DEPARTMENT OF
COMPUTERSCIENCE & ENGINEERING

Experiment 2.3

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Subject Name: Cloud Computing & Distributed Systems Lab
Subject Code: 21CSP-378

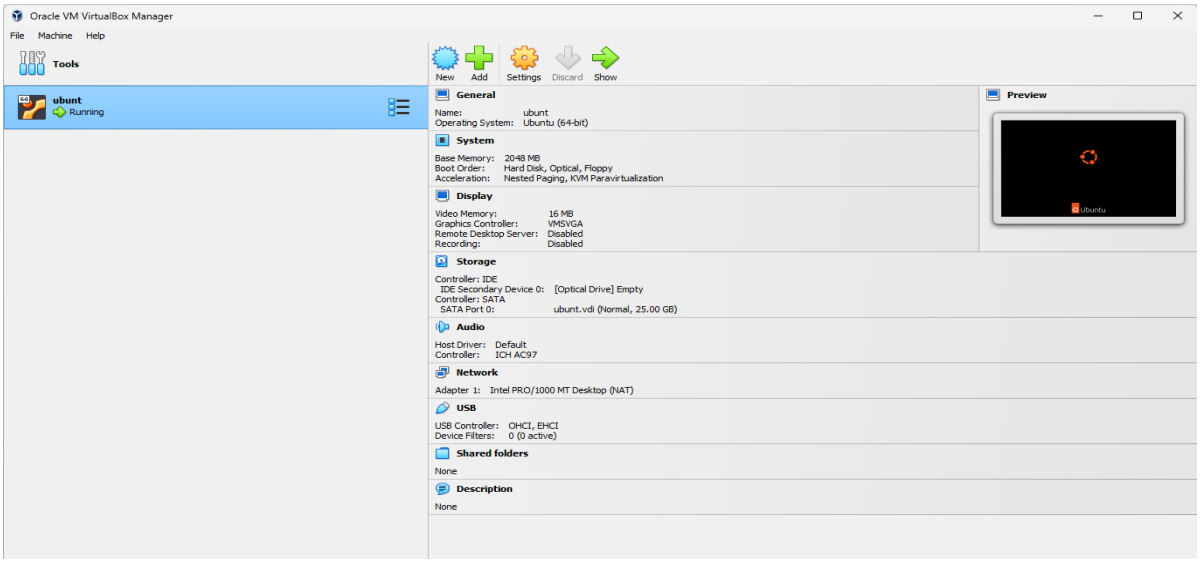
1. **Aim:** To implement IaaS by installing OpenStack.

2. **Objective:** Develop/Implement a Infrastructure as a Service (IaaS) by deploying OpenStack, enabling scalable and flexible cloud infrastructure management for virtualized resources, including compute, storage, and networking, to meet diverse user demands efficiently..

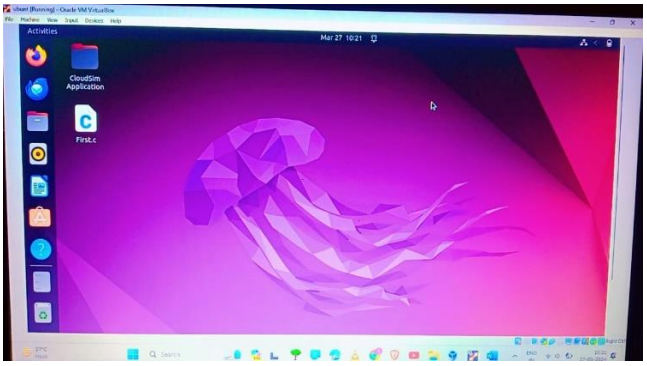
3. **Theory:** OpenStack is an open-source cloud computing platform that allows users to control large pools of compute, storage, and networking resources throughout a datacenter via a dashboard. It provides an Infrastructure as a Service (IaaS) solution, enabling organizations to deploy and manage virtualized resources, orchestrate instances, and automate tasks, thereby facilitating the creation and management of private and public clouds..

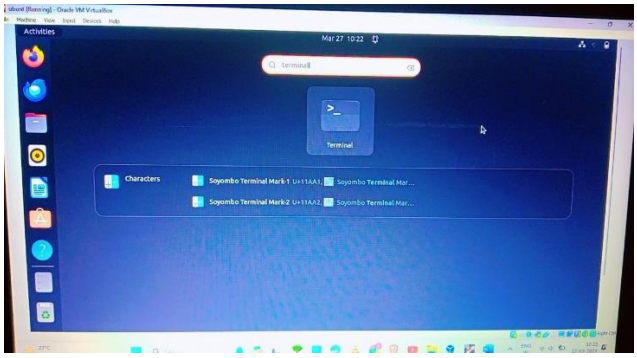
4. **Procedure:**

Step 1: Open the Virtual Box and the Virtual Machine in the Operating System.



