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CLOUD APPLICATION DEVELOPMENT

OPENSTACK LAB EXPERIMENT – 03

OBJECTIVE: Setting up Object Storage using OpenStack Swift.

OpenStack – Swift

All OpenStack services can be authenticated and authorized using OpenStack Keystone, an open-source identity management solution. It serves as a central directory of users, roles, and permissions and is a fundamental part of the OpenStack cloud computing platform. Keystone makes secure access to other OpenStack services like Nova, Glance, Cinder, and others possible.

The OpenStack Object Store project, known as Swift, offers cloud storage software so that you can store and retrieve lots of data with a simple API. It's built for scale and optimized for durability, availability, and concurrency across the entire data set. Swift is ideal for storing unstructured data that can grow without bound.

OpenStack – Keystone CLI

For carrying out several administrative operations connected to identity management, such as creating users, projects, roles, and policies, OpenStack Keystone offers a Command Line Interface (CLI). The OpenStack command-line client, commonly referred to as "OpenStack CLI" or "OpenStack Client," includes the Keystone CLI.

Installing the OpenStack CLI on your local computer and setting it up to connect to your OpenStack deployment are prerequisites for using the Keystone CLI. You can use the following Keystone-specific commands after setting up the CLI:

openstack user create: Creates a new user openstack user delete: Deletes a user openstack project create: Creates a new project openstack project delete: Deletes a project openstack role create: Creates a new role openstack role delete: Deletes a role openstack role add: Assigns a role to a user or group openstack policy create: Creates a new policy openstack policy delete: Deletes a policy

The Keystone CLI can be used to control OpenStack service authentication and authorization. For instance, you can create a new endpoint for an OpenStack service using the openstack endpoint create command or generate a new authentication token using the openstack token issue command.

Overall, managing identity and access management in your OpenStack system is made simple and effective by the Keystone CLI.

