

Aim: Implementation of OpenStack with user and private network creation.

STEPS:

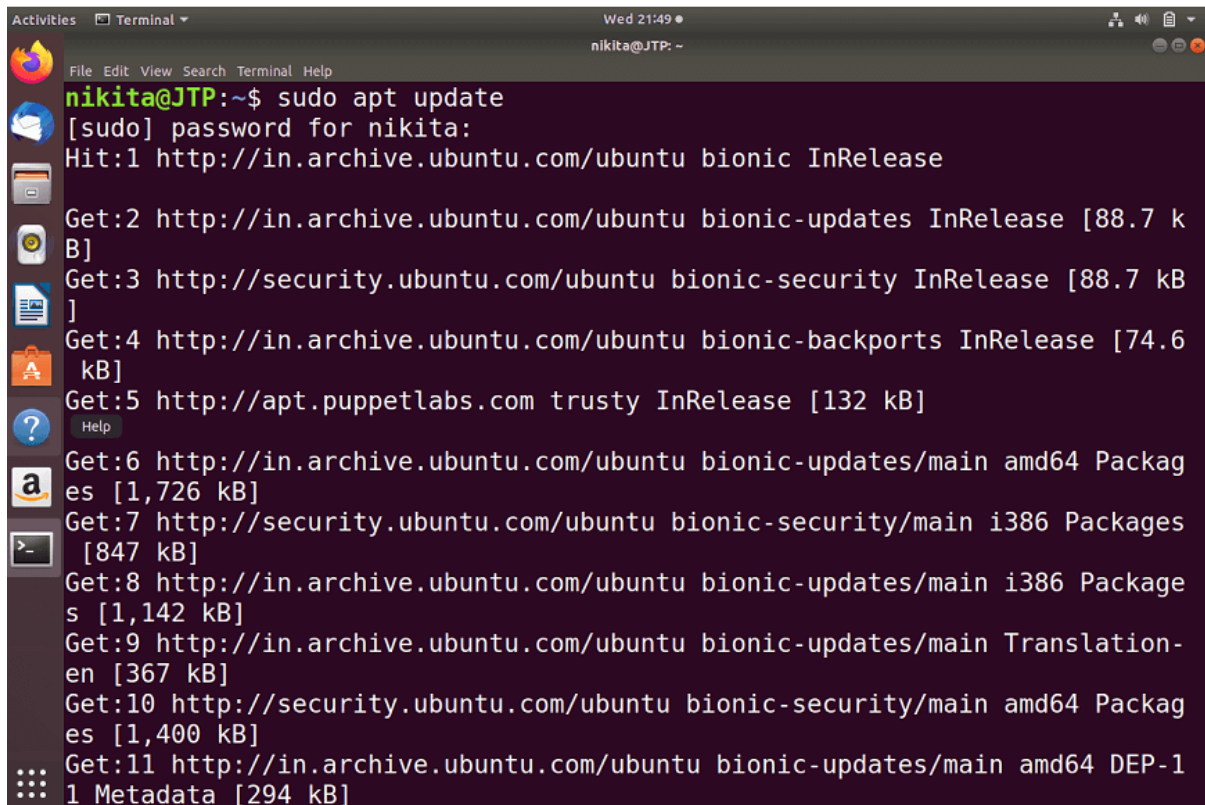
Step 1: Update Ubuntu System

Open the terminal and run the following command to ensure that the system is up to date :

\$ sudo apt update **OR**

\$ sudo apt -y upgrade

Sample Output :



Reboot the system after running the above command. To reboot the system, run the following command :

\$ sudo reboot

or

\$ init 6

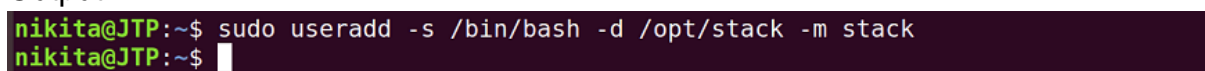
Step 2: Create Stack User

It is important that the devstack must run as a regular user (non-root user) with the sudo enabled.

