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Course/Section: CPE232 31 S6	Date Submitted: 12/04/2023
Instructor: Dr. Jonathan Taylor	Semester and SY: 1st sem 2023-2024

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.

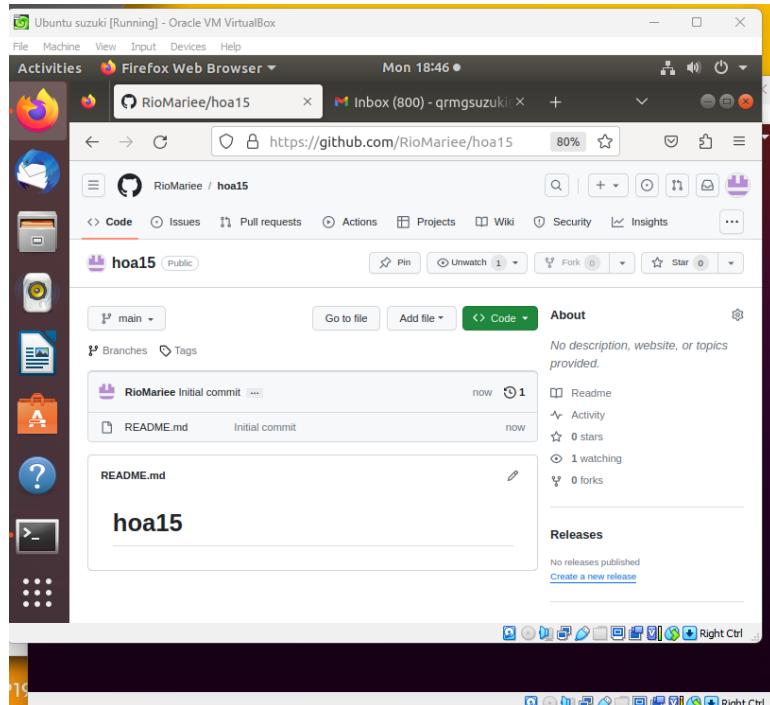
3. Resources

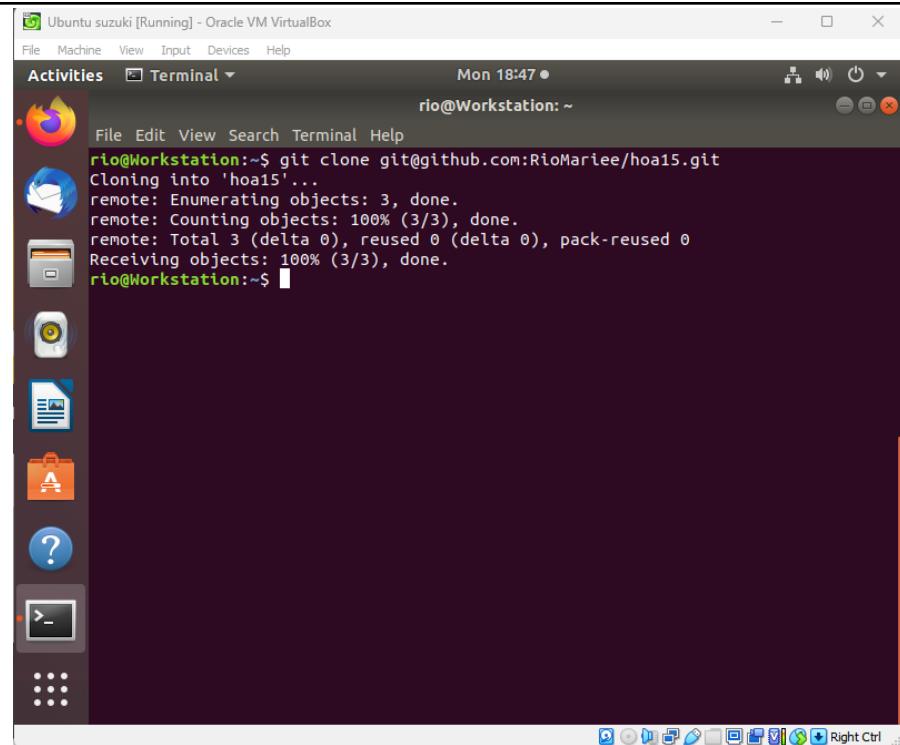
Oracle VirtualBox (Hypervisor)

1x Ubuntu VM or Centos VM

4. Tasks

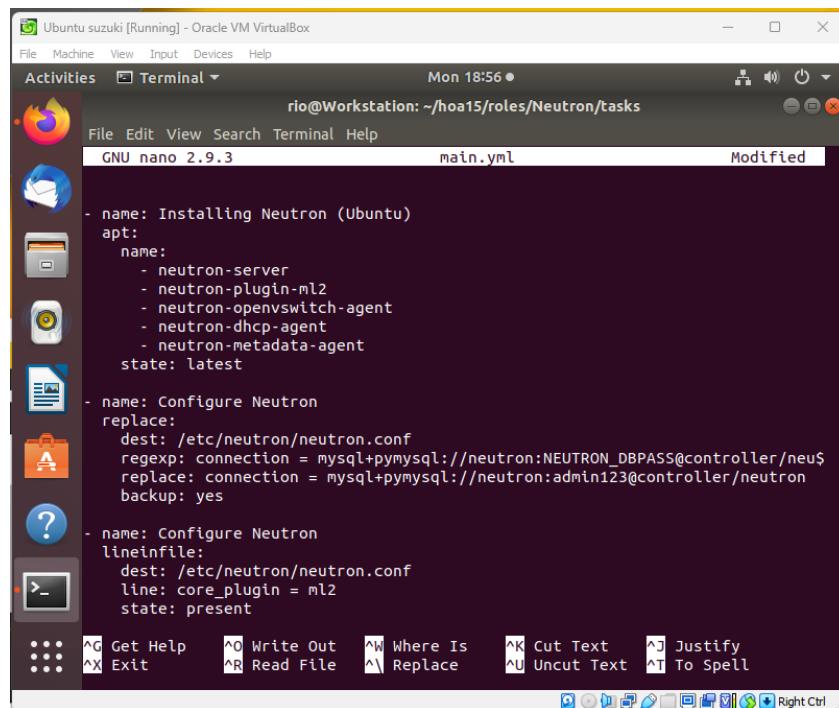
1. Create a new repository for this activity.





```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 18:47 •
rio@Workstation: ~
File Edit View Search Terminal Help
rio@Workstation:~$ git clone git@github.com:RioMariee/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.
rio@Workstation:~$
```

