LAB 6

Openstack Training Labs

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- Note: screenshots need to be clear and good-looking; submissions must be in PDF format.

1. **OpenStack overview**

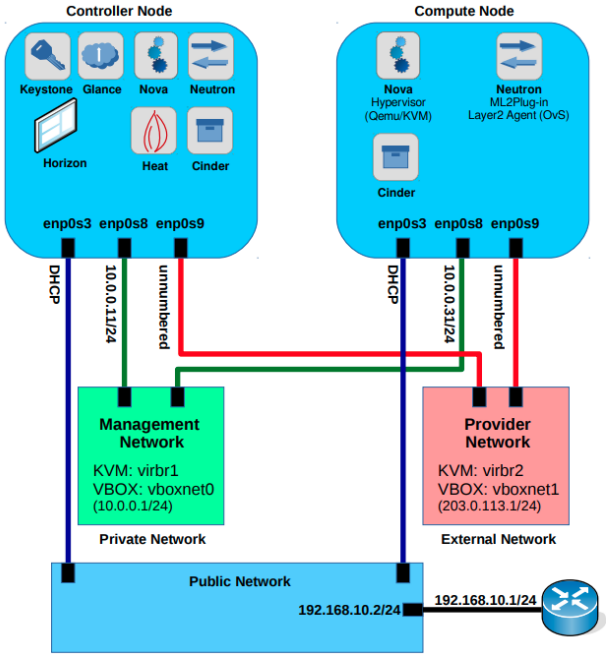
   Please take a visit at OpenStack home page

   Openstack installation guide

2. **Setup OpenStack training labs on VirtualBox**

Deploying OpenStack could be really challenging for beginners. OpenStack Training labs would provide a simple automated way to have a multi-node OpenStack deployment on VirtualBox/KVM virtual machines. Labs scripts provide an easy way to set up an OpenStack cluster on your computer which should be a good starting point for beginners to learn OpenStack, and for advanced users to test out new features, check out different capabilities of OpenStack.

Below figure demonstrates the architecture of the OpenStack training laboratory. There are two nodes (e.g., controller node and compute node) each with three networks. A *Public network* attaching the nodes to the Internet, a *Management network* for internal communications between entities and finally a *Provider network* to provide an interface for VMs.



In this lab, you will learn how to deploy an OpenStack environment using VirtualBox virtual machines on your computer.

Requirements:

- Hardware: at least 8G RAM and 10G hard disk.
- Dependencies: VirtualBox on any supported platform

Please follow either 2.1 or 2.2 to setup your OpenStack training lab

2.1. Building your OpenStack from the scratch

You can build your OpenStack training lab by following this tutorial (https://wiki.openstack.org/wiki/Documentation/training-labs#Building_the_cluster). The building steps take several hours, please be patient.

2.2. Using pre-built VMs

Another way to set up your OpenStack training lab is to use provided OVA files. The files are pre-built VirtualBox VMs; therefore you need to install VirtualBox to your computer first, then import the VMs into VirtualBox.

Note: you need to create 2 host-only networks (File/Preferences/Host network manager)/Host-only network) before starting the VMs.