To keep this note in mind, let's create a new user with the name "stack" and assign the sudo permissions or privileges. To create a stack user, run the following command in your terminal:

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

Output :



Now, to assign the sudo privileges to the stack user, run the following command :

\$ echo "stack ALL=(ALL) NOPASSWD: ALL" | sudo tee /etc/sudoers.d/stack

Output :

```
nikita@JTP:~$ echo "stack ALL=(ALL) NOPASSWD:ALL" | sudo tee /etc/sudoers.d/stack
stack ALL=(ALL) NOPASSWD:ALL
nikita@JTP:~$
```

You can switch to the 'stack' user by running the following command:

```
$ sudo su - stack
```

Output :

```
nikita@JTP:~$ sudo su - stack
stack@JTP:~$
```

```
nmfc@nmfc-virtual-machine:~/Desktop$ echo "stack1 AL=(ALL) NOPASSWD:ALL" | sudo
tee /etc/sudoers.d/stack
[sudo] password for nmfc:
stack1 AL=(ALL) NOPASSWD:ALL
nmfc@nmfc-virtual-machine:~/Desktop$ sudo apt install git -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  git-man liberror-perl
Suggested packages:
  git-daemon-run | git-daemon-sysvinit git-doc git-email git-gui gitk gitweb
  git-cvs git-mediawiki git-svn
The following NEW packages will be installed:
  git git-man liberror-perl
0 upgraded, 3 newly installed, 0 to remove and 563 not upgraded.
```

Step 3: Install the Git

In Most of the Ubuntu systems, git comes by default. But if git is missing on your system, then install it by running the following command:

```
$ sudo apt install git -y
```

Sample Output :

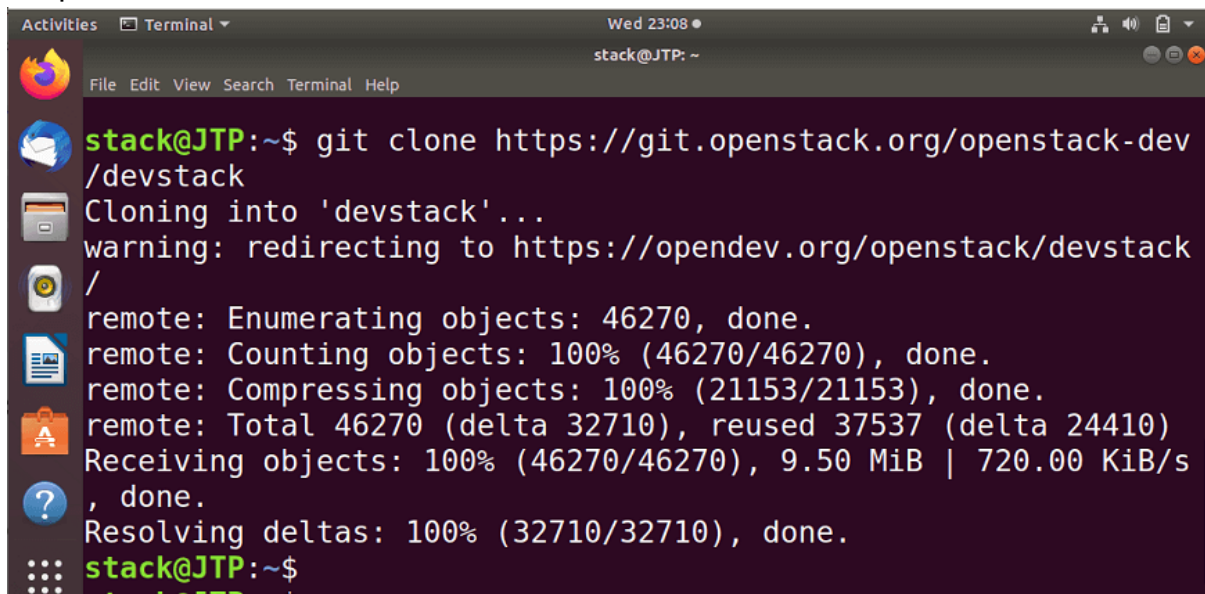
```
Activities Terminal
Wed 23/03
stack@JTP:~
stack@JTP:~$ sudo apt install git -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libllvm9 linux-headers-5.3.0-28 linux-headers-5.3.0-28-generic linux-image-5.3.0-28-generic
  linux-modules-5.3.0-28-generic linux-modules-extra-5.3.0-28-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  git-man liberror-perl
Suggested packages:
  git-daemon-run | git-daemon-sysvinit git-doc git-el git-email git-gui gitk gitweb git-cvs
  git-mediawiki git-svn
The following NEW packages will be installed:
  git git-man liberror-perl
0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.
Need to get 4,741 kB of archives.
After this operation, 34.0 MB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 liberror-perl all 0.17025-1 [22.8 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu bionic-updates/main amd64 git-man all 1:2.17.1-1ubuntu0.7 [804 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu bionic-updates/main amd64 git amd64 1:2.17.1-1ubuntu0.7 [3,915 kB]
Fetched 4,741 kB in 58s (81.9 kB/s)
Selecting previously unselected package liberror-perl.
(Reading database ... 205033 files and directories currently installed.)
Preparing to unpack .../liberror-perl_0.17025-1_all.deb ...
Unpacking liberror-perl (0.17025-1) ...
```