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



```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 18:56 •
rio@Workstation: ~/hoa15/roles/Neutron/tasks
GNU nano 2.9.3 main.yml Modified
- 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/neu$ replace: connection = mysql+pymysql://neutron:admin123@controller/neutron backup: yes

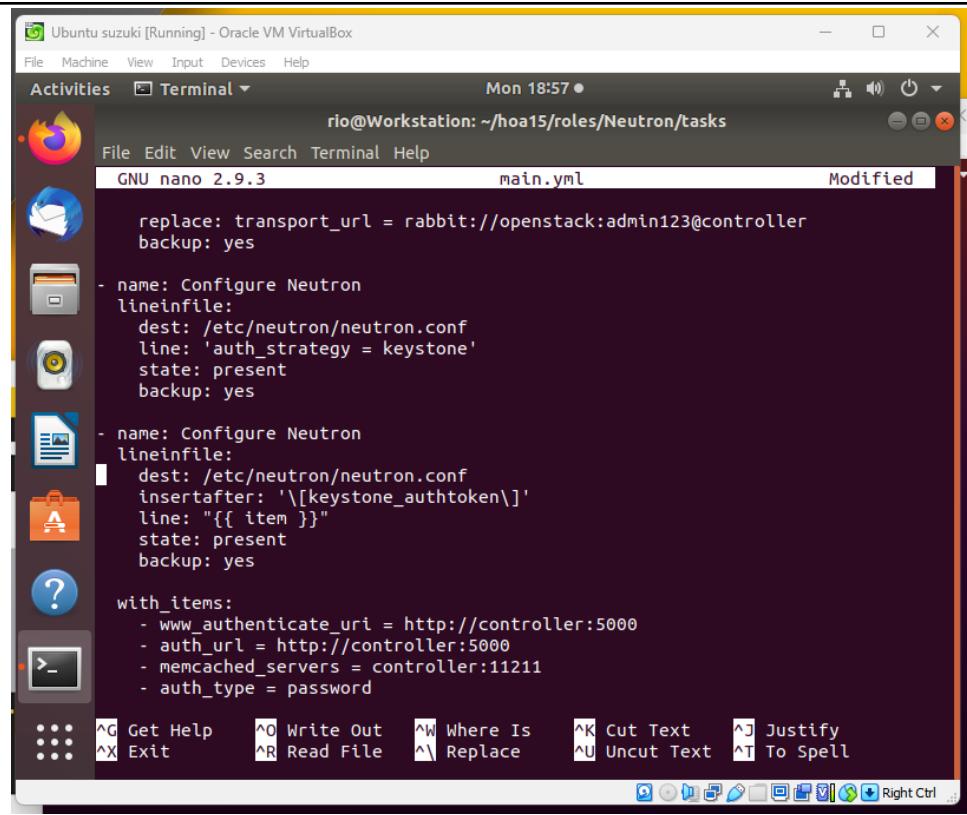
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/neutron.conf
    line: core_plugin = ml2
    state: present
```

A screenshot of a Linux desktop environment, likely Ubuntu, running in Oracle VM VirtualBox. The terminal window title is "Activities Terminal" and the command line shows "rio@Workstation: ~/hoa15/roles/Neutron/tasks". The file being edited is "main.yml" with status "Modified". The content of the file is:

```
replace:
  dest: /etc/neutron/neutron.conf
  regexp: connection = mysql+pymysql://neutron:NEUTRON_DBPASS@controller/neu$  
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  
  
- name: Conf Neutron  
  replace:  
    dest: /etc/neutron/neutron.conf
```

A screenshot of a Linux desktop environment, likely Ubuntu, running in Oracle VM VirtualBox. The terminal window title is "Activities Terminal" and the command line shows "rio@Workstation: ~/hoa15/roles/Neutron/tasks". The file being edited is "main.yml" with status "Modified". The content of the file is:

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



```
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

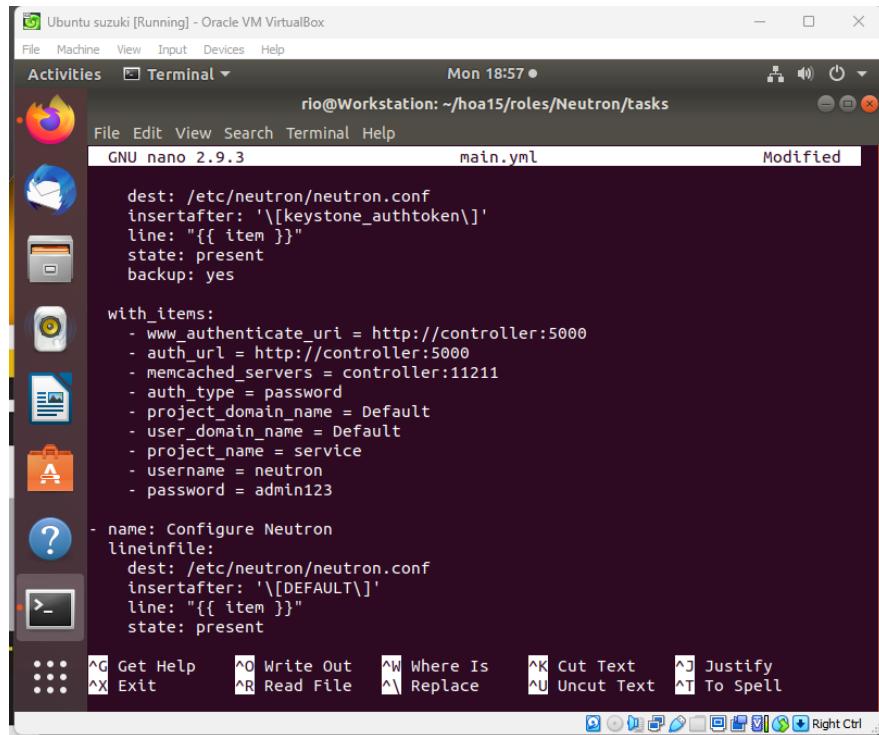
- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/neutron.conf
    insertafter: '\[keystone_auth_token\]'
    line: "{{ item }}"
    state: present
    backup: yes

with_items:
  - www_authenticate_uri = http://controller:5000
  - auth_url = http://controller:5000
  - memcached_servers = controller:11211
  - auth_type = password

dest: /etc/neutron/neutron.conf
insertafter: '\[keystone_auth_token\]'
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

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



