Uppsala University

Applied Cloud Computing

1TD265

C1

Tabea Haverkamp

15 September 2020

1 Questions Task 1

1.1 What is the difference between the private IP and the floating IP?

The private IP is used for the private (cloud-) network. Instances in the same network can communicate with that IP address. The floating IP is not statically set, but dynamically allocated. The user needs to manually attach the floating IP. With that IP the user can access it from outside the network.

1.2 Can you access the Internet from the VM without assigning a floating IP to the machine?

No.

1.3 What is the difference between image, instance and snapshot?

Image A file to a virtual disk that has a bootable operating system (in our case Ubuntu 18.4) installed on it.

Instance Instance of an image which is created on request and configured when launched. On this work is done.

Snapshot Creates a new image from a running instance at that exact moment, like a photograph.

1.4 What is the name of the OpenStack service responsible for providing the: a. Image Service, b. Compute Service?

a: Glance
b: By default it is the kernel-based VM (KVM) hypervisor, but it can be changed.

2 Questions Task 2

2.1 What is the technology used to provide volumes in OpenStack? Is it RAID or LVM?

LVM (Logical Volume Manager).

2.2 What is LVM? Explain the advantage(s) of using LVM?

LVM stands for Logical Volume Manager. It allows flexible and easily managable storage deployment, especially in the area of volume management. It allows easy volume resize options, easy storage management and other features like snapshots, mirroring, exporting and importing.

2.3 Can one volume be attached to multiple instances or vice versa?

A volume can be attached to multiple instances if the OpenStack Block Storage service (default service) is not used, but a shared storage solution like a Network Attached Storage (NAS) or NFS volumes. An instance can only have one volume attached.

2.4 Explain the main difference between Ephemeral Storage and Block-Storage. What are the major use-cases for the different storage types?

Ephemeral Storage Data is not stored forever, more like a temporary storage. The data is lost once the VM is terminated. It is used to run operating system and scratch space

Block Storage is a persistent storage, meaning that the storage resource outlives any other resource and is always available, regardless of the state of a running instance. It is implemented by the Block Storage service cinder. A volume can be detached from one instance and attached to another without loosing data. It is used to add additional persistent storage to a virtual machine (VM)

2.5 Does your VM have ephemeral storage?

Yes.

2.6 What is the name of the OpenStack service providing volumes?

Cinder.

3 Questions Task 3

3.1 Explain the picture in the tab "Network Topology"

It shows the network topology with active and inactive devices connected to that specific network, and their routing way. Also, it will return availability information for each individual device within the network.

3.2 What is the subnet used by the Tenant?

192.168.2.0/24

3.3 What is the role of the router?

It assigns IP addresses to the tenants.

3.4 Explain the path of the traffic of the VM to the Internet?

The VM connects to the router at 192.168.2.1 which then connects to the public external IPv4 Network.

3.5 Find out the unique ID of the external network

9187404b-b24b-4ee5-b5f4-22d9a15dc4e2

3.6 What is the name of the OpenStack service handling Networks?

Nova.

4 Questions Task 4

4.1 Examine the code in app.py. What Python framework is used to provide the (extremely simplistic) RESTful service?

Flask.

4.2 What problem does "screen" solve?

It allows to run multiple terminals in one single screen session.

4.3 Write a short description of the steps you followed to complete the Task.

1. Install Flask.
2. Ran the screen command
3. Opened another WSL window to run `curl -i http://130.238.29.254:5000/cowsay/api/v1.0/saysomething`
4. Connection Refused Error.
5. Add Port 5000 in the security group
6. Run `http://130.238.29.254:5000/cowsay/api/v1.0/saysomething` again. Output:

```
tabea@DESKTOP-K4H62C8:~\$ curl -i http
   ://130.238.29.254:5000/cowsay/api/v1.0/
   saysomething
HTTP/1.0 200 OK
Content-Type: text/html; charset=utf-8
Content-Length: 385
Server: Werkzeug/1.0.1 Python/3.6.9
Date: Sun, 06 Sep 2020 16:12:00 GMT

  -------------
< Hello student >
  -------------
                  \
                   \
                     ^__^
                     (oo)\_______
                     (__)\       )\/\
                         ||----w |
                         ||     ||
```

4.4 Is SSC a Public, Community, Private or Hybrid cloud, and why?

It is a Community Cloud, as it is a cloud specific for one community, namely participants in Swedish Higher Education institutions.