Practical - 10

Aim: How to Install OpenStack on Ubuntu with DevStack

Minimum Requirements

Before we begin, ensure you have the following minimum prerequisites

1. A fresh Ubuntu 18.04 installation
2. User with sudo privileges
3. 4 GB RAM
4. 2 vCPUs
5. Hard disk capacity of 10 GB
6. Internet connection

Step 1: Update and Upgrade the System

To start off, log into your Ubuntu 18.04 system using SSH protocol and update & upgrade system repositories using the following command.

apt update -y && apt upgrade -y

Sample Output

```
root@ubuntu:/# apt update -y && apt ugrade -y
Hit:1 http://us-central1.gce.archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://us-central1.gce.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://us-central1.gce.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:4 http://us-central1.gce.archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [8570 kB]
Get:5 http://archive.canonical.com/ubuntu bionic InRelease [10.2 kB]
Get:6 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:7 http://us-central1.gce.archive.ubuntu.com/ubuntu bionic/universe Translation-en [4941 kB]
Get:8 http://us-central1.gce.archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [151 kB]
Get:9 http://us-central1.gce.archive.ubuntu.com/ubuntu bionic/multiverse Translation-en [108 kB]
Get:10 http://us-central1.gce.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [627 kB]
```

Next reboot the system using the command.

sudo reboot

OR

init 6

Step 2: Create Stack user and assign sudo priviledge

Best practice demands that devstack should be run as a regular user with sudo privileges. With that in mind, we are going to add a new user called “stack” and assign sudo privileges. To create stack user execute

sudo adduser -s /bin/bash -d /opt/stack -m stack

Next, run the command below to assign sudo privileges to the user

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

Sample Output

```
root@ubuntu:/# sudo useradd -s /bin/bash -d /opt/stack -m stack
root@ubuntu:/#
root@ubuntu:/# echo "stack ALL=(ALL) NOPASSWD: ALL" | sudo tee /etc/sudoers.d/stack
stack ALL=(ALL) NOPASSWD: ALL
root@ubuntu:/#
```

Step 3: Install git and download DevStack

Once you have successfully created the user 'stack' and assigned sudo privileges, switch to the user using the command.

su - stack

In most Ubuntu 18.04 systems, git comes already installed. If by any chance git is missing, install it by running the following command.

sudo apt install git -y

Sample output

```
root@ubuntu:~# su - stack
stack@ubuntu:~$
stack@ubuntu:~$ sudo apt install git -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
git is already the newest version (1:2.17.1-1ubuntu0.4).
The following packages were automatically installed and are no longer required:
  grub-pc-bin libnuma1
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

Using git, clone devstack's git repository as shown.

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

Sample output