```
dest: /etc/neutron/neutron.conf
insertafter: '\[keystone_auth_token\]'
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

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

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 18:57 •

rio@Workstation: ~/hoa15/roles/Neutron/tasks

GNU nano 2.9.3 main.yml Modified

```
- user_domain_name = Default
- project_name = service
- username = neutron
- password = admin123

- 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
```

Get Help Write Out Where Is Cut Text Justify
Exit Read File Replace Uncut Text To Spell Right Ctrl

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 18:58 •

rio@Workstation: ~/hoa15/roles/Neutron/tasks

GNU nano 2.9.3 main.yml Modified

```
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
```

Get Help Write Out Where Is Cut Text Justify
Exit Read File Replace Uncut Text To Spell Right Ctrl

The screenshot shows a terminal window titled "Terminal" running on an Ubuntu system. The window title bar indicates the session is "Ubuntu suzuki [Running] - Oracle VM VirtualBox". The terminal window displays a file named "main.yml" which has been modified. The content of the file is as follows:

```
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

- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/plugins/ml2/ml2_conf.ini
    line: 'type_drivers = flat,vlan'
    state: present
```

This screenshot shows the same terminal window after the configuration changes have been applied. The terminal window title bar indicates the session is "Ubuntu suzuki [Running] - Oracle VM VirtualBox". The terminal window displays the same "main.yml" file, but the content has been updated to reflect the changes made in the previous screenshot. The "lock_path" setting now includes a trailing slash, and the "type_drivers" setting now includes a comma and a space before "vlan".

```
lineinfile:
  dest: /etc/neutron/neutron.conf
  line: 'lock_path = /var/lib/neutron/tmp'
  state: present
  backup: yes

- 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
```

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 18:58 •

rio@Workstation: ~/hoa15/roles/Neutron/tasks

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml Modified

```
- 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
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell Right Ctrl

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 18:58 •

rio@Workstation: ~/hoa15/roles/Neutron/tasks

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml Modified

```
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

- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/plugins/ml2/openvswitch_agent.ini
    regexp: 'bridge_mappings = provider: PROVIDER_INTERFACE_NAME'
    line: 'bridge_mappings = provider:LocalMachine'
    state: present
    backup: yes

- name: Configure Neutron
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell Right Ctrl

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 18:59 •

rio@Workstation: ~/hoa15/roles/Neutron/tasks

GNU nano 2.9.3 main.yml Modified

```
state: present
backup: yes

- 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
```

Get Help Write Out Where Is Cut Text Justify
Exit Read File Replace Uncut Text To Spell

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 18:59 •

rio@Workstation: ~/hoa15/roles/Neutron/tasks

GNU nano 2.9.3 main.yml Modified

```
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
```

Get Help Write Out Where Is Cut Text Justify
Exit Read File Replace Uncut Text To Spell

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 18:59 •
rio@Workstation: ~/hoa15/roles/Neutron/tasks
GNU nano 2.9.3 main.yml Modified
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

- name: Configure Neutron
  lineinfile:
    dest: /etc/neutron/metadata_agent.ini
    regexp: 'metadata_proxy_shared_secret = METADATA_SECRET'
    line: 'metadata_proxy_shared_secret = admin123'

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell
Right Ctrl .
```

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 18:59 •
rio@Workstation: ~/hoa15/roles/Neutron/tasks
GNU nano 2.9.3 main.yml Modified
lineinfile:
  dest: /etc/neutron/metadata_agent.ini
  line: 'nova_metadata_host = controller'
  state: present
  backup: yes

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

  with_items:
```

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 18:59 •
rio@Workstation: ~/hoa15/roles/Neutron/tasks
GNU nano 2.9.3 main.yml Modified
backup: yes

- name: Configure 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

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^I Replace ^U Uncut Text ^T To Spell
Right Ctrl ...
```

b. Horizon

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 19:01 •
rio@Workstation: ~/hoa15/roles/Horizon/task
GNU nano 2.9.3 main.yml Modified
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

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^I Replace ^U Uncut Text ^T To Spell
Right Ctrl ...
```

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:01 • rio@Workstation: ~/hoa15/roles/Horizon/task

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml Modified

```
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

  with_items:
    - "SESSION_ENGINE = 'django.contrib.sessions.backends.cache'"
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:01 • rio@Workstation: ~/hoa15/roles/Horizon/task

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml Modified

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

    with_items:
      - "SESSION_ENGINE = 'django.contrib.sessions.backends.cache'"
      - ''
      - "CACHES = {"
      - "'default': {"
      - "'BACKEND': 'django.core.cache.backends.memcached.MemcachedCa$"
      - "'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\" % OPENSTAC$
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 19:01 •
rio@Workstation: ~/hoa15/roles/Horizon/task
File Edit View Search Terminal Help
GNU nano 2.9.3 main.yml Modified
-   ''default': {
-     ''BACKEND': 'django.core.cache.backends.memcached.MemcachedCa$'
-     ''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" % OPENSTAC$'
    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

  with_items:
    - "OPENSTACK_API_VERSIONS = {"
    -   '"identity": 3,'
    -   '"image": 2,'
    -   '"volume": 3,'

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell
Right Ctrl .;
```

