Ex.No.14	Study on OpenStack

AIM:

To study openstack by creating a private cloud and configuring a VM.

PROCEDURE:

Private cloud refers to a model of cloud computing where IT services are provisioned over private IT infrastructure for the dedicated use of a single organization. A private cloud is usually managed via internal resources. OpenStack is a cloud operating system that controls large pools of compute, storage, and networking resources throughout a datacentre, all managed through a dashboard that gives administrators control while empowering their users to provision resources through a web interface.

System Requirements:

Operating system:

Ubuntu

• Ubuntu 16.04 LTS (Xenial Xerus) CentOS (support is experimental) •

Centos 7, fully updated.

Processor- 1,

Memory -4 GB

Storage- 10 GB

Add your user

We need to add a user to install DevStack. (if you created a user during install you can skip this step and just give the user sudo privileges below)

$ sudo useradd -s /bin/bash -d /opt/stack -m stack

Since this user will be making many changes to your system, it will need to have

sudo privileges:

```
$ apt-get install sudo -y || yum install -y sudo
$ echo "stack ALL=(ALL) NOPASSWD: ALL" >> /etc/sudoers
```

Download DevStack

We'll grab the latest version of DevStack via https:

```
$ sudo apt-get install git -y || sudo yum install -y git
$ git clone https://git.openstack.org/openstack-dev/devstack $
cd devstack
```

Run DevStack

Now to configure stack.sh. DevStack includes a sample in devstack/samples/local.conf. Create local.conf as shown below to do the following:

- Set FLOATING_RANGE to a range not used on the local network, i.e. 192.168.1.224/27. This configures IP addresses ending in 225-254 to be used as floating IPs.
- Set FIXED_RANGE and FIXED_NETWORK_SIZE to configure the internal address space used by the instances.
- Set FLAT_INTERFACE to the Ethernet interface that connects the host to your local network. This is the interface that should be configured with the static IP address mentioned above.
- Set the administrative password. This password is used for the **admin** and **demo** accounts set up as OpenStack users.
- Set the MySQL administrative password. The default here is a random hex

string which is inconvenient if you need to look at the database directly for anything.

- Set the RabbitMQ password.
- Set the service password. This is used by the OpenStack services (Nova, Glance, etc) to authenticate with Keystone.

local.conf should look something like this:

[[local|localrc]]

FLOATING_RANGE=192.168.1.

224/27

FIXED_RANGE=10.11.12.0/24

FIXED_NETWORK_SIZE=256

FLAT_INTERFACE=eth0

ADMIN_PASSWORD=supersecret

DATABASE_PASSWORD=iheartdatabases

RABBIT_PASSWORD=flopsymopsy

SERVICE_PASSWORD=iheartksl

Run DevStack:

$ ./stack.sh

A seemingly endless stream of activity ensues. When complete you will see a summary of stack.sh's work, including the relevant URLs, accounts and passwords to poke at your shiny new OpenStack.

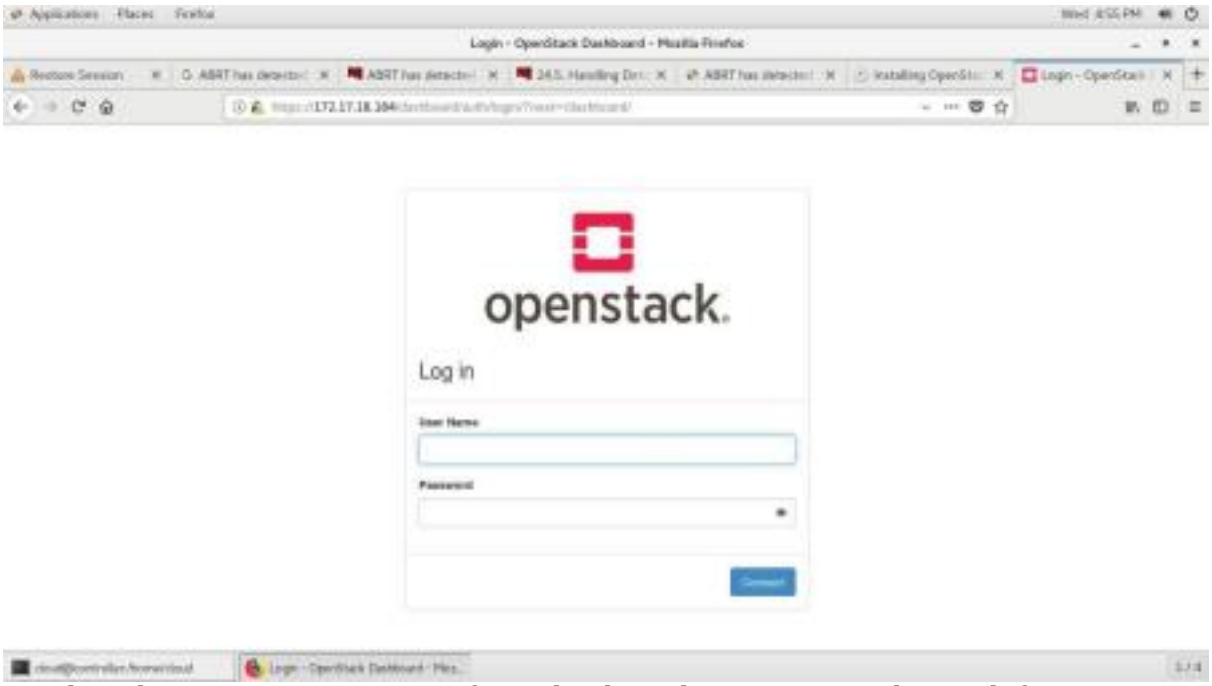
Using OpenStack

At this point you should be able to access the dashboard from other computers on the local network. In this example that would be http://192.168.1.201/ for the dashboard (aka Horizon). Launch VMs and if you give them floating IPs and