- vboxnet0: 10.0.0.0/24, DHCP is enabled
- vboxnet1: 203.0.113.0/24

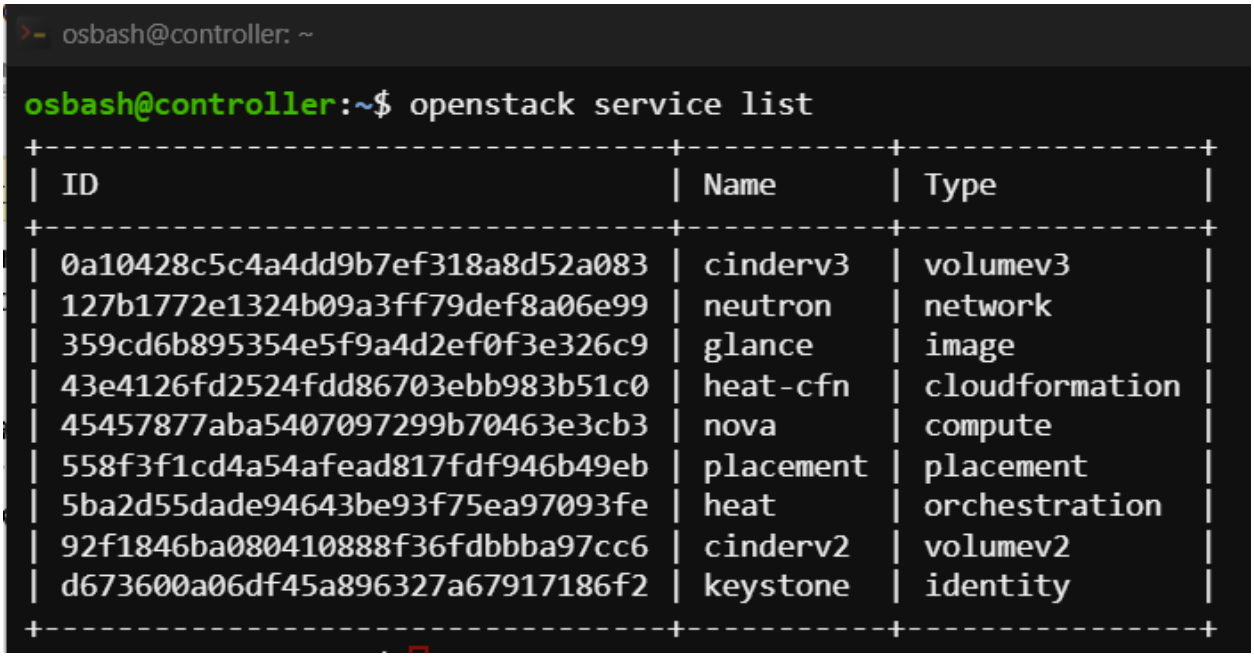
3. Using the cluster

By default, the cluster is built in headless mode. As such, the method to access the cluster nodes is via SSH. The localhost's TCP ports 2230 through 2232 are forwarded to the controller node and compute node, respectively. Access the shell prompts on the cluster nodes as follows. The username is *osbash* and the password is also *osbash*. To become root, use sudo.

```
ssh -p 2230 osbash@localhost   # controller node
ssh -p 2232 osbash@localhost   # compute node
```

From controller's shell, show installed Openstack services (take a screenshot)

```
. admin-openrc.sh
openstack service list
```



4. Using OpenStack services via Horizon

Horizon is also accessed via a forwarded port. On your computer, use this URL to access the GUI:

http://127.0.0.1:8888/horizon

Two accounts are configured: *admin/admin_user_secret* and *demo/demo_user_pass*. The default domain required for login is *"default"*.