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 19:01 •
rio@Workstation: ~/hoa15/roles/Horizon/task
File Edit View Search Terminal Help
GNU nano 2.9.3 main.yml Modified
  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

  with_items:
    - "OPENSTACK_API_VERSIONS = {"
    -   '"identity": 3,'
    -   '"image": 2,'
    -   '"volume": 3,'

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell
Right Ctrl .;
```

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:01 •

rio@Workstation: ~/hoa15/roles/Horizon/task

GNU nano 2.9.3 main.yml Modified

```
dest: /etc/openstack-dashboard/local_settings.py
regexp: '^OPENSTACK_API_VERSIONS ='
line: "{{ item }}"
state: present
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:
```

Get Help Write Out Where Is Cut Text Justify
Exit Read File Replace Uncut Text To Spell

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:02 •

rio@Workstation: ~/hoa15/roles/Horizon/task

GNU nano 2.9.3 main.yml Modified

```
- 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
```

Get Help Write Out Where Is Cut Text Justify
Exit Read File Replace Uncut Text To Spell

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:02 •

rio@Workstation: ~/hoa15/roles/Horizon/task

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml Modified

```

        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,"
  - "}"

```

Keyboard Shortcuts:

- Get Help
- Write Out
- Where Is
- Cut Text
- Justify
- Exit
- Read File
- Replace
- Uncut Text
- To Spell

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:02 •

rio@Workstation: ~/hoa15/roles/Horizon/task

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml Modified

```

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}'

Keyboard Shortcuts:

- Get Help
- Write Out
- Where Is
- Cut Text
- Justify
- Exit
- Read File
- Replace
- Uncut Text
- To Spell

c. Cinder

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:08 • rio@Workstation: ~/hoa15/roles/Cinder/tasks

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml Modified

```
- 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/c$ 
    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
  replace:
    dest: /etc/cinder/cinder.conf
    regexp: transport_url = rabbit://openstack:RABBIT_PASS@controller
    replace: transport_url = rabbit://openstack:admin123@controller
    backup: yes
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:08 • rio@Workstation: ~/hoa15/roles/Cinder/tasks

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml Modified

```
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: '\[keystone_auth_token\]'
    line: '{{ item }}'
    state: present
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:09 •

rio@Workstation: ~/hoa15/roles/Cinder/tasks

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml Modified

```
dest: /etc/cinder/cinder.conf
line: 'auth_strategy = keystone'
state: present
backup: yes

- name: Configure Cinder
  lineinfile:
    dest: /etc/cinder/cinder.conf
    insertafter: '^\[keystone_auth_token\]'
    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 = cinder
  - password = pass123
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:09 •

rio@Workstation: ~/hoa15/roles/Cinder/tasks

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml Modified

```
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'
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:09 •

rio@Workstation: ~/hoa15/roles/Cinder/tasks

GNU nano 2.9.3 main.yml Modified

```
- 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
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:09 •

rio@Workstation: ~/hoa15/roles/Cinder/tasks

GNU nano 2.9.3 main.yml Modified

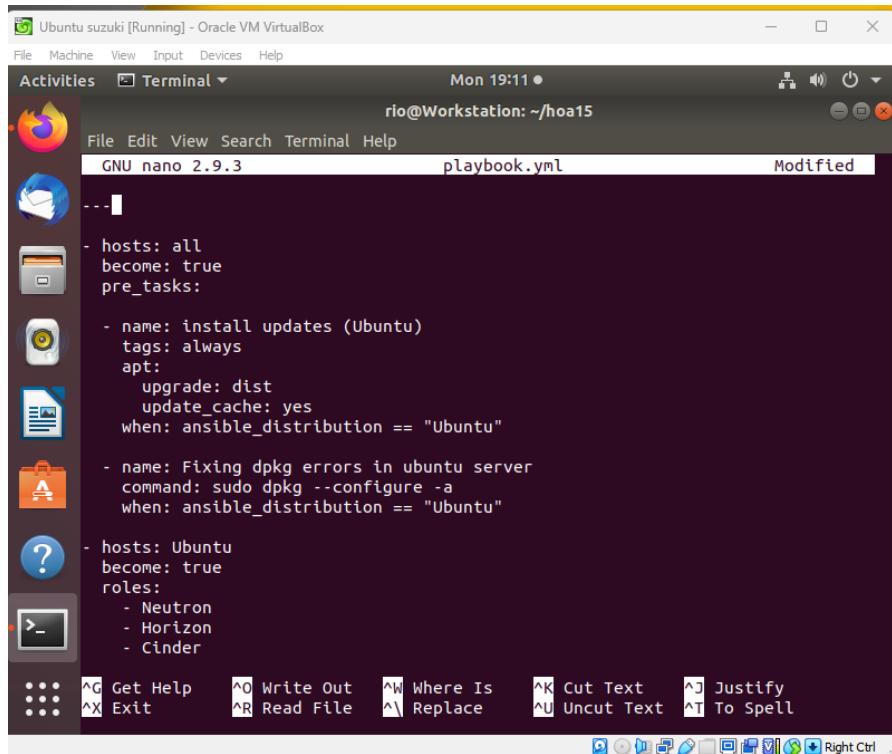
```
backup: yes

- 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
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell

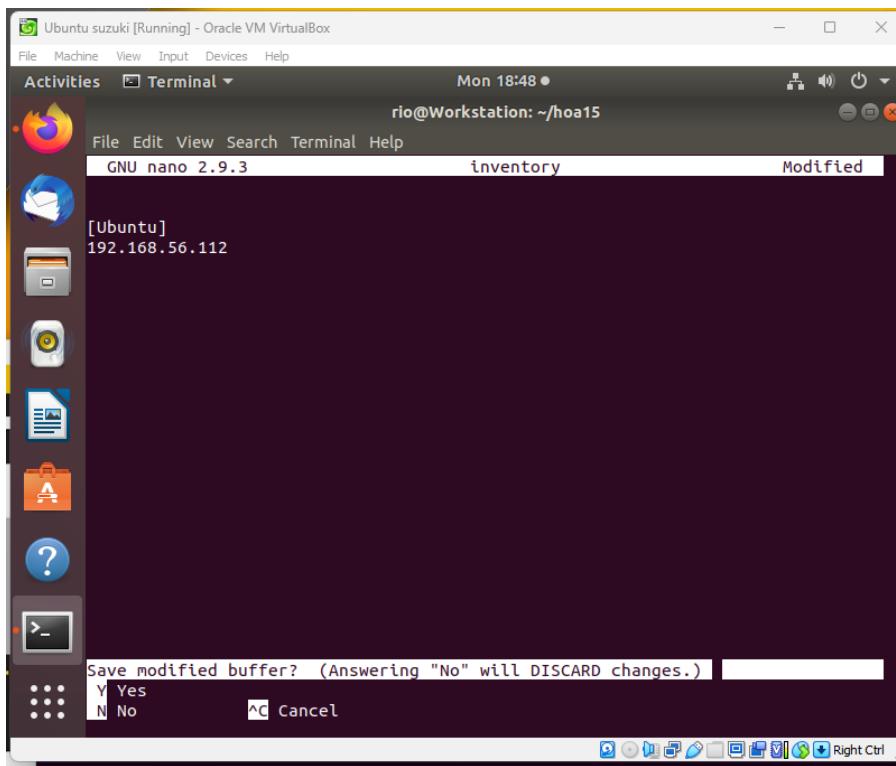
- d. Create different plays in installing per server type (controller, compute etc.) and identify it as a group in the Inventory file.



```

Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 19:11 •
rio@Workstation: ~/hoa15
GNU nano 2.9.3      playbook.yml      Modified
...
- hosts: all
  become: true
  pre_tasks:
    - name: install updates (Ubuntu)
      tags: always
      apt:
        upgrade: dist
        update_cache: yes
      when: ansible_distribution == "Ubuntu"
    - name: Fixing dpkg errors in ubuntu server
      command: sudo dpkg --configure -a
      when: ansible_distribution == "Ubuntu"
  hosts: Ubuntu
  become: true
  roles:
    - Neutron
    - Horizon
    - Cinder
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^Y Replace ^U Uncut Text ^T To Spell

```



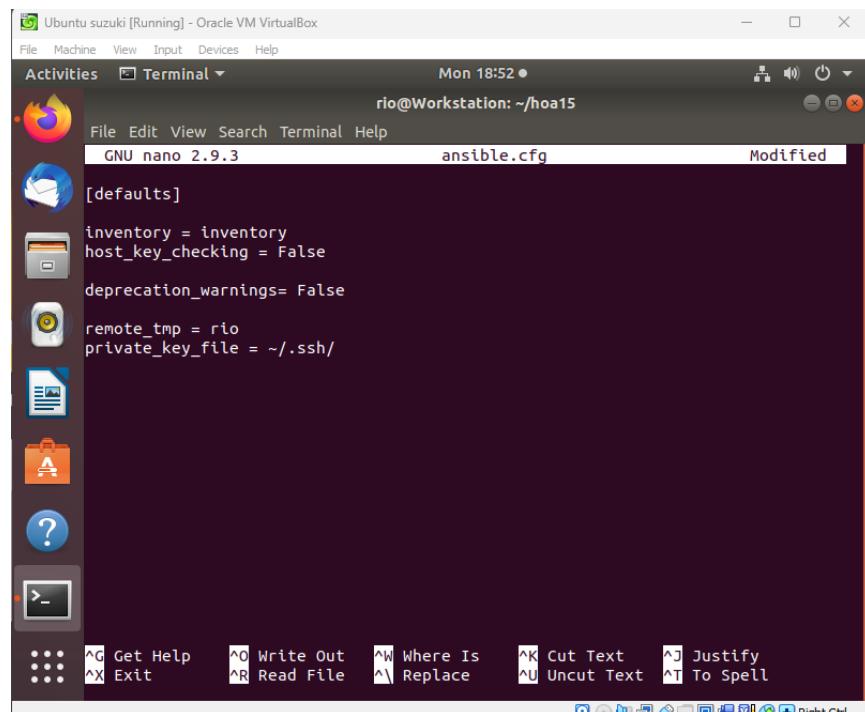
```

Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 18:48 •
rio@Workstation: ~/hoa15
GNU nano 2.9.3      inventory      Modified
[Ubuntu]
192.168.56.112
Save modified buffer? (Answering "No" will DISCARD changes.)
Y Yes      N No      C Cancel

```

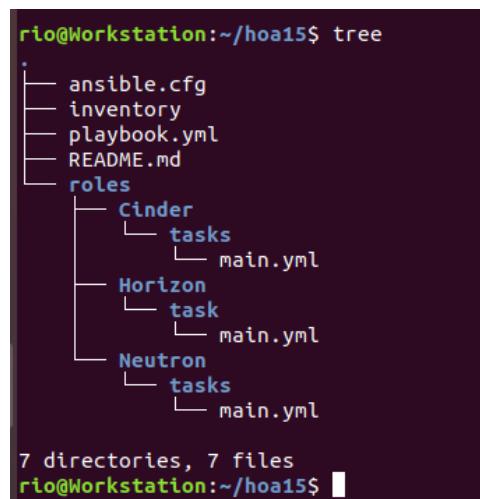
e. Add, commit and push it to your GitHub repo.