Step 4: Download OpenStack

Once you install the git, use the git command to download the DevStack from Github.

```
$ git clone https://git.openstack.org/openstack-dev/devstack
```

Output :

A terminal window titled 'stack@JTP: ~' showing the output of the command 'git clone https://git.openstack.org/openstack-dev/devstack'. The output shows the cloning process, including a warning about redirecting to 'https://opendev.org/openstack/devstack/', and the successful completion of cloning 46270 objects.

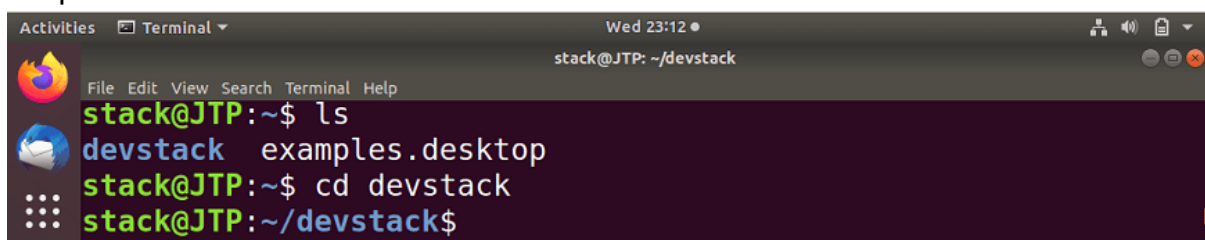
```
stack@JTP:~$ git clone https://git.openstack.org/openstack-dev/devstack
Cloning into 'devstack'...
warning: redirecting to https://opendev.org/openstack/devstack/
remote: Enumerating objects: 46270, done.
remote: Counting objects: 100% (46270/46270), done.
remote: Compressing objects: 100% (21153/21153), done.
remote: Total 46270 (delta 32710), reused 37537 (delta 24410)
Receiving objects: 100% (46270/46270), 9.50 MiB | 720.00 KiB/s
, done.
Resolving deltas: 100% (32710/32710), done.
stack@JTP:~$
```

Step 5: Create a DevStack Configuration File

First of all, go to the devstack directory by running the following command :

```
$ cd devstack
```

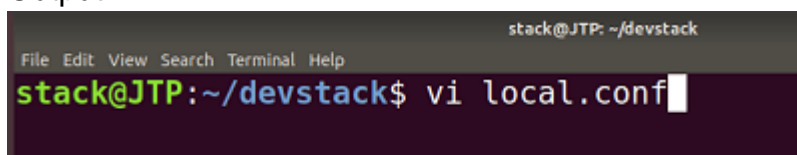
Output :

A terminal window titled 'stack@JTP: ~/devstack' showing the output of the commands 'ls' and 'cd devstack'. The 'ls' command shows 'devstack' and 'examples.desktop' in the current directory. The 'cd devstack' command changes the directory to 'devstack'.

```
stack@JTP:~$ ls
devstack  examples.desktop
stack@JTP:~$ cd devstack
stack@JTP:~/devstack$
```

Now, create a local.conf file in which you have to enter the four passwords and the host IP address :

Output :

A terminal window titled 'stack@JTP: ~/devstack' showing the command 'vi local.conf' being entered at the prompt.

