UPPSALA
UNIVERSITET

Applied Cloud Computing

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Assignment 1

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Task-1 (Provisioning a Virtual Machine)

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

Answer: Private IP is the IP of the machine in private network and floating IP is user's public IP through which user can access their machine from the internet.

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

Answer: Yes. Floating IP is used to access the VM from the internet not the other way around.

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

Answer: Image includes an operating system and it can be used to boot an instance.
Instance is a server running users application.
Snapshot is the backup of images which stores the state of a virtual machine at a particular moment in time. It is a common way to protect data.

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

Answer:
a) Image is a Glance service
b) Compute is a Nova service

Task-2 (Block Storage)

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

Answer: LVM

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

Answer: LVM stands for Logical Volume Manager. The advantage of LVM is that it allocates disks, mirroring and resizing of logical volume.

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

Answer: No, we can't attach one volume to multiple instances but one instance can have multiple volumes.

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

Answer: Ephemeral storage is the volatile temporary storage attached to your instances which is only present during the running lifetime of the instance where as Block-storage is a non-volatile memory, it provides fixed -sized raw storage capacity. Each storage volume can be treated as an independent disk drive.

2.5 Does your VM have ephemeral storage?

Answer: Yes

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

Answer: Cinder is the OpenStack Block Storage service for providing volumes.

Task-3 (Network)

3.1 Explain the picture in the tab "Network Topology"

Answer: In network topology there is a blue line which is representing public IP which is connected to a router, the router is also connected to the internal IP which is making a connection between both networks. In internal IP every VM (instance) is connected with their own IP.

3.2 What is the subnet used by the Tenant?

Answer: The subnet used by the tenant is 192.168.2.0/24

3.3 What is the role of the router?

Answer: Router is used to forward data packets across different networks. This is connected to two or more data lines from different IP networks.

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

Answer: Virtual Machines have their own private IP and router is connected to that VM to help it connect to the internet, this router is also connected with public IP which is used to communicate with other LAN networks to help connect to the internet.

3.5 Find out the unique ID of the external network.

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

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

Answer: Neutron

Task-4 (Cowsay as a Service)

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

Answer: Flask service is used.

4.2 What problem does "screen" solve?

Answer: On running Screen command it creates a new screen and doesn't affect other operations running in the background. User can swap back to command line and do the other operations.

4.3 Write a short description of the steps you followed to complete the Task- 4.

Answer: Following are the steps followed to complete the task.
1) Clone the repository in VM from provided GitHub link.
2) Install Python, PIP, Cowsay and Flask.
3) Open and clear the new screen using screen python app.py, you can swap back to the other screen to use the command line.
4) Access the csaas/cowsay folder from the git clone repository and run the cowsay using curl -i

http://<130.238.29.102>:5000/cowsay/api/v1.0/saysomething.
5) Following diagram is the output you get when you run the cowsay program.

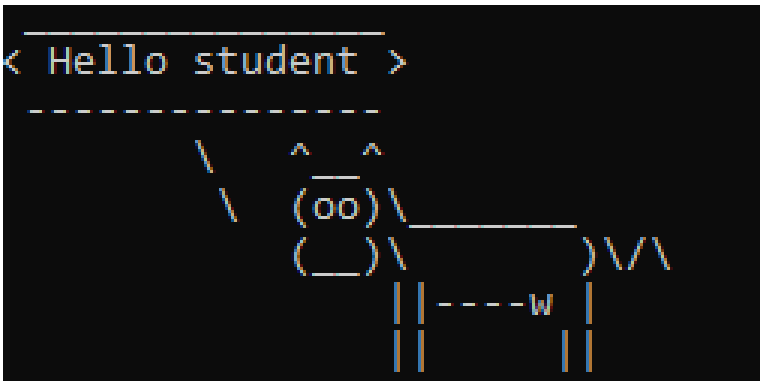

Figure 1: Cowsay Program

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

Answer: SSC is a community cloud. Community clouds are a recent variant of hybrid clouds that are built to serve the specific needs of different business communities.