Ansible.cfg:



```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 18:52 ●
File Edit View Search Terminal Help
GNU nano 2.9.3 ansible.cfg Modified
[defaults]
inventory = inventory
host_key_checking = False
deprecation_warnings= False
remote_tmp = rio
private_key_file = ~/.ssh/
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^A Replace ^U Uncut Text ^T To Spell
```

Tree:



```
rio@Workstation:~/hoa15$ tree
.
├── ansible.cfg
├── inventory
├── playbook.yml
└── README.md
└── roles
    ├── Cinder
    │   └── tasks
    │       └── main.yml
    ├── Horizon
    │   └── task
    │       └── main.yml
    └── Neutron
        └── tasks
            └── main.yml
7 directories, 7 files
rio@Workstation:~/hoa15$
```

Process:

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:13 ●

rio@Workstation: ~/hoa15\$ ansible-playbook --ask-become-pass playbook.yml

BECOME password:

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

TASK [Gathering Facts] *****
*

ok: [192.168.56.112]

TASK [install updates (Ubuntu)] *****
*

ok: [192.168.56.112]

TASK [Fixing dpkg errors in ubuntu server] *****
*

changed: [192.168.56.112]

PLAY [Ubuntu] *****
*

TASK [Gathering Facts] *****
*

ok: [192.168.56.112]

TASK [Neutron : Installing Neutron (Ubuntu)] *****
*

changed: [192.168.56.112]

Right Ctrl

This terminal window shows the execution of an Ansible playbook named 'playbook.yml'. The command used is 'ansible-playbook --ask-become-pass playbook.yml'. The output shows the playbook running on a single host, '192.168.56.112'. The tasks include gathering facts, installing updates, fixing dpkg errors, and installing Neutron. The 'changed' status indicates that changes were made during the playbook execution.

Ubuntu suzuki [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Mon 19:13 ●

rio@Workstation: ~/hoa15\$

changed: [192.168.56.112]

TASK [Neutron : Configure Neutron] *****
*

ok: [192.168.56.112]

TASK [Neutron : Configure Neutron] *****
*

ok: [192.168.56.112]

TASK [Neutron : Configure Neutron] *****
*

ok: [192.168.56.112]

TASK [Neutron : Conf Neutron] *****
*

ok: [192.168.56.112]

TASK [Neutron : Configure Neutron] *****
*

changed: [192.168.56.112]

TASK [Neutron : Configure Neutron] *****
*

changed: [192.168.56.112] => (item=www_authenticate_uri = http://controller:5000
0)

changed: [192.168.56.112] => (item=auth_url = http://controller:5000)

changed: [192.168.56.112] => (item=memcached_servers = controller:11211)

changed: [192.168.56.112] => (item=auth_type = password)

Right Ctrl

This terminal window continues the execution of the Ansible playbook. It shows the configuration of Neutron, including setting the www_authenticate_uri, auth_url, memcached_servers, and auth_type parameters. The 'changed' status for each task indicates that the configuration was updated successfully.

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 19:13 ●
rio@Workstation: ~/hoa15
File Edit View Search Terminal Help
changed: [192.168.56.112] => (item=memcached_servers = controller:11211)
changed: [192.168.56.112] => (item=auth_type = password)
changed: [192.168.56.112] => (item=project_domain_name = Default)
changed: [192.168.56.112] => (item=user_domain_name = Default)
changed: [192.168.56.112] => (item=project_name = service)
changed: [192.168.56.112] => (item=username = neutron)
changed: [192.168.56.112] => (item=password = admin123)

TASK [Neutron : Configure Neutron] *****
*
changed: [192.168.56.112] => (item=notify_nova_on_port_status_changes = true)
changed: [192.168.56.112] => (item=notify_nova_on_port_data_changes = true)

TASK [Neutron : Configure Neutron] *****
*
ok: [192.168.56.112] => (item=auth_url = http://controller:5000)
ok: [192.168.56.112] => (item=auth_type = password)
ok: [192.168.56.112] => (item=project_domain_name = Default)
ok: [192.168.56.112] => (item=user_domain_name = Default)
changed: [192.168.56.112] => (item=region_name = RegionOne)
ok: [192.168.56.112] => (item=project_name = service)
changed: [192.168.56.112] => (item=username = nova)
ok: [192.168.56.112] => (item=password = admin123)

TASK [Neutron : Configure Neutron] *****
*
changed: [192.168.56.112]

TASK [Neutron : Configure Neutron] *****
```

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 19:14 ●
rio@Workstation: ~/hoa15
File Edit View Search Terminal Help
TASK [Neutron : Configure Neutron] *****
*
changed: [192.168.56.112]

TASK [Neutron : Configure Neutron] *****
*
changed: [192.168.56.112]

TASK [Neutron : Configure Neutron] *****
*
changed: [192.168.56.112] => (item=mechanism_drivers = openvswitch)
changed: [192.168.56.112] => (item=extension_drivers = portsecurity)

TASK [Neutron : Configure Neutron] *****
*
changed: [192.168.56.112]
TASK [Neutron : Configure Neutron] *****
*
changed: [192.168.56.112]

TASK [Neutron : Configure Neutron] *****
*
changed: [192.168.56.112] => (item=enable_security_group = true)
changed: [192.168.56.112] => (item=firewall_driver = openvswitch)

TASK [Neutron : Configure Neutron] *****
```

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 19:14 •
rio@Workstation: ~/hoa15
File Edit View Search Terminal Help
TASK [Neutron : Configure Neutron] ****
*
changed: [192.168.56.112] => (item=enable_security_group = true)
changed: [192.168.56.112] => (item=firewall_driver = openvswitch)

TASK [Neutron : Configure Neutron] ****
*
changed: [192.168.56.112] => (item=interface_driver = openvswitch)
changed: [192.168.56.112] => (item=dhcp_driver = neutron.agent.linux.dhcp.Dnsma
sq)
changed: [192.168.56.112] => (item=enable_isolated_metadata = true)

TASK [Neutron : Configure Neutron] ****
*
changed: [192.168.56.112]

TASK [Neutron : Configure Neutron] ****
*
changed: [192.168.56.112]