Instance creation in Openstack using CLI

1. openstack user create --password mypassword myuser --email myuser@example.com openstack user create --password mypassword myuser --email myuser@example.com This will create a new user named "myuser" with the password "mypassword" and email address "myuser@example.com". Note that the -password option is used to set the user's password explicitly. If you don't provide this option, Keystone will generate a random password for the user.
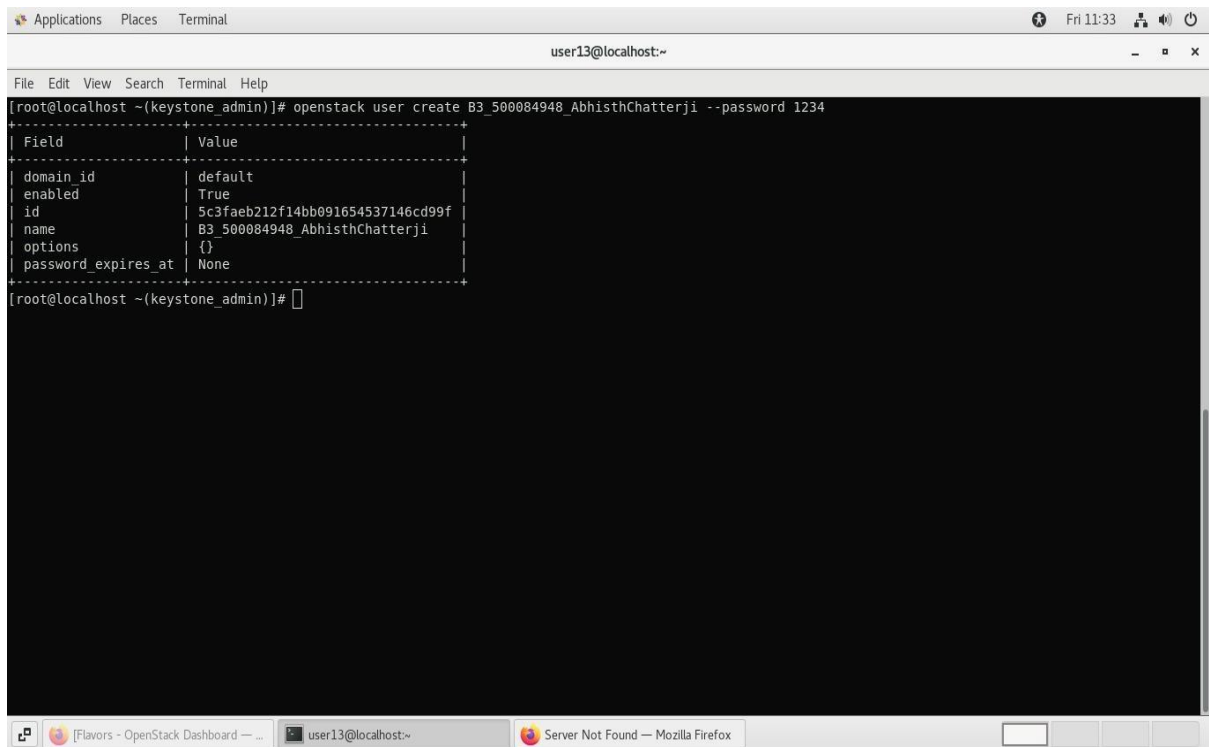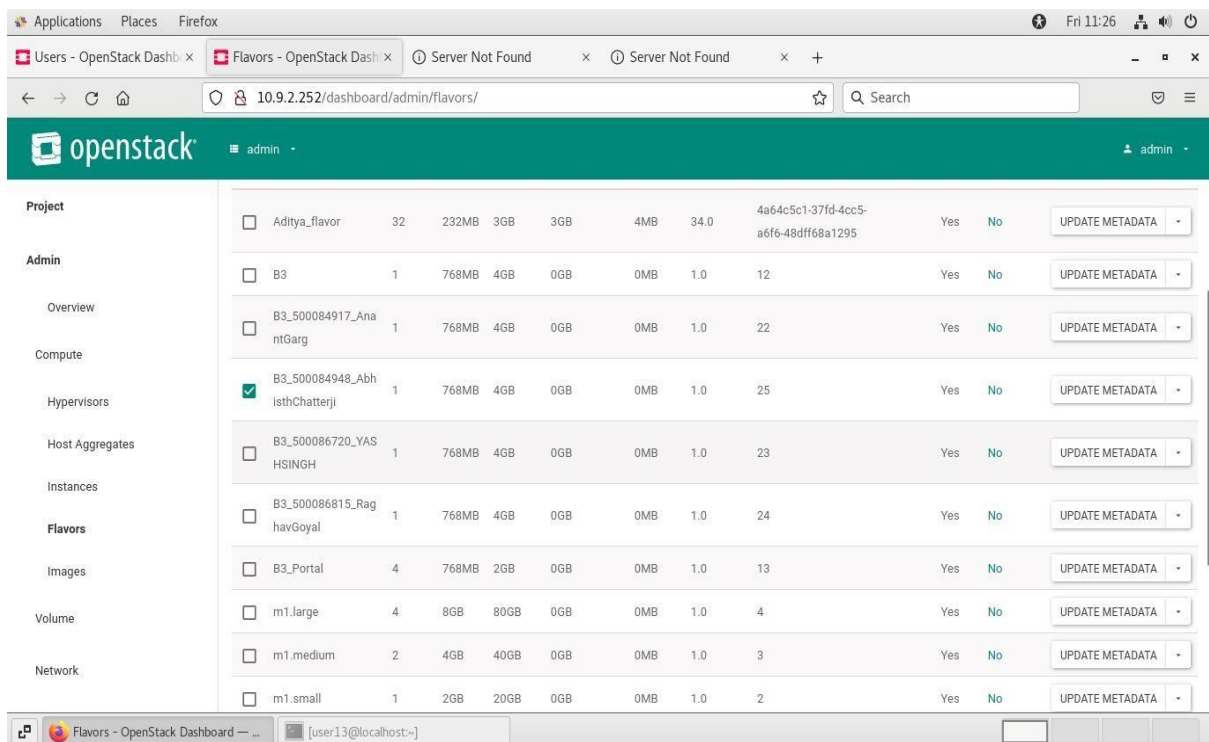
Fig 1. User creation