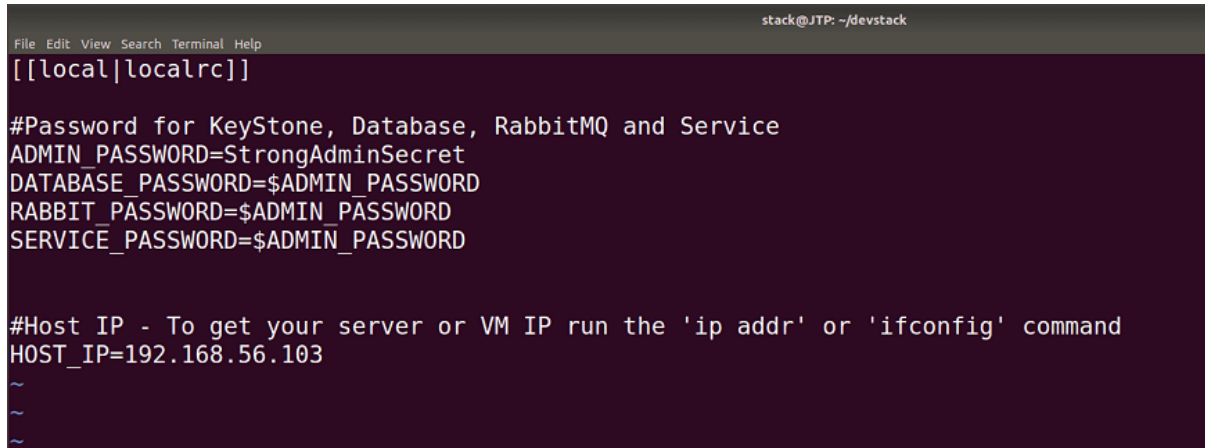
```
stack@JTP:~/devstack$ vi local.conf
```

Copy the following line of content in the file :

```
[[local|localrc]]
```

```
# Password for KeyStone, Database, RabbitMQ and Service
ADMIN_PASSWORD=StrongAdminSecret
DATABASE_PASSWORD=$ADMIN_PASSWORD
RABBIT_PASSWORD=$ADMIN_PASSWORD
SERVICE_PASSWORD=$ADMIN_PASSWORD
```

```
# Host IP - To get your Server or VM IP, run the 'ip addr' or 'ifconfig' command
HOST_IP=192.168.56.103
```

Output :

```
stack@JTP: ~/devstack
[[local|localrc]]

#Password for Keystone, Database, RabbitMQ and Service
ADMIN_PASSWORD=StrongAdminSecret
DATABASE_PASSWORD=$ADMIN_PASSWORD
RABBIT_PASSWORD=$ADMIN_PASSWORD
SERVICE_PASSWORD=$ADMIN_PASSWORD

#Host IP - To get your server or VM IP run the 'ip addr' or 'ifconfig' command
HOST_IP=192.168.56.103
~
~
~
```

Press the ESC, then wq to save and then exit from the local.conf file.

Here, ADMIN_PASSWORD is the password that we will use to log into the

OpenStack login page. The default username for an OpenStack is 'admin'.

And HOST_IP is the IP address of your system. To get your Server or VM IP, run the 'ifconfig' or 'ip addr' command.

Step 6 : Install OpenStack with DevStack

To install and run the openstack, execute the following command :

```
$ ./stack.sh
```

DevStack will install the following components:

- Compute Service (Nova)
- Image Service- Glance
- Identity Service-Keystone,
- Block Storage Service - Cinder
- OpenStack Dashboard - Horizon
- Network Service - Neutron
- Placement API - Placement
- Object Storage - Swift

The installation will take about 10-20 minutes, mostly depends on your internet speed.