TASK [Neutron : Configfiure Neutron] ****
*
changed: [192.168.56.112] => (item=auth_url = http://controller:5000)
changed: [192.168.56.112] => (item=auth_type = password)
changed: [192.168.56.112] => (item=project_domain_name = Default)
changed: [192.168.56.112] => (item=user_domain_name = Default)
changed: [192.168.56.112] => (item=region_name = RegionOne)
changed: [192.168.56.112] => (item=project_name = service)
```

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 19:14 •
rio@Workstation: ~/hoa15
File Edit View Search Terminal Help
TASK [Neutron : Configure Neutron] ****
*
changed: [192.168.56.112] => (item=auth_url = http://controller:5000)
changed: [192.168.56.112] => (item=auth_type = password)
changed: [192.168.56.112] => (item=project_domain_name = Default)
changed: [192.168.56.112] => (item=user_domain_name = Default)
changed: [192.168.56.112] => (item=region_name = RegionOne)
changed: [192.168.56.112] => (item=project_name = service)
changed: [192.168.56.112] => (item=username = neutron)
changed: [192.168.56.112] => (item=password = admin123)
changed: [192.168.56.112] => (item=service_metadata_proxy = true)
changed: [192.168.56.112] => (item=metadata_proxy_shared_secret = admin123)

TASK [Cinder : Installing Cinder (Ubuntu)] ****
*
changed: [192.168.56.112]

TASK [Cinder : Configure Cinder] ****
*
ok: [192.168.56.112]

TASK [Cinder : Configure Cinder] ****
*
ok: [192.168.56.112]

TASK [Cinder : Configure Cinder] ****
*
ok: [192.168.56.112]
```

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 19:14 •
rio@Workstation: ~/hoa15
File Edit View Search Terminal Help
TASK [Cinder : Configure Cinder] ****
*
ok: [192.168.56.112]

TASK [Cinder : Configure Cinder] ****
*
ok: [192.168.56.112]

TASK [Cinder : Configure Cinder] ****
*
changed: [192.168.56.112] => (item=www_authenticate_uri = http://controller:5000)
changed: [192.168.56.112] => (item=auth_url = http://controller:5000)
changed: [192.168.56.112] => (item=memcached_servers = controller:11211)
changed: [192.168.56.112] => (item=auth_type = password)
changed: [192.168.56.112] => (item=project_domain_name = default)
changed: [192.168.56.112] => (item=user_domain_name = default)
changed: [192.168.56.112] => (item=project_name = service)
changed: [192.168.56.112] => (item=username = cinder)
changed: [192.168.56.112] => (item=password = pass123)

TASK [Cinder : Configure Cinder] ****
*
changed: [192.168.56.112]

TASK [Cinder : Configure Cinder] ****
*
changed: [192.168.56.112]
```

```
Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Mon 19:14 •
rio@Workstation: ~/hoa15
File Edit View Search Terminal Help
changed: [192.168.56.112] => (item=project_domain_name = default)
changed: [192.168.56.112] => (item=user_domain_name = default)
changed: [192.168.56.112] => (item=project_name = service)
changed: [192.168.56.112] => (item=username = cinder)
changed: [192.168.56.112] => (item=password = pass123)

TASK [Cinder : Configure Cinder] ****
*
changed: [192.168.56.112]

TASK [Cinder : Configure Cinder] ****
*
changed: [192.168.56.112]

TASK [Cinder : Populate the Database] ****
*
changed: [192.168.56.112]

TASK [Cinder : Configure Cinder] ****
*
changed: [192.168.56.112]

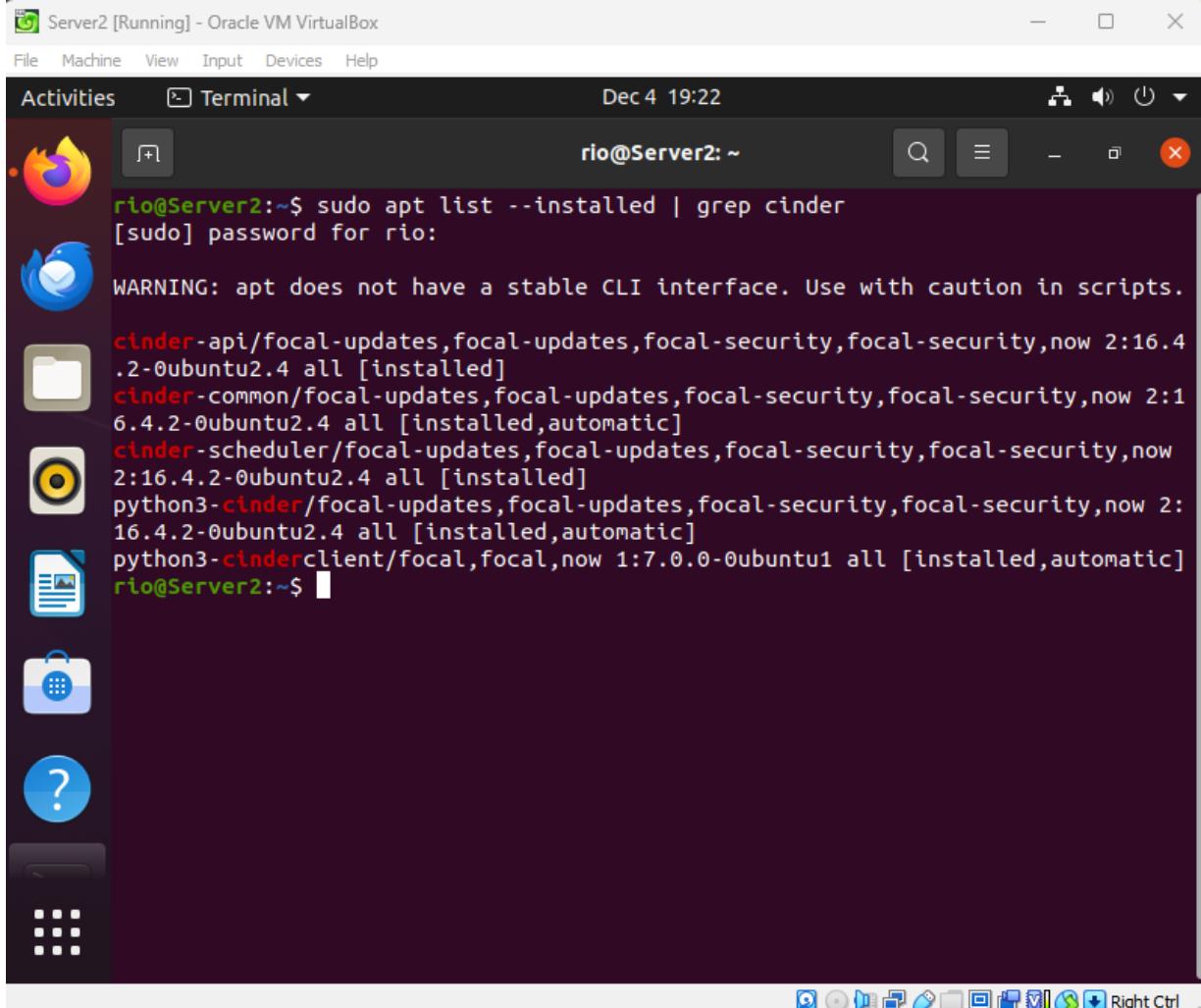
PLAY RECAP ****
*
192.168.56.112      : ok=33   changed=23   unreachable=0    failed=0
skipped=0    rescued=0    ignored=0