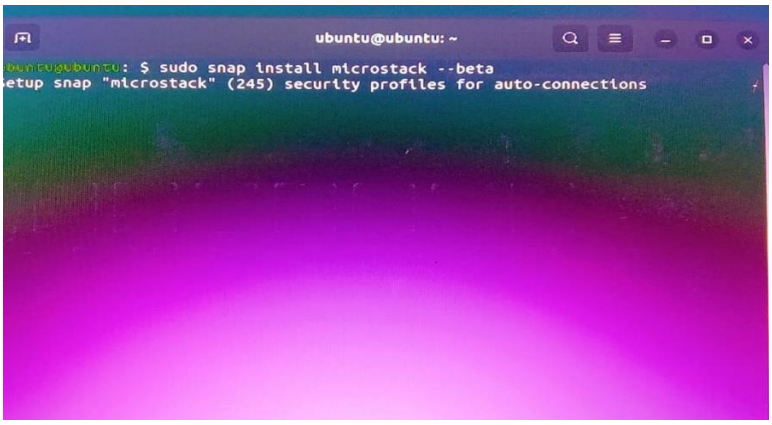
Step 2: After the open of the VM the open the terminal in the VM.



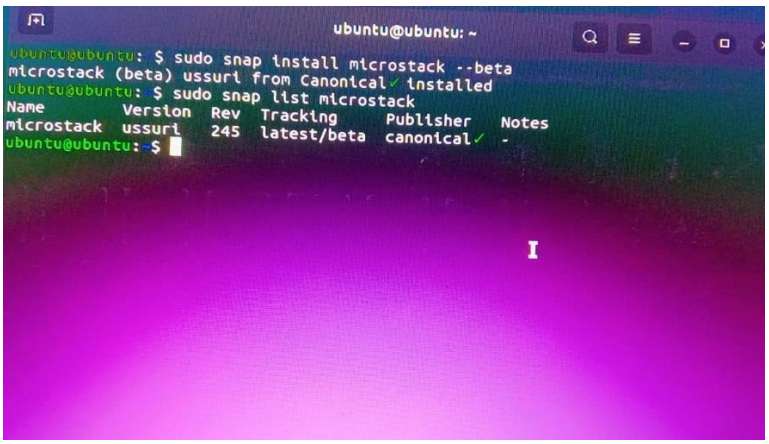


Step 3: Then in Terminal write the followings commands to build up Iaas(OpenStack).

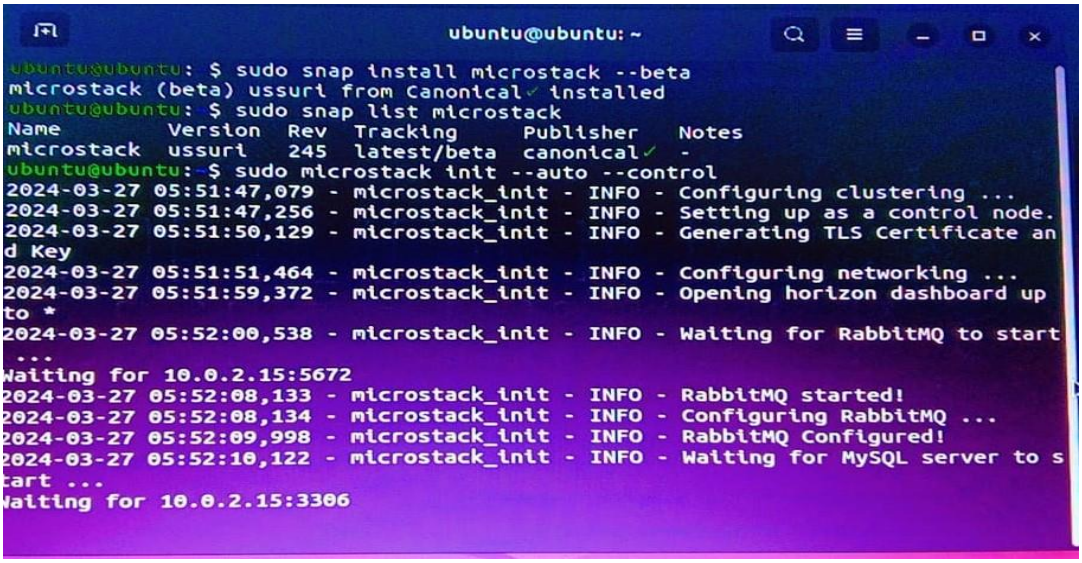
1). Install the microstack –Beta Version write **sudo snap install microstack –beta**



