibility to OpenStack features without having a lot of command-line experience.

Cinder - The block storage system in OpenStack, known as Cinder, provides examples or virtual machines in the cloud with persistent storage resources. Block-level storage volume provisioning and administration are made possible by it, and users may connect and remove volumes from instances as needed. Cinder offers flexibility in selecting storage alternatives that best meet particular application requirements by supporting a variety of storage backends, such as distributed file systems, cloud storage solutions, and conventional storage arrays. By offering block-level storage options that are dynamically allocated and managed, it guarantees data permanence, performance, and adaptability for applications operating in the OpenStack cloud.

Conclusions:

This action represents the coordination and implementation of critical elements that work together to control networking, offer a UI, and supply block storage services in the OpenStack architecture. The installation procedure is streamlined when a playbook is used, guaranteeing uniformity, dependability, and effective distribution across several nodes or settings. Neutron's networking features make it possible to create and manage a variety of network resources while maintaining security and connection. The web-based dashboard provided by Horizon provides an easy-to-use interface for managing and orchestrating many OpenStack

services. For cloud-based applications, Cinder's block storage system ensures data accessibility and permanence by offering scalable and durable storage options. A strong and useful OpenStack cloud system with the networking, storage, and administration features required to handle a variety of applications and tasks in a cloud-based computing setting is made possible by this installation's success.