```
stack@ubuntu:~$ git clone https://git.openstack.org/openstack-dev/devstack
Cloning into 'devstack'...
warning: redirecting to https://opendev.org/openstack/devstack/
remote: Enumerating objects: 43615, done.
remote: Counting objects: 100% (43615/43615), done.
remote: Compressing objects: 100% (12575/12575), done.
remote: Total 43615 (delta 31152), reused 42370 (delta 30360)
Receiving objects: 100% (43615/43615), 8.27 MiB | 24.61 MiB/s, done.
Resolving deltas: 100% (31152/31152), done.
stack@ubuntu:~$
stack@ubuntu:~$ ls
devstack
stack@ubuntu:~$
```

Step 4: Create devstack configuration file

In this step, navigate to the devstack directory.

cd devstack

Then create a local.conf configuration file.
vim local.conf

Paste the following content
[[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 - get your Server/VM IP address from ip addr command
HOST_IP=10.208.0.10

Save and exit the text editor. NOTE:

1. The **ADMIN_PASSWORD** is the password that you will use to log in to the OpenStack login page. The default username is **admin.**
2. The **HOST_IP** is your system's IP address that is obtained by running **ifconfig** or **ip addr** commands.

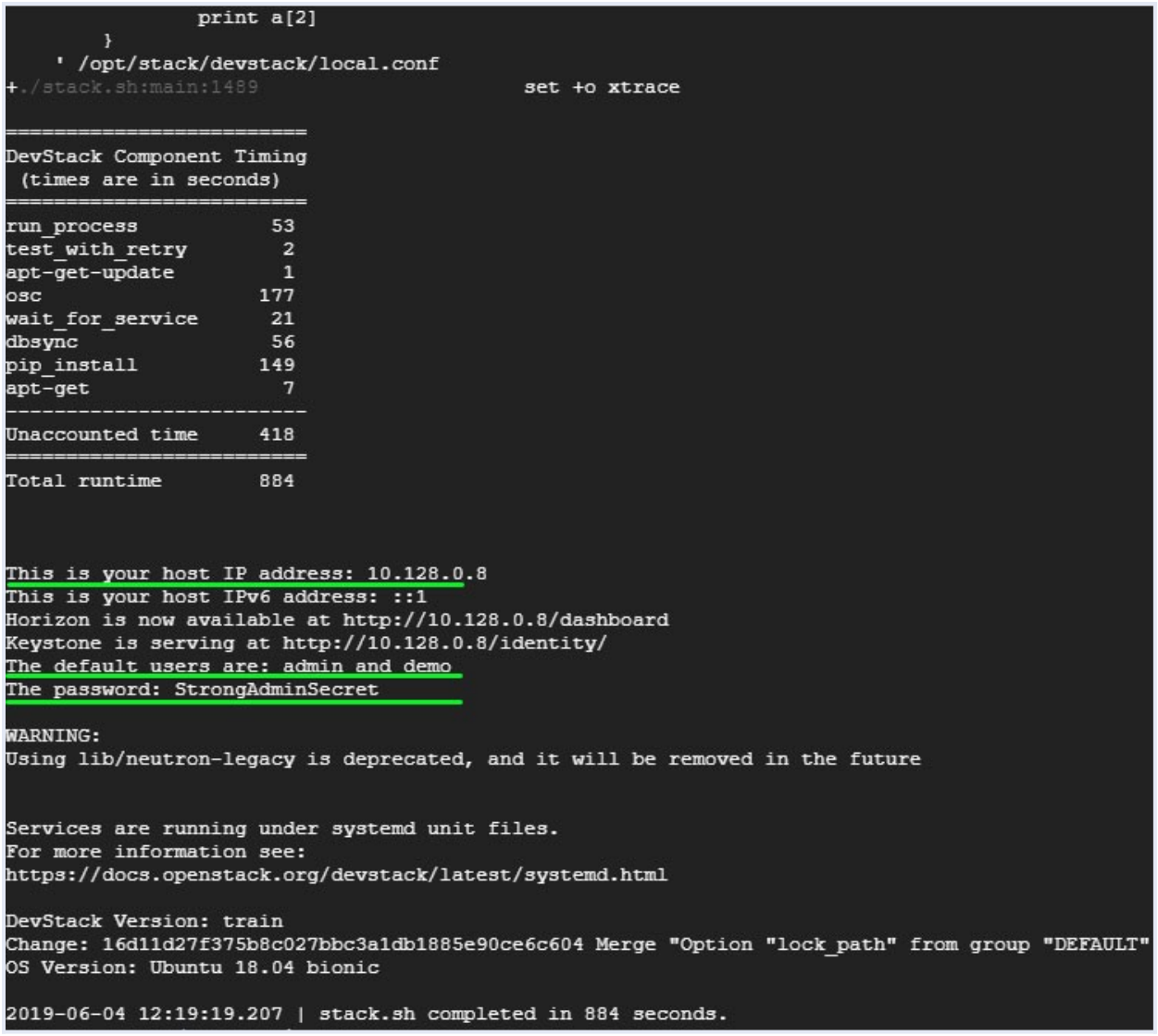
Step 5: Install OpenStack with Devstack

To commence the installation of OpenStack on Ubuntu 18.04, run the script below contained in devstack directory.
./stack.sh

The following features will be installed:

- Horizon – OpenStack Dashboard
- Nova – Compute Service
- Glance – Image Service
- Neutron – Network Service
- Keystone – Identity Service
- Cinder – Block Storage Service
- Placement – Placement API

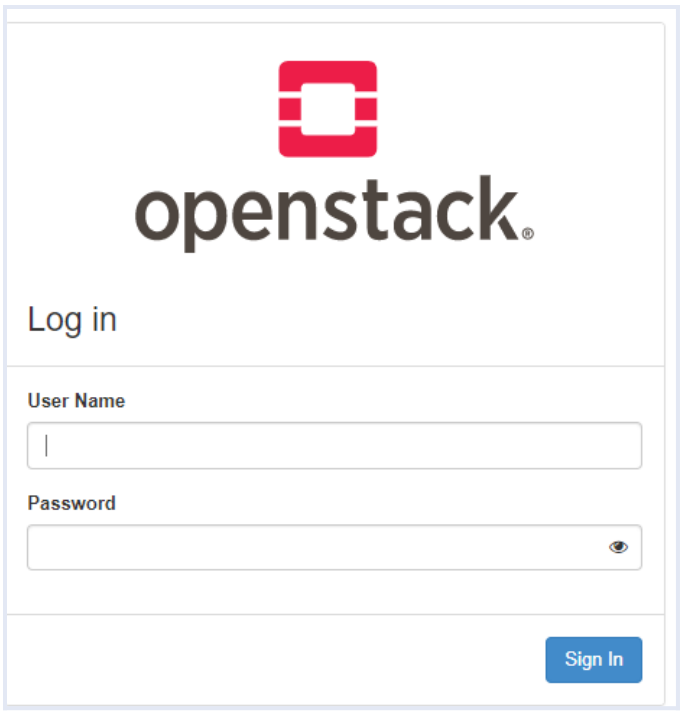
The deployment takes about 10 to 15 minutes depending on the speed of your system and internet connection. In our case, it took roughly 12 minutes. At the very end, you should see output similar to what we have below.



This confirms that all went well and that we can proceed to access OpenStack via a web browser.

Step 6: Accessing OpenStack on a web browser

To access OpenStack via a web browser browse your Ubuntu's IP address as shown.
https://server-ip/dashboard This directs you to a login page as shown.



Enter the credentials and hit “Sign In” You should be able to see the Management console dashboard as shown below.