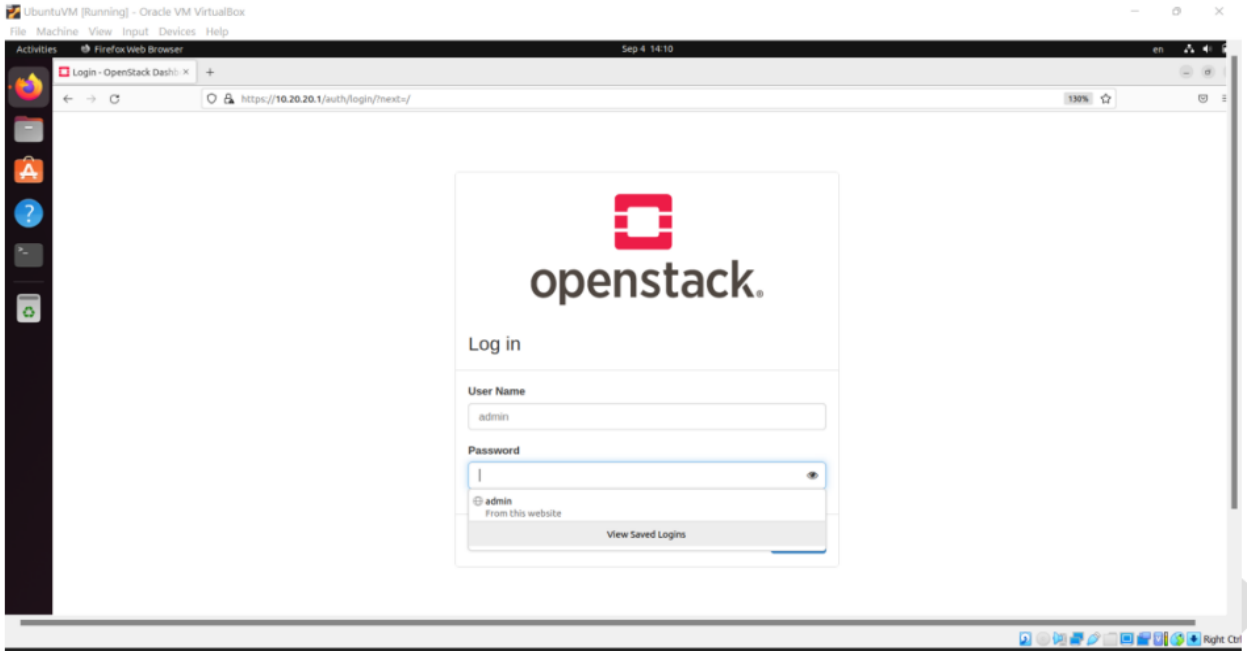
2). Check installation completion with the command **sudo snap list microstack**



3). Initialize microstack with the command **sudo microstack init --auto –control**

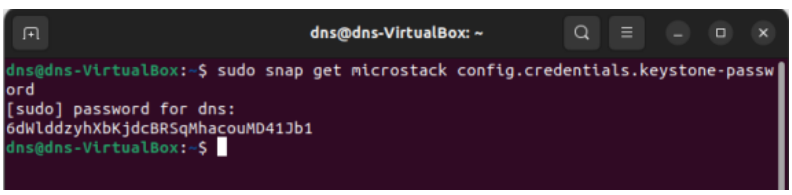


Step 4). After initialization of OpenStack. Use browser to launch OpenStack Dashboard. Use the **IP address 10.0.2.15** to login to the dashboard.

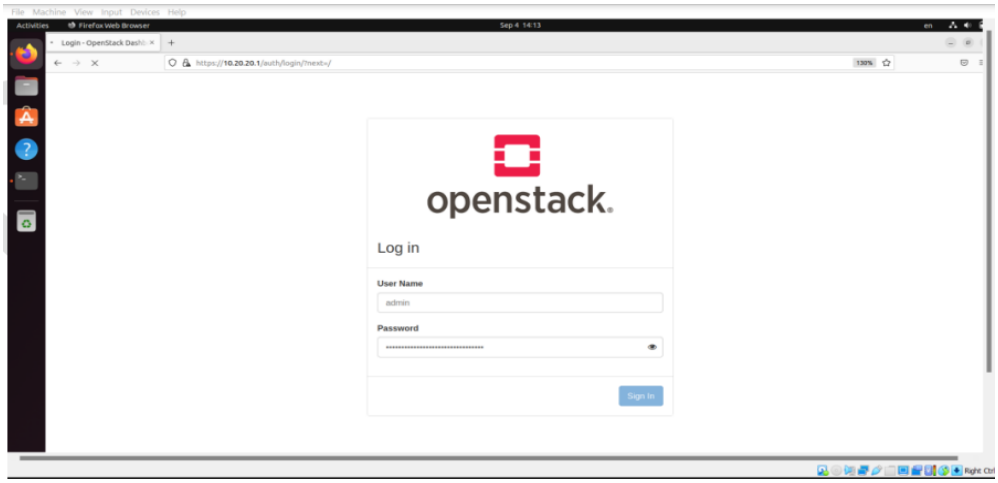


Step 5). Use **"admin"** as username. Get password for the login from Terminal using the command