Fig 2. All the created user

3

2. openstack flavor create --vcpus 2 --ram 4096 --disk 40 myflavor

A flavour in OpenStack is a template that specifies an instance's computing, memory, and storage capabilities. Users can choose the right amount of resources for their workload by using flavours, which are used to determine an instance's attributes at the time of creation.

In OpenStack, a flavour often has the following characteristics: the number of virtual CPUs assigned to the instance, or vCPUs

RAM: The instance's allotted amount of memory, measured in megabytes
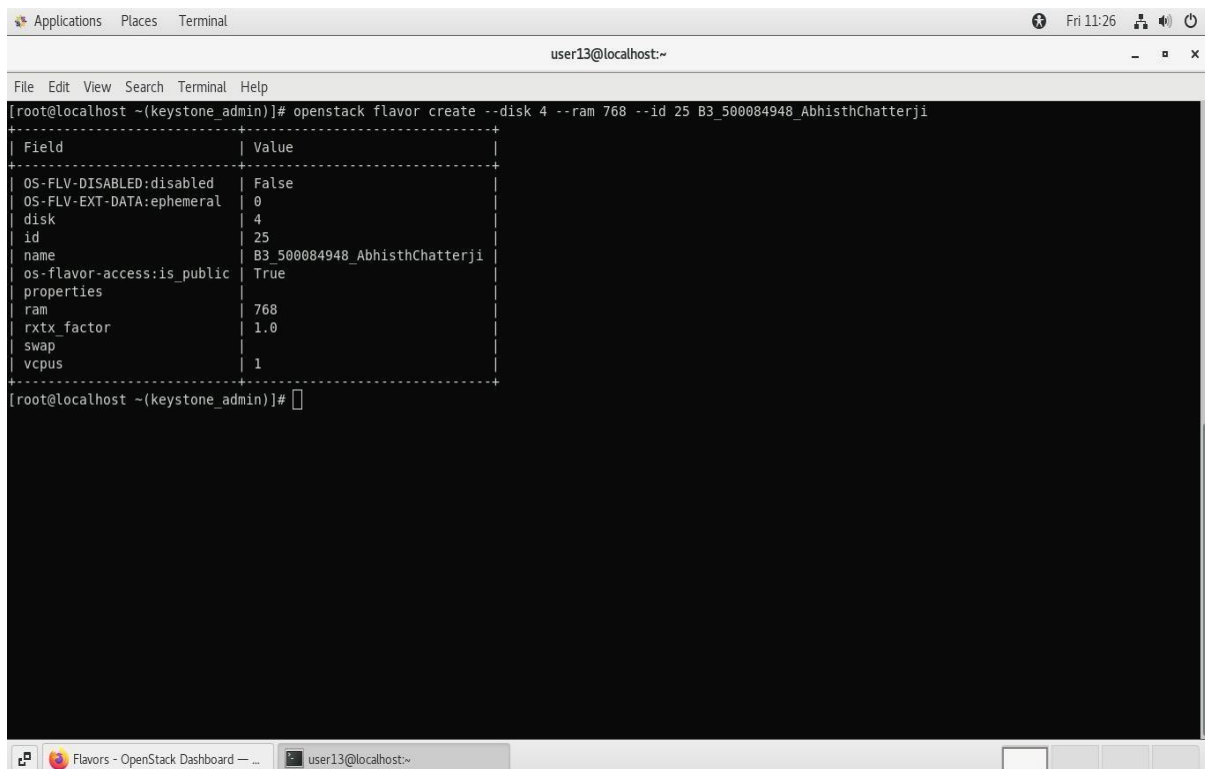
Disk: The instance's assigned storage space, measured in gigabytes

ID: a special code for the flavour

Name: the flavor's human-readable name

Swap: The number of megabytes (MB) of swap space assigned to the instance.

