Assignment 1

On

Openstack

20INMCA565 - Cloud Computing

Submitted To,

Mr. Binumon Joseph

Submitted By,

Varsha Shaji

INTMCA-S9

RollNo:54

Amal Jyothi College

Of Engineering

Certificate

Infosys®
Navigate your next

COURSE COMPLETION CERTIFICATE

The certificate is awarded to

Varsha Shaji

for successfully completing the course

Learning OpenStack

on August 28, 2024

Infosys | Springboard

Congratulations! You make us proud!

Issued on: Thursday, August 29, 2024
To verify, scan the QR code at https://verify.onwingspan.com

Thirumala Arohi
Executive Vice President and Global Head
Education, Training & Assessment (ETA)
Infosys Limited

Openstack Installation

Installing OpenStack can be a complex task, as it involves setting up multiple components to work together. OpenStack is a cloud computing platform that provides infrastructure-as-a-service (IaaS) for both public and private clouds. Below is a general guide for installing OpenStack using **Packstack**, which is one of the simpler methods for deployment on a single server or a small-scale environment.

Prerequisites

1. **Operating System**: Typically, OpenStack is installed on a Linux-based OS, such as CentOS, Rocky Linux, or Ubuntu. For this guide, we'll assume CentOS 7 or a similar distribution.
2. **Hardware Requirements**:
    - At least 8 GB of RAM.
    - 2 CPU cores.
    - 50 GB of disk space.
3. **Network Configuration**: Ensure you have proper network connectivity and DNS resolution.
4. **Root or Sudo Access**: You need root or sudo privileges on the server to install OpenStack.

Steps

Step 1: Prepare the Server

1. **Update the System** Start by updating all packages to the latest versions:

    ```
    sudo yum update -y
    ```

2. **Set Hostname** Set a proper hostname for your server:

    ```
    sudo hostnamectl set-hostname openstack-controller
    ```

    Add the hostname to the /etc/hosts file to resolve localhost:

    ```
    echo "127.0.0.1 openstack-controller" | sudo tee -a /etc/hosts
    ```

3. **Disable SELinux** Temporarily disable SELinux to prevent it from interfering with OpenStack services:

    ```
     setenforce 0
    ```

    To disable it permanently, edit /etc/selinux/config and set SELINUX=permissive:

    ```
    sudo sed -i 's/SELINUX=enforcing/SELINUX=permissive/g' /etc/selinux/config
    ```

4. **Disable Firewall** Packstack handles security using its configuration, so disable the firewall:

    ```
    sudo systemctl stop firewalld
    ```

    ```
    sudo systemctl disable firewalld
    ```

5. **Enable NTP (Network Time Protocol)** It's essential for all OpenStack services to have synchronized time:

    ```
    sudo yum install -y chrony
    ```

```
sudo systemctl enable chronyd
sudo systemctl start chronyd
```

Step 2: Enable RDO Repository

The RDO repository provides the latest OpenStack packages.

1. **Install RDO Release Package** Add the RDO repository for the OpenStack release you want to install. For example, for the **Stein** release:

   ```
   sudo yum install -y centos-release-openstack-stein
   ```

   Update Your System After enabling the RDO repository, update your system:

   ```
   sudo yum update -y
   ```

Step 3: Install Packstack

Packstack simplifies OpenStack installation by managing configurations and installations for you.

1. **Install Packstack Utility**

   ```
   sudo yum install -y openstack-packstack
   ```

Step 4: Configure Packstack

1. **Generate Packstack Answer File** This file will contain all the configuration options for your OpenStack installation.

   ```
   packstack --gen-answer-file=packstack-answers.txt
   ```

2. **Edit the Answer File** Open the packstack-answers.txt file in a text editor to customize the installation:

   ```
   vim packstack-answers.txt
   ```

Some key options you might want to customize:

- **CONFIG_DEFAULT_PASSWORD**: Set a default password for all OpenStack services and users.
- **CONFIG_MARIADB_PW**: Set a password for the MariaDB database.
- **CONFIG_KEYSTONE_ADMIN_PW**: Set a password for the OpenStack admin user.
- **CONFIG_CONTROLLER_HOST**: The IP address of the controller node.
- **CONFIG_COMPUTE_HOSTS**: The IP addresses of the compute nodes.
- **CONFIG_NETWORK_HOSTS**: The IP addresses of the network nodes.
- **CONFIG_STORAGE_HOST**: The IP address of the storage node.
- **CONFIG_NETWORK_MANAGE**: If set to "y", Packstack will manage the network setup.

For a single-node installation (all services on one server), ensure that CONFIG_CONTROLLER_HOST, CONFIG_COMPUTE_HOSTS, CONFIG_NETWORK_HOSTS, and CONFIG_STORAGE_HOST all point to the same IP address (your server's IP).

Also, set CONFIG_NEUTRON_ML2_TYPE_DRIVERS to flat,vlan or vxlan depending on your network type.

3. **Run Packstack Installation** Use the customized answer file to start the installation:

```
packstack --answer-file=packstack-answers.txt
```

This process will take some time as Packstack configures and installs all necessary OpenStack components (like Nova, Neutron, Keystone, Glance, Cinder, etc.).

Step 5: Post-Installation Configuration

1. **Verify Installation** After the installation is complete, verify that all OpenStack services are running:

```
source /root/keystonerc_admin
```

```
openstack service list
```

You should see a list of services like nova, neutron, keystone, etc., all listed as "enabled" and "up."

2. **Access the OpenStack Dashboard** Open a web browser and go to http://<your-server-ip>/dashboard.

Log in with the username admin and the password you set for CONFIG_KEYSTONE_ADMIN_PW.

Step 6: Troubleshooting and Validation

1. **Check Logs** If you encounter any issues, check the logs located in /var/tmp/packstack/ for more detailed information.
2. **Restart Services** If any OpenStack services are not running, you can restart them using systemctl. For example:

```
sudo systemctl restart openstack-nova-api.service
```

3. **Network Configuration** Make sure your network configuration aligns with your environment. OpenStack's Neutron service requires careful configuration to ensure proper network isolation and connectivity.