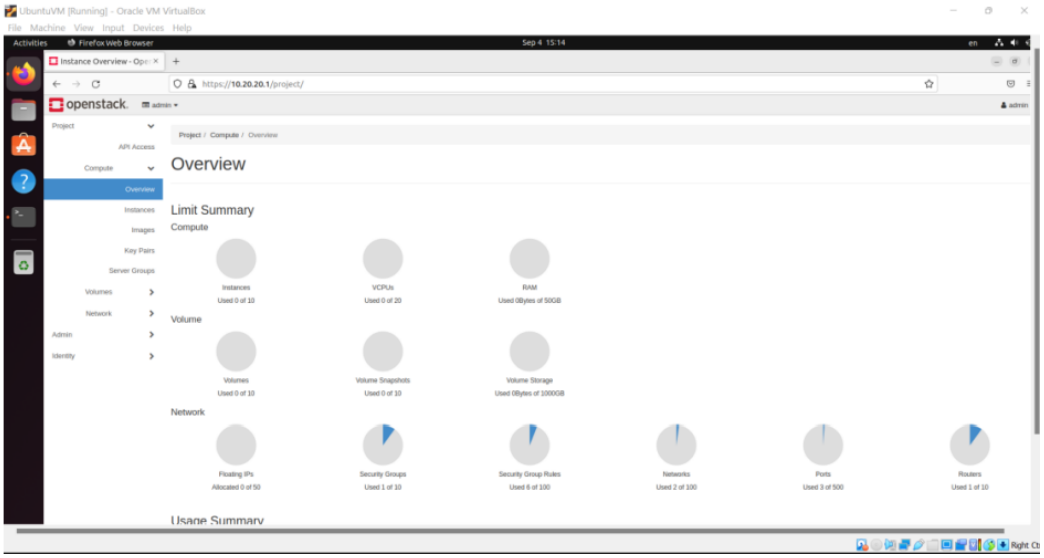
1). For Password: **sudo snap get microstack config.credentials.keystone-password**



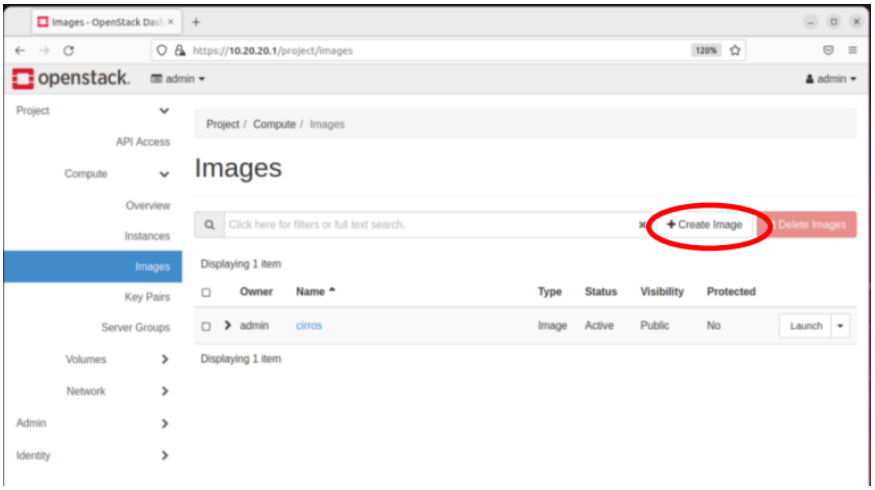
a). Copy the password and use it to login to the dashboard.



b). Then go on the Dashboard/Overview:

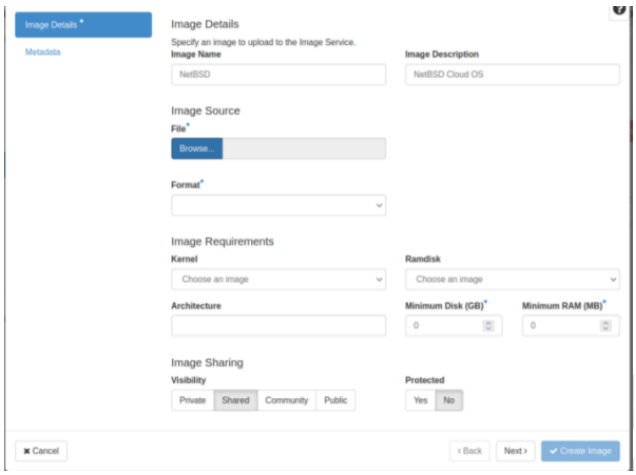


c). Perform the Iaas to **Open Images Tab and click Create Image**

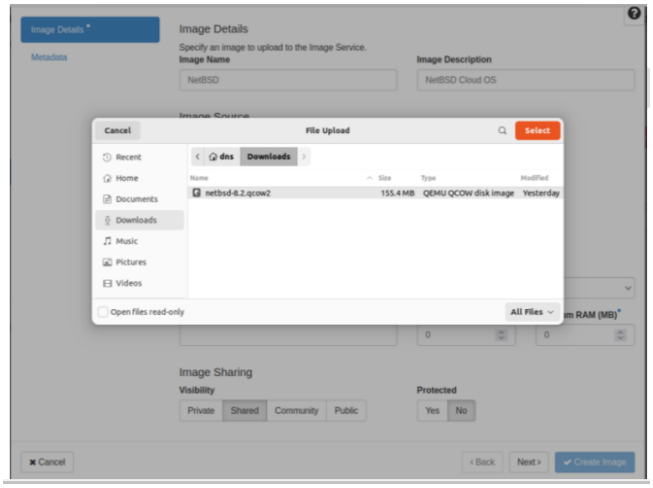


d). Provide the Image downloaded from **https://docs.openstack.org/image-guide/obtainimages.html** to create a new image.