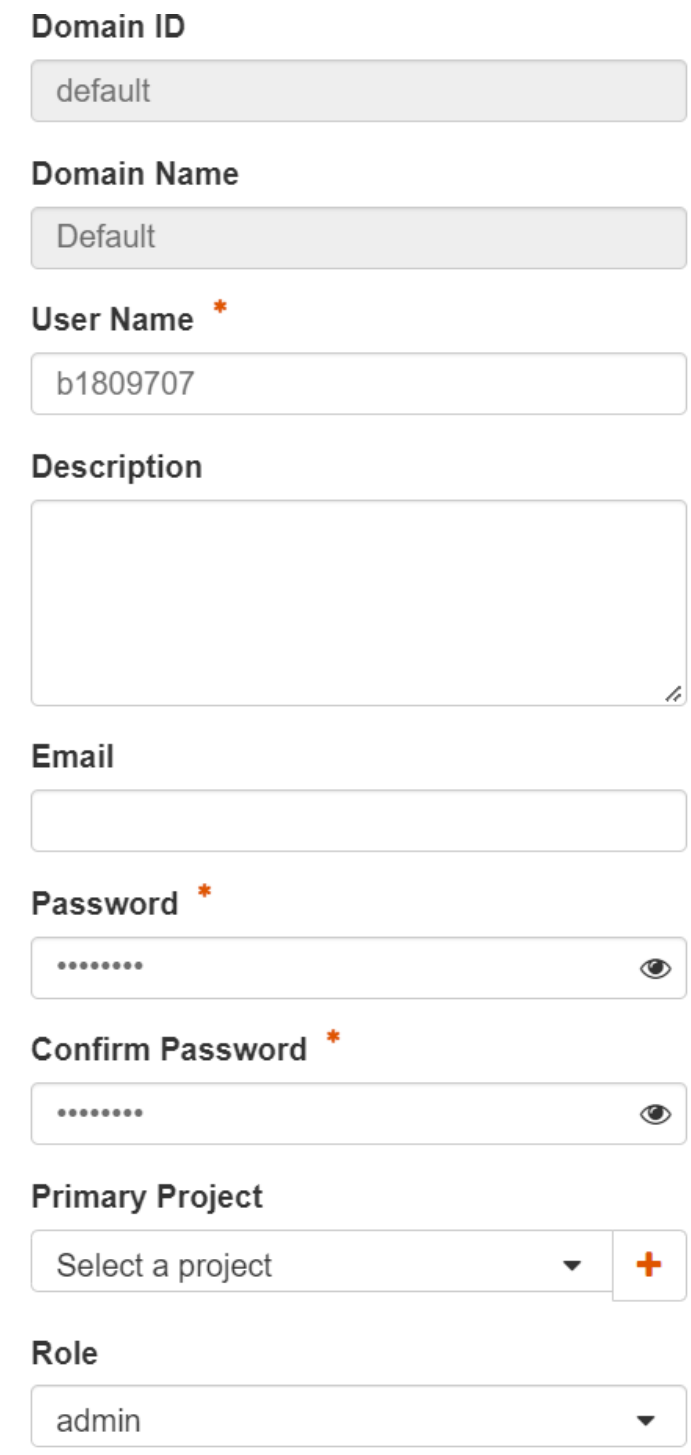
4.1. Creating user, project, network, instance

Using Horizon GUI, create:

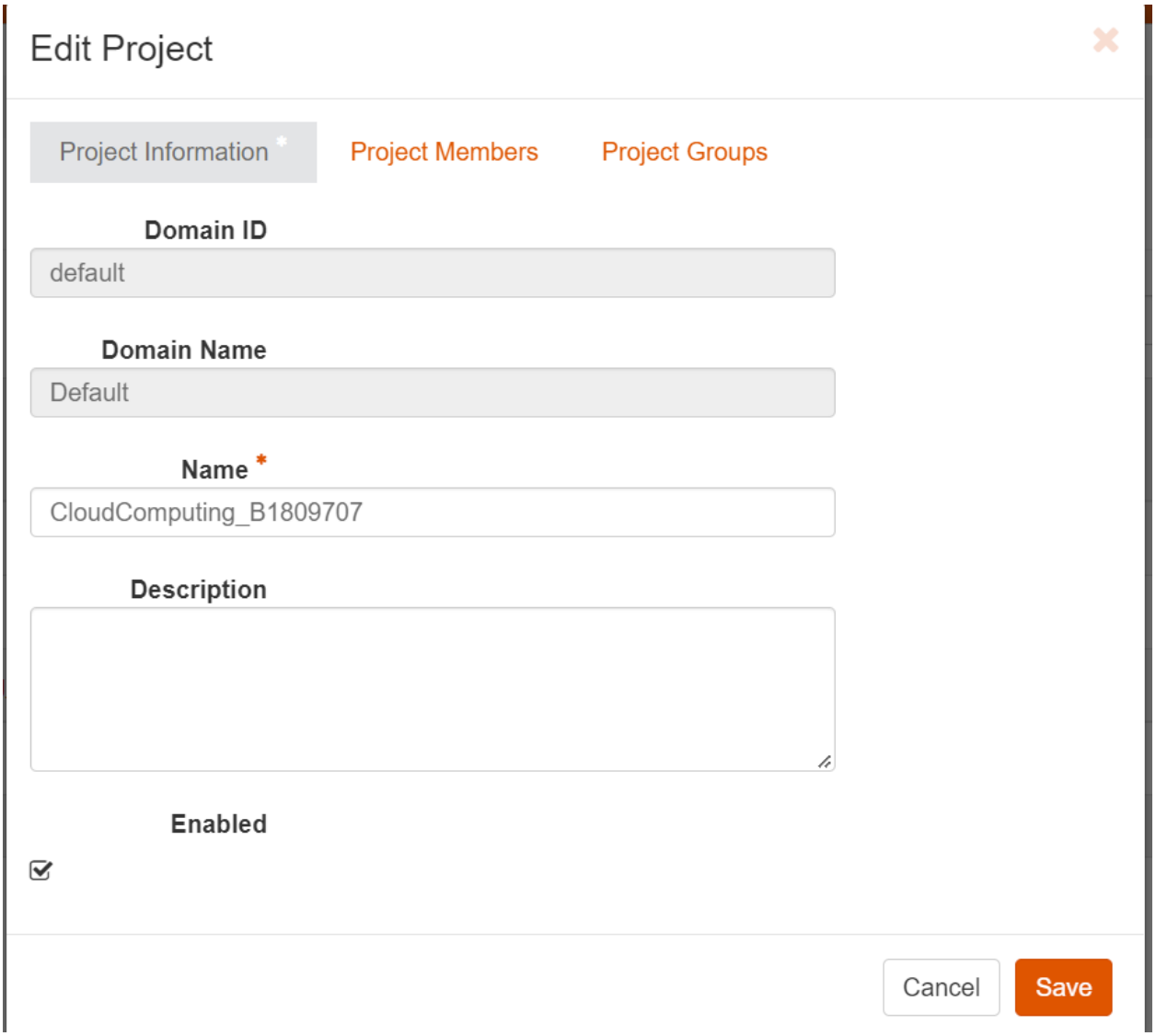
Note: If you get an error <Could not find default role "user" in Keystone>, please create the role.