RXTX Factor: The instance's allocation of network bandwidth

Fig 3. Flavor created

3. openstack volume create --size 10 --description "My volume" --property myprop=myvalue myvolume

4

A volume in OpenStack is a virtual disc that may be connected to an instance in order to offer persistent storage. The OpenStack dashboard, CLI, or API can be used to create, attach, detach, and delete volumes.

In OpenStack, a volume typically has the following characteristics:

ID: the volume's special identification number

Name: a volume's human-readable name

Description: a summary of the book

Size: The volume's size in gigabytes

Status: the volume's present condition (eg. creating, available, in-use, etc.)

Associated with: the volume's associated instance (if any)

If a volume is bootable, it can be utilised as a boot device for an application.

Fig 4. Volume creation

4. openstack volume list

The openstack volume list command can be used to view the list of volumes in OpenStack using the CLI. All of the volumes in your deployment will be listed in a table along with their IDs, names, sizes, and status when you run this command.
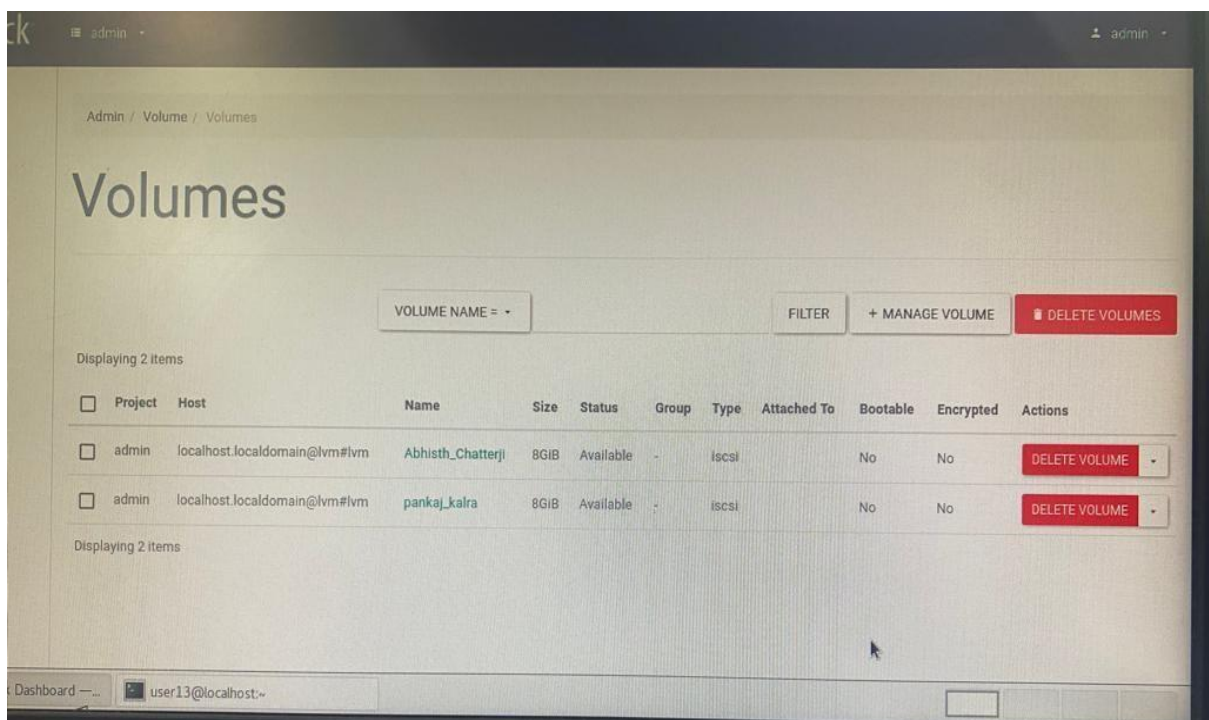

Fig 5. Volume List

Fig 6. Image List in gui

5. An image in OpenStack is a virtual machine launch template that has already been set. An operating system, application software, and other setup parameters are frequently included in images. The image formats that OpenStack supports are QCOW2, RAW, VHD, VDI, and VMDK.