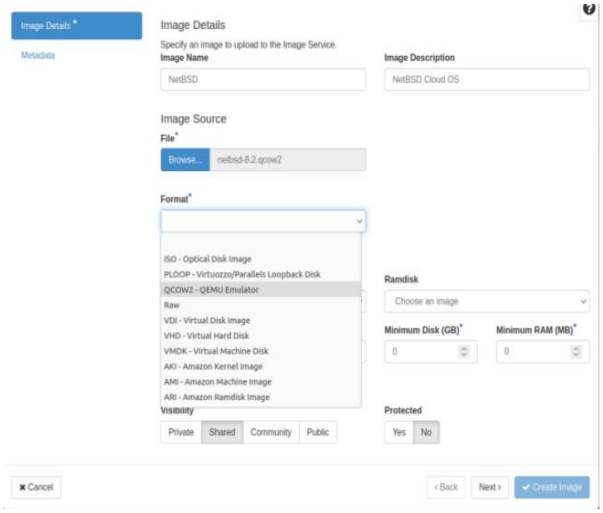
a). Provide Image Name:



b) . Choose Image Source – Downloaded Cloud OS Image



c). Choose File Format QCOW2:



d). Choose Visibility Public and Create Image

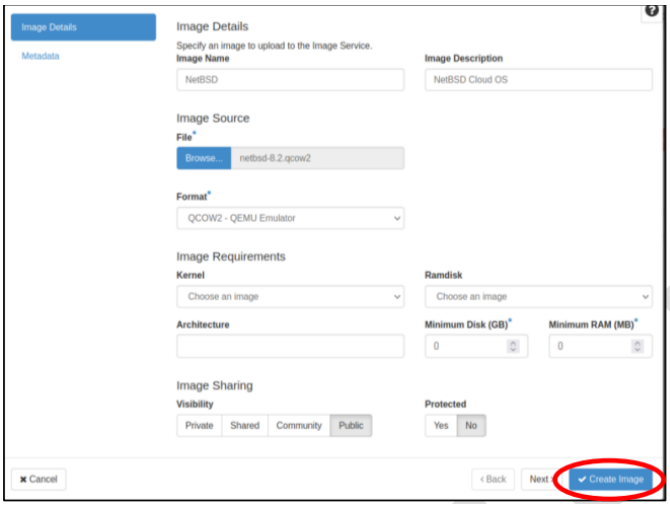
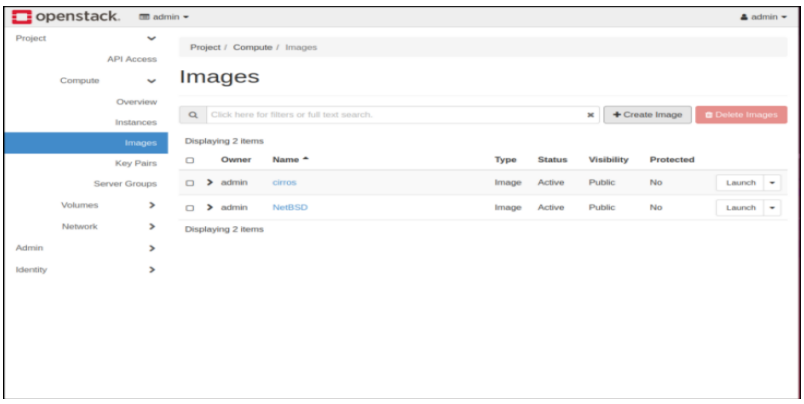
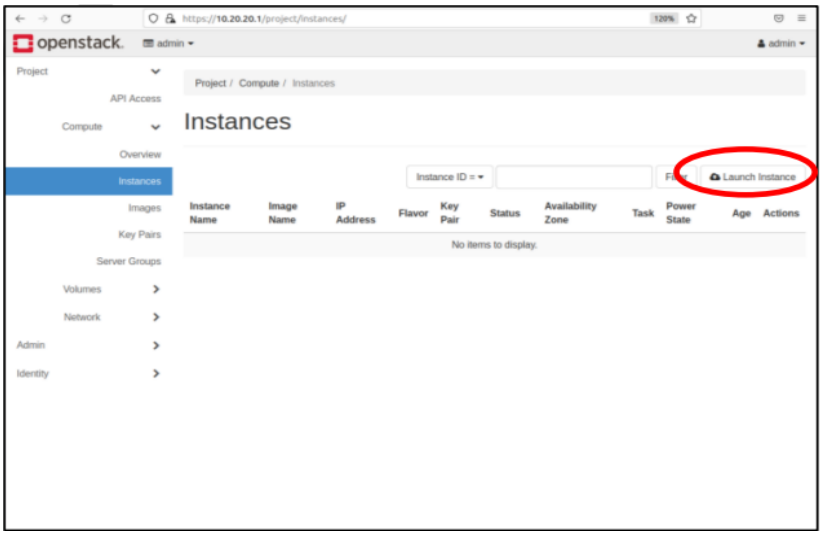


Image are created in the OpenStack:

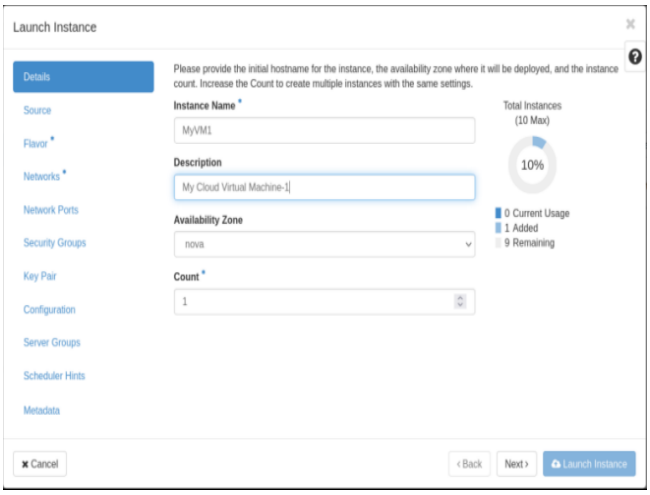


Step 6). Create Instance from the available Images using web interface or Terminal Interface.

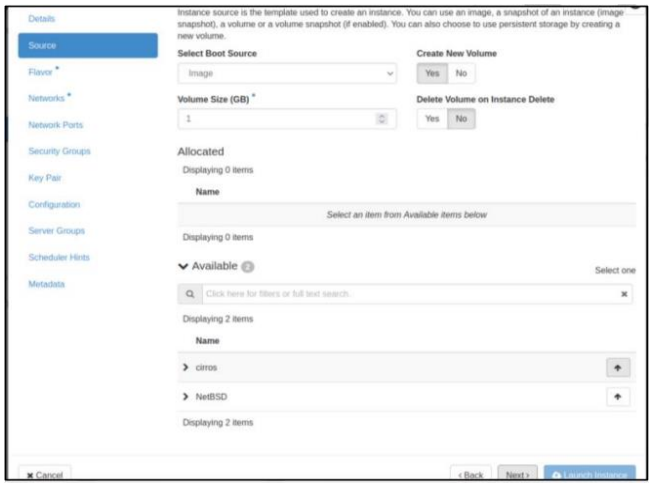
a). Open Interfaces section and select Launch Instance



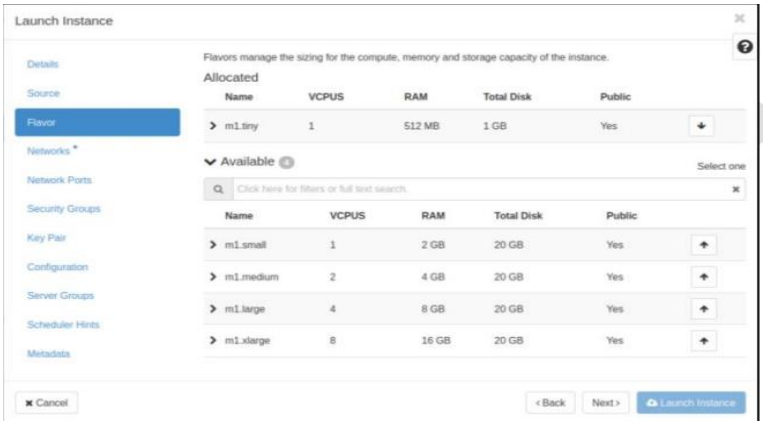
b) Provide Instance Name and select Next



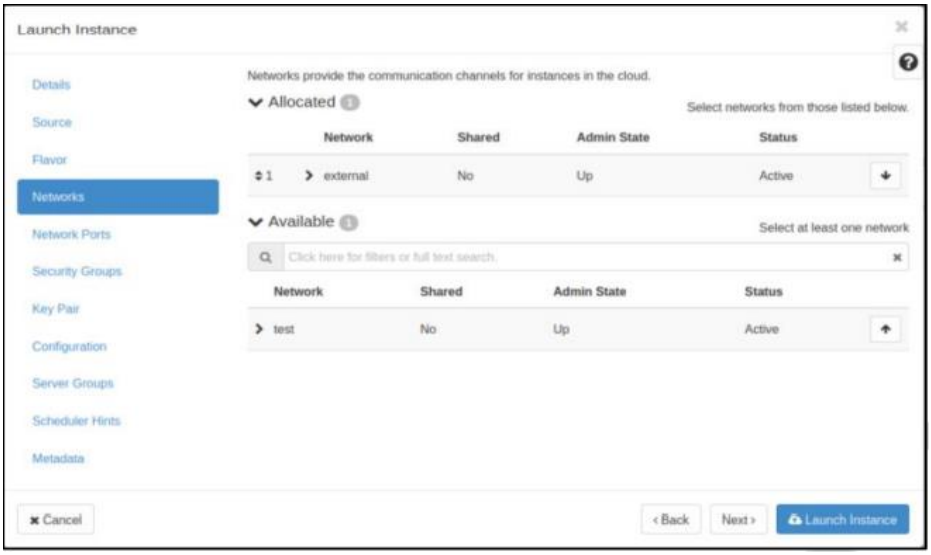
c). Select "cirros" as source form the available images



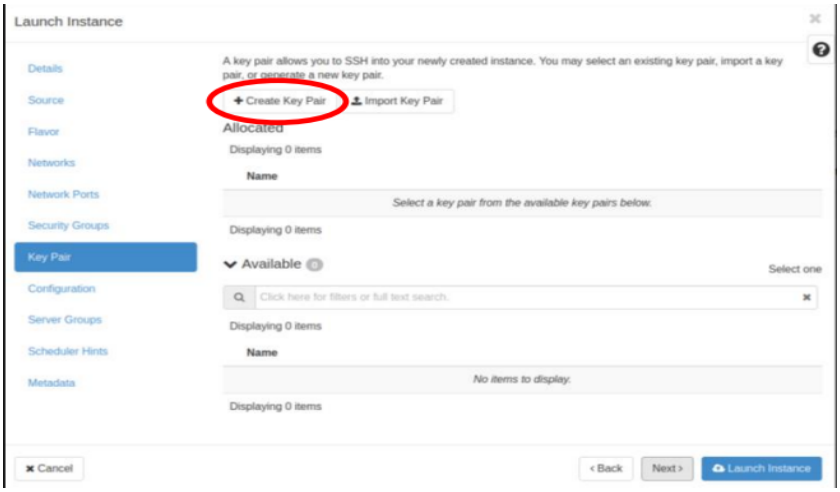
d). Select Flavor "m1.tiny" from the available Flavors



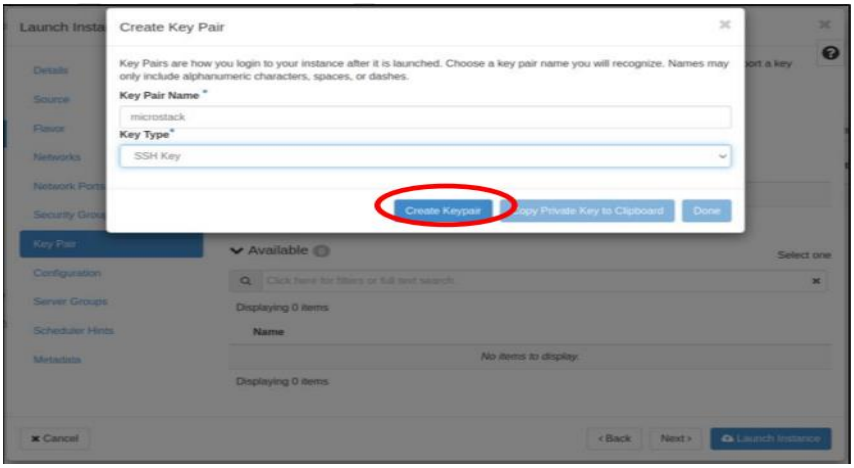
e). Select "external" network as the network for the Instance

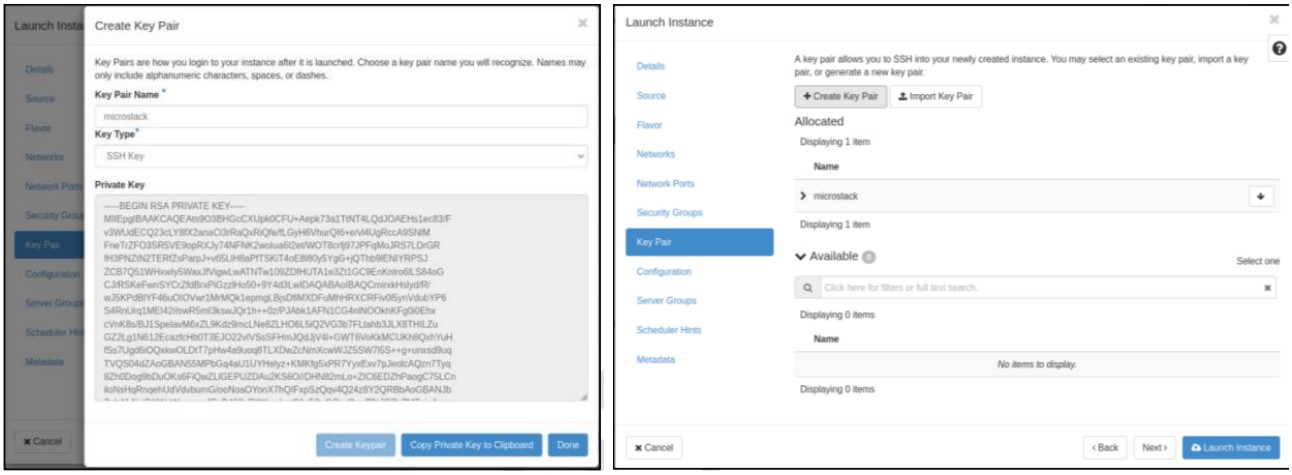


f). Network Ports and Security Group use the default Options. In Key Pair Section Create a new SSH Key Pair with name “microstack” and select it.

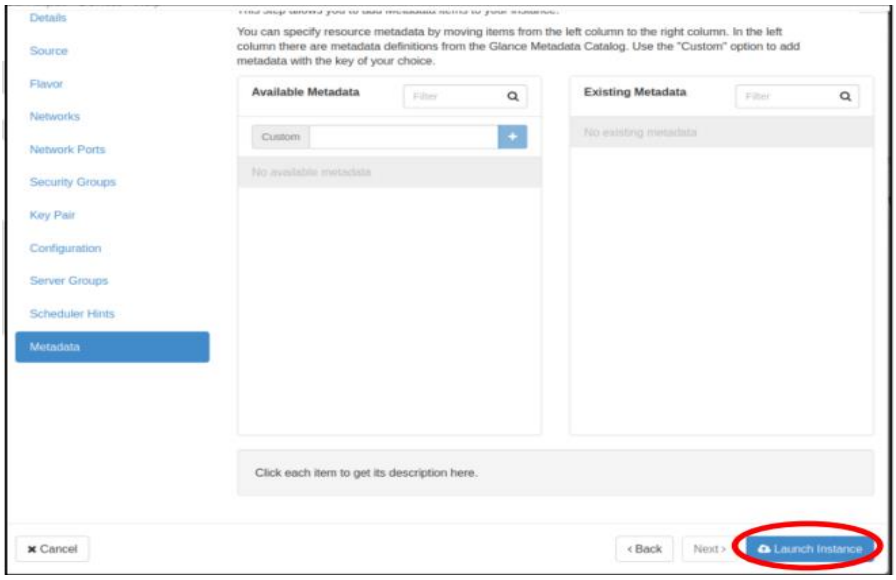


g). Provide Key Name “microstack” and Choose Key Type as “SSH”.

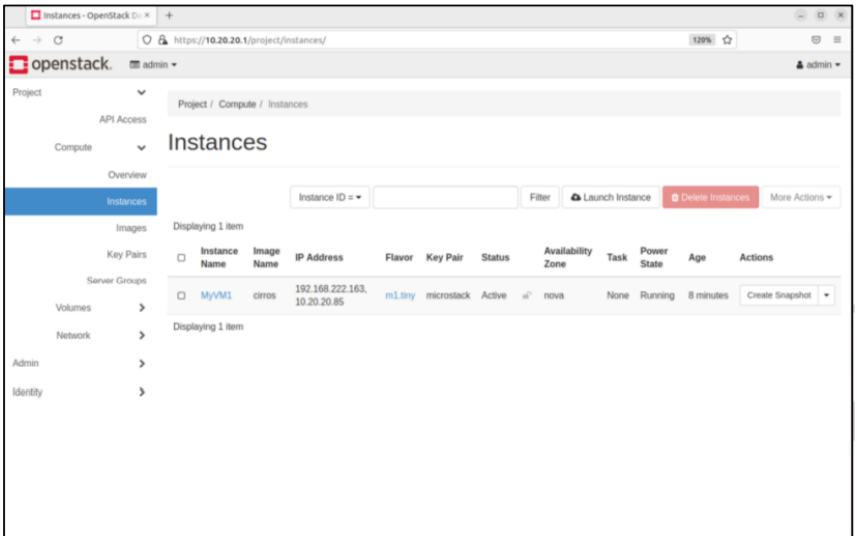




h). Remaining Options “Configuration”, “Server Groups”, “Scheduler Hints” and “Metadata” keep the default values. Launch the Instance.

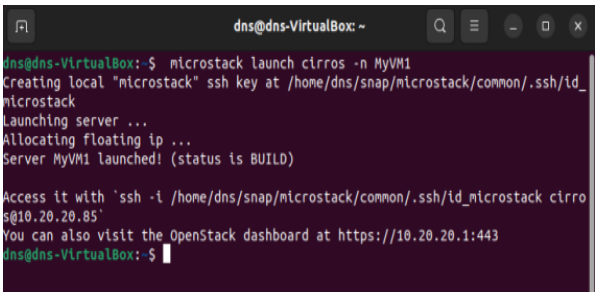


Implement of the Instances in the OpenStack:

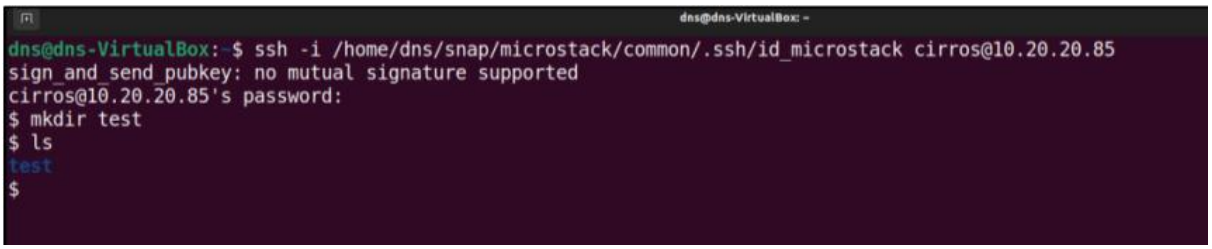


Step 7). Instance Creation using Terminal Interface using the given command

a). microstack launch cirros -n MyVM1 , **b).**Type the "ssh" command created to login to the system