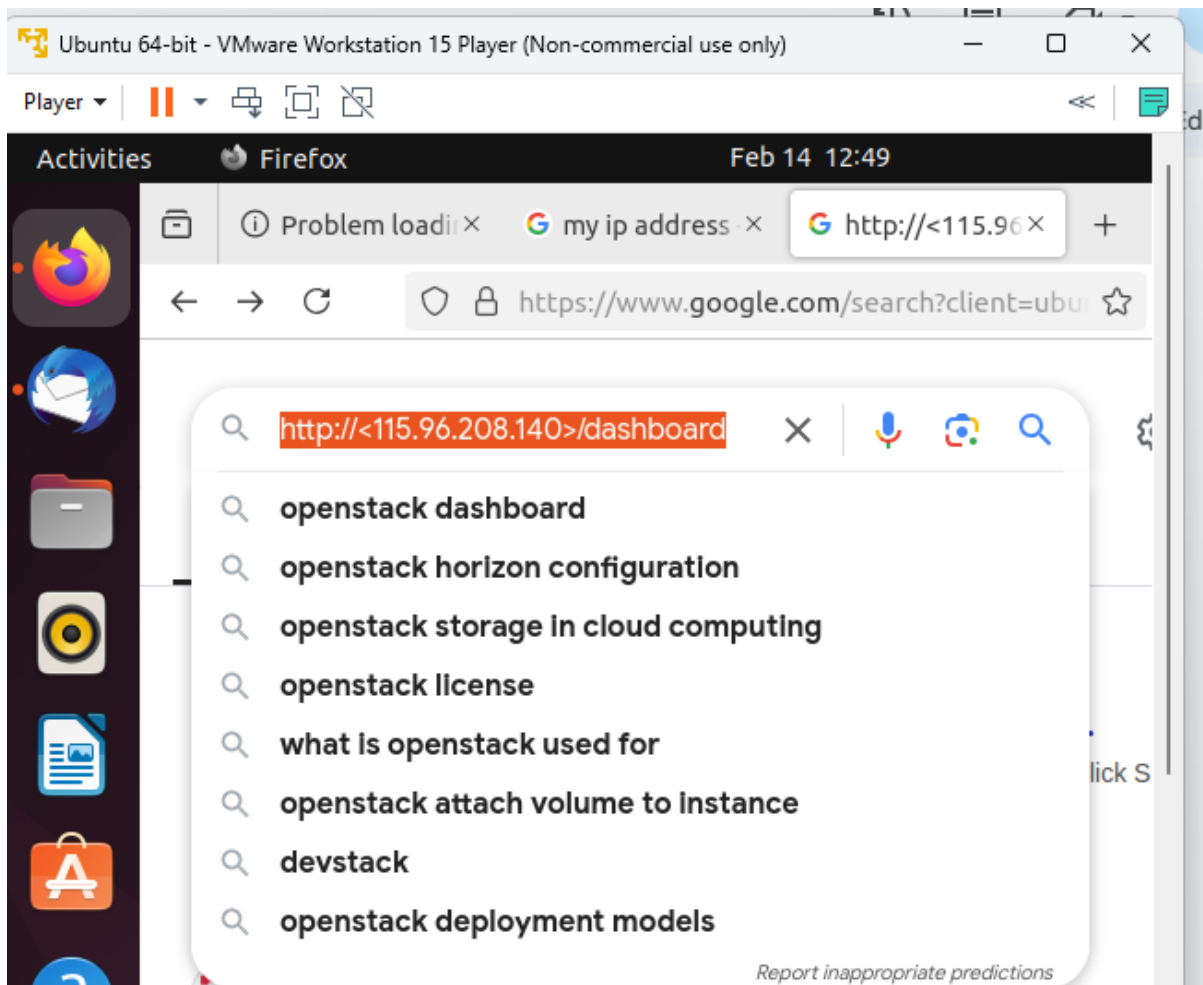
At the very end of the installation, you will get the host's IP address, URL for managing it and the username and password to handle the administrative task.

Step 7: Accessing OpenStack on a browser

Copy the horizon URL given in the installation output and paste it into your browser :

```
http://<IP Address>/dashboard
```

```
nmfc@nmfc-virtual-machine:~/Desktop$ echo "stack1 AL=(ALL) NOPASSWD:ALL" | sudo
tee /etc/sudoers.d/stack
[sudo] password for nmfc:
stack1 AL=(ALL) NOPASSWD:ALL
nmfc@nmfc-virtual-machine:~/Desktop$ sudo apt install git -y
Reading package lists... Done
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  git-cvs git-mediawiki git-svn
The following NEW packages will be installed:
  git git-man liberror-perl
0 upgraded, 3 newly installed, 0 to remove and 563 not upgraded.
```



Conclusion: Hence we have successfully implemented Openstack with user and private network creation.