To manage images in your OpenStack deployment, utilise the Glance OpenStack Image service. You can create, remove, update, and retrieve photos using Glance's RESTful API.
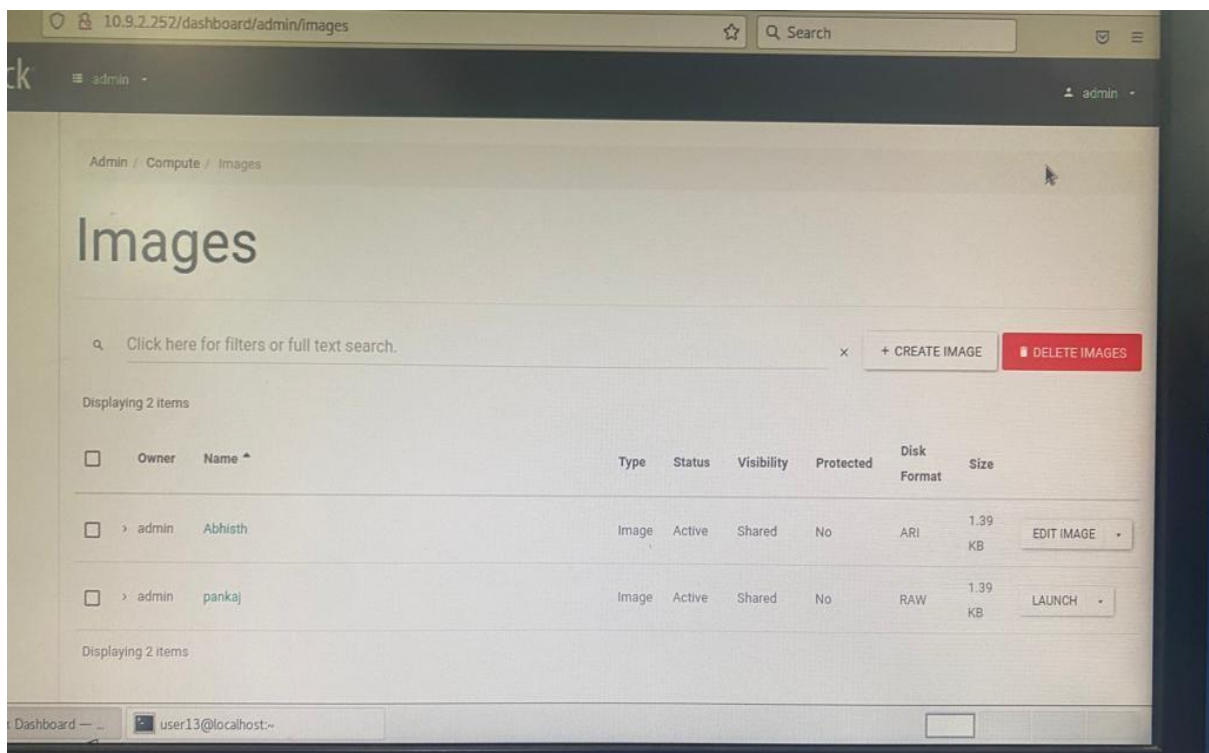

Fig 7. Created images

7

An instance in OpenStack is a virtual computer that is active and may be used to run workloads and deploy applications. A flavour, which specifies the number of computing resources, such as CPU, memory, and disc space allotted to the instance, is associated with each instance that is built from an image.