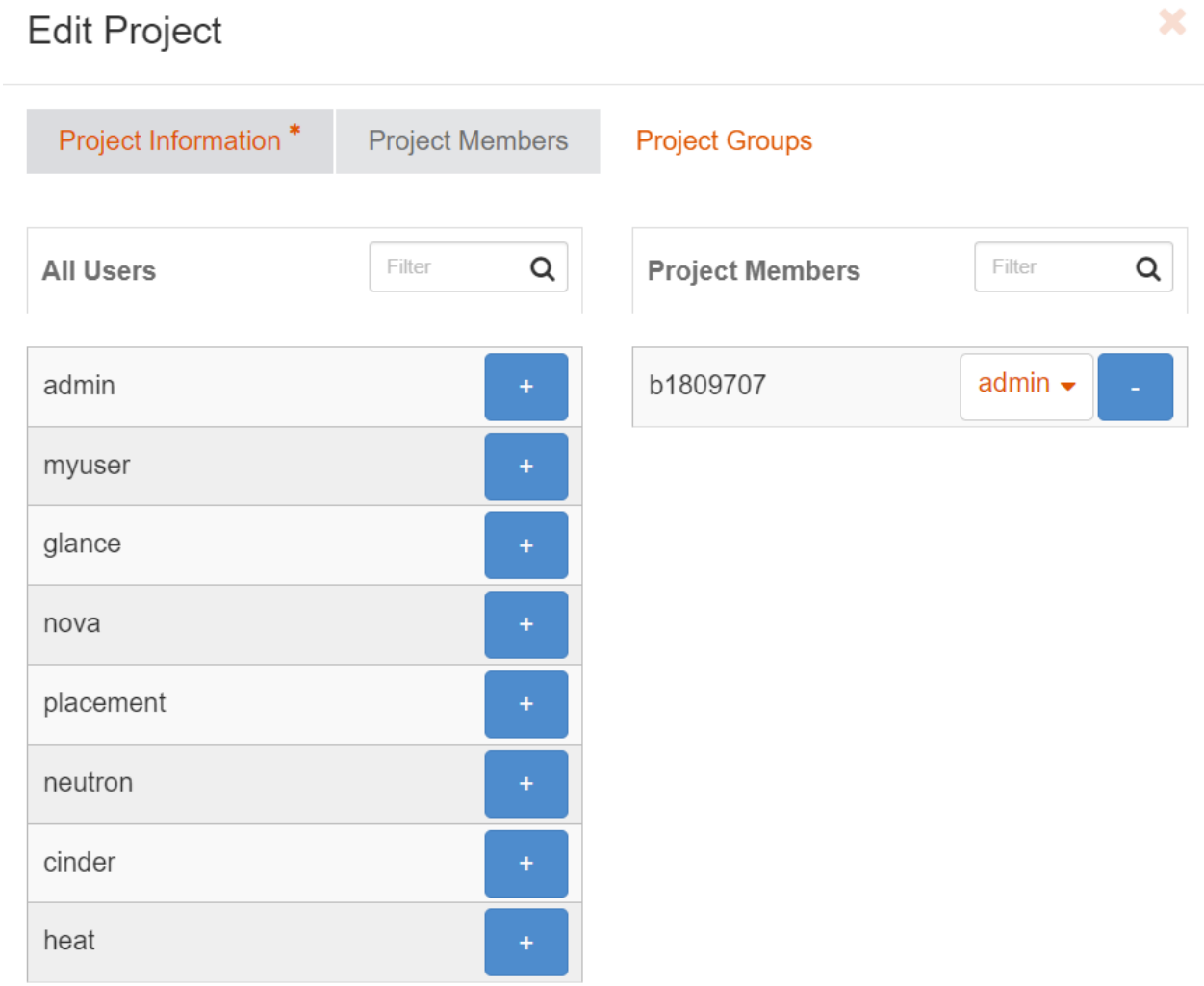
```
[root@controller openstack-dashboard]# openstack role create user
+-------------+----------------------------------+
| Field       | Value                            |
+-------------+----------------------------------+
| description | None                             |
| domain_id   | None                             |
| id          | 09eb40106d534afca8d34694327ae1f6 |
| name        | user                             |
| options     | {}                               |
+-------------+----------------------------------+
[root@controller openstack-dashboard]#
```