rio@Workstation:~/hoa15$ tree
```

5. Output (screenshots and explanations)

Output verification:

- Cinder



The screenshot shows a terminal window titled "Server2 [Running] - Oracle VM VirtualBox". The terminal session is for user "rio" on "Server2" at the prompt "rio@Server2: ~". The date and time displayed are "Dec 4 19:22". The terminal window has a dark background with light-colored text. It displays the following command and its output:

```
rio@Server2:~$ sudo apt list --installed | grep cinder
[sudo] password for rio:
WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

cinder-api/focal-updates,focal-updates,focal-security,focal-security,now 2:16.4
.2-0ubuntu2.4 all [installed]
cinder-common/focal-updates,focal-updates,focal-security,focal-security,now 2:1
6.4.2-0ubuntu2.4 all [installed,automatic]
cinder-scheduler/focal-updates,focal-updates,focal-security,focal-security,now 2:
2:16.4.2-0ubuntu2.4 all [installed]
python3-cinder/focal-updates,focal-updates,focal-security,focal-security,now 2:
16.4.2-0ubuntu2.4 all [installed,automatic]
python3-cinderclient/focal,focal,now 1:7.0.0-0ubuntu1 all [installed,automatic]
rio@Server2:~$
```

- Neutron

```
cinder-common/focal-updates,focal-updates,focal-security,focal-security,now 2:1  
6.4.2-0ubuntu2.4 all [installed,automatic]  
cinder-scheduler/focal-updates,focal-updates,focal-security,focal-security,now  
2:16.4.2-0ubuntu2.4 all [installed]  
python3-cinder/focal-updates,focal-updates,focal-security,focal-security,now 2:  
16.4.2-0ubuntu2.4 all [installed,automatic]  
python3-cinderclient/focal,focal,now 1:7.0.0-0ubuntu1 all [installed,automatic]  
rio@Server2:~$ sudo apt list --installed | grep neutron  
  
WARNING: apt does not have a stable CLI interface. Use with caution in scripts.  
  
neutron-common/focal-updates,focal-updates,now 2:16.4.2-0ubuntu6.3 all [install  
ed,automatic]  
neutron-dhcp-agent/focal-updates,focal-updates,now 2:16.4.2-0ubuntu6.3 all [ins  
talled]  
neutron-metadata-agent/focal-updates,focal-updates,now 2:16.4.2-0ubuntu6.3 all  
[installed]  
neutron-openvswitch-agent/focal-updates,focal-updates,now 2:16.4.2-0ubuntu6.3 a  
ll [installed]  
neutron-plugin-ml2/focal-updates,focal-updates,now 2:16.4.2-0ubuntu6.3 all [ins  
talled]  
neutron-server/focal-updates,focal-updates,now 2:16.4.2-0ubuntu6.3 all [install  
ed]  
python3-neutron-lib/focal,focal,now 2.3.0-0ubuntu1 all [installed,automatic]  
python3-neutron/focal-updates,focal-updates,now 2:16.4.2-0ubuntu6.3 all [instal  
led,automatic]  
python3-neutronclient/focal,focal,now 1:7.1.1-0ubuntu1 all [installed,automatic]  
]  
rio@Server2:~$
```

Github link: <https://github.com/RioMariee/hoa15.git>

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services

- Neutron, Horizon, and Cinder stand as crucial pillars within the intricate framework of OpenStack, each with a specialized role in shaping the dynamics of cloud infrastructure. Neutron, the maestro of networking services, takes charge of configuring networks and managing interfaces for virtual machines, ensuring a seamless flow of communication within the OpenStack environment. Meanwhile, Horizon steps into the spotlight as the web-based dashboard maestro, providing users with an aesthetically pleasing interface to navigate and govern OpenStack resources. Its prowess lies in simplifying intricate tasks like launching instances, configuring networks, and handling

storage management, offering users an effortlessly intuitive platform. Enter Cinder, the unsung hero of block storage services, orchestrating the management of block-level storage volumes in OpenStack. With the ability to create, attach, and detach volumes to and from instances, Cinder plays a pivotal role in crafting scalable and enduring storage solutions for virtual machines. In essence, the collaborative efforts of Neutron, Horizon, and Cinder forge a holistic suite of services, with a keen focus on networking, user interface finesse, and block storage prowess, all aimed at streamlining the efficient deployment, management, and utilization of resources within the intricate realm of the OpenStack framework.

Conclusions:

To conclude, the whole deal of creating a workflow to slap OpenStack onto our system using Ansible as our Infrastructure as Code (IaC) has been very eye-opening. It wasn't just about wrestling with OpenStack deployment intricacies; it was also a shout-out to the mighty IaC for making infrastructure processes a breeze. Thanks to Ansible, installing OpenStack went from a messy ordeal to a smoothly choreographed routine, making things snappier and easier to repeat. Bringing IaC into the mix isn't just about simplifying the deployment hustle – it's laying down a solid groundwork for keeping our infrastructure game strong and consistent. As we kick back and mull over this project, the knowledge we gained from pulling off a slick OpenStack installation dance with Ansible is a nod to the idea that diving into IaC is the real deal in today's infrastructure game. It's like our secret weapon for flexing agility, reliability, and future scalability in the ever-changing world of cloud computing.