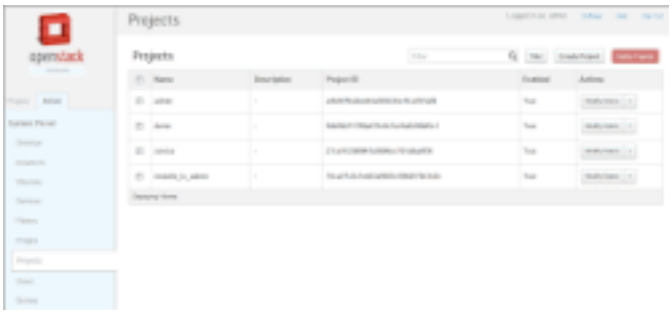
security group access those VMs will be accessible from other machines on your network.

Procedure to Launch an instance in openstack

1. Log in to the dashboard.



2. Select the appropriate project from the drop down menu at the top left.



1. On the Project tab, open the Compute tab and click Instances category.
   The dashboard shows the instances with its name, its private and floating IP addresses, size, status, task, power state, and so on.

2. Click Launch Instance.

3. In the Launch Instance dialog box, specify the

following values: Details tab

Instance Name
Assign a name to the virtual machine.

Description
You can assign a brief description of the virtual

machine. Availability Zone
By default, this value is set to the availability zone given by the cloud provider (for example, us-west or apac-south). For some cases, it could be nova. To launch multiple instances, enter a value greater than 1. The default is 1.

Source tab

Boot from image - If you choose this option, a new field for Image Name displays. You can select the image from the list.
Boot from snapshot - If you choose this option, a new field for Instance Snapshot displays. You can select the snapshot from the list.

Boot from volume - If you choose this option, a new field for Volume displays. You can select the volume from the list.

Boot from image (creates a new volume) - With this option, you can boot from an image and create a volume by entering the Device Size and Device Name for your volume. Click the Delete Volume on Instance Delete option to delete the volume on deleting the instance.

Boot from volume snapshot (creates a new volume) - Using this option, you can boot from a volume snapshot and create a new volume by choosing Volume Snapshot from a list and adding a Device Name for your volume. Click the Delete Volume on Instance Delete option to delete the volume on deleting the instance.

Image Name - This field changes based on your previous selection. If you have chosen to launch an instance using an image, the Image Name field displays. Select the image name from the dropdown list.

Instance Snapshot - This field changes based on your previous selection. If you have chosen to launch an instance using a snapshot, the Instance Snapshot field displays. Select the snapshot name from the dropdown list.

Volume - This field changes based on your previous selection. If you have chosen to launch an instance using a volume, the Volume field displays. Select the volume name from the dropdown list. If you want to delete the volume on instance delete, check the Delete Volume on Instance Delete option.

Flavor tab

- Specify the size of the instance to launch.

Networks tab

- Selected Networks
- To add a network to the instance, click the + in the Available field.

Network Ports tab

- Ports
- Activate the ports that you want to assign to the instance.

Security Groups tab

- Security Groups
- Activate the security groups that you want to assign to the instance. • Security groups are a kind of cloud firewall that define which incoming network traffic is forwarded to instances.
- If you have not created any security groups, you can assign only the default security group to the instance.

Key Pair tab

• Key Pair

• Specify a key pair.

• If the image uses a static root password or a static key set (neither is recommended), you do not need to provide a key pair to launch the instance. • Configuration tab

• Customization Script Source

• Specify a customization script that runs after your instance launches.

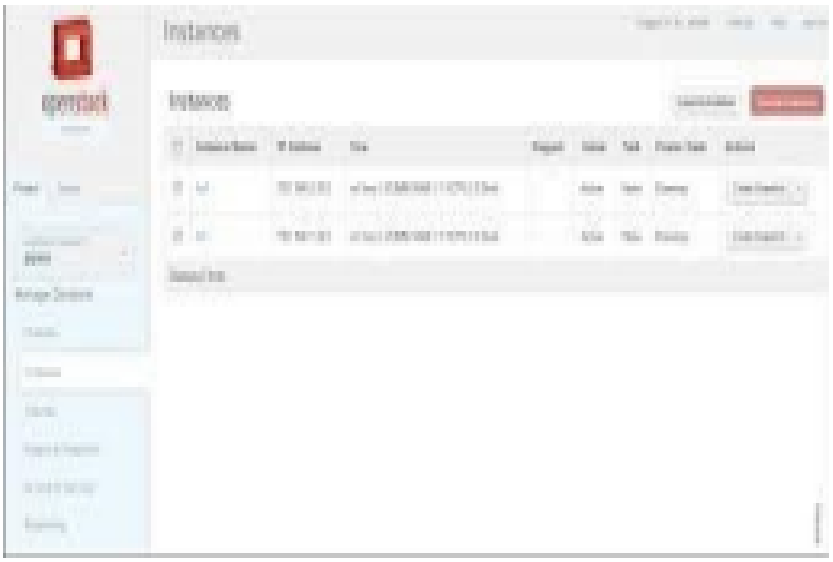
Metadata tab

• Available Metadata

• Add Metadata items to your instance.

Click Launch Instance.

The instance starts on a compute node in the cloud.



RESULT:

Hence the creation of a private cloud using openstack and configure VM