4.1.1. A user with username is <Your student ID>

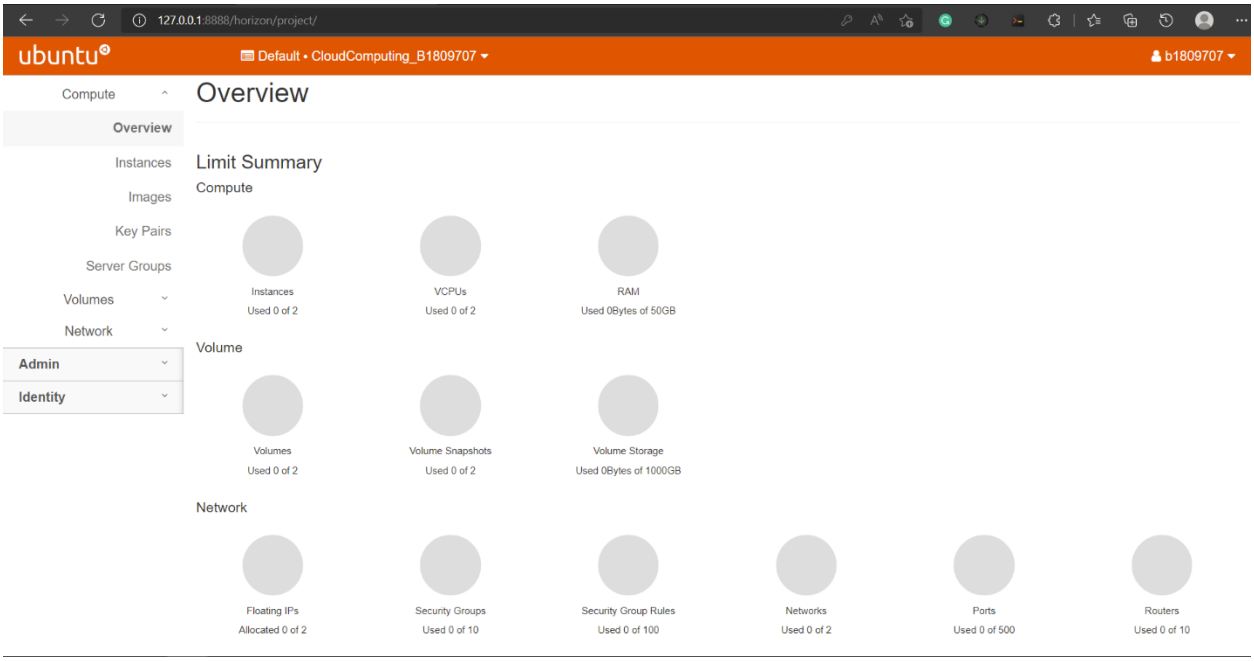


4.1.2. A project with project name is <CloudComputing_Your student ID>, add the user in 4.1.1 to the project whose role is "admin". (take a screenshot)

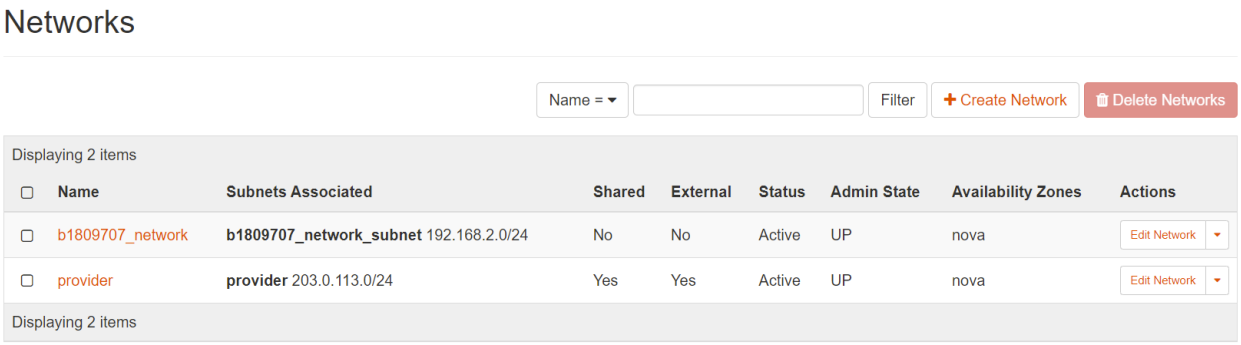



Edit Project
Project Information *
Project Members
Project Groups
All Users
Filter
admin
myuser
glance
nova
placement
neutron
cinder
heat
Project Members
Filter
b1809707
admin
-

4.1.3. Modify the quotas of the project: instances value is 2 and network value is 2



4.1.4. Re-login to OpenStack using the user in 4.1.1, then create a network, router connects the network and external network, flavor, and an instance. (take a screenshot)



Router_1

Clear Gateway

Overview | Interfaces | Static Routes

+ Add Interface | Delete Interfaces

Displaying 2 items

Name	Fixed IPs	Status	Type	Admin State	Actions
(04d7ae02-ddad)	• 192.168.2.1	Active	Internal Interface	UP	Delete Interface
(61b0124e-d2a3)	• 203.0.113.104	Active	External Gateway	UP	Delete Interface

Displaying 2 items

Flavors

Filter | + Create Flavor | Delete Flavors

Displaying 1 item

Flavor Name	VCPUs	RAM	Root Disk	Ephemeral Disk	Swap Disk	RX/TX factor	ID	Public	Metadata	Actions
C2R2H4	2	512MB	4GB	0GB	0MB	1.0	95e22e87-0ba3-420a-bd89-9098ffc71a76	Yes	No	Update Metadata

Displaying 1 item

Instances

Instance ID = | Filter | Launch Instance (Quota exceeded) | Delete Instances | More Actions

Displaying 1 item

Instance Name	Image Name	IP Address	Flavor	Key Pair	Status	Availability Zone	Task	Power State	Age	Actions
B1809707_cirros	cirros		C2R2H4	-	Error	nova	None	No State	1 minute	Edit Instance

Displaying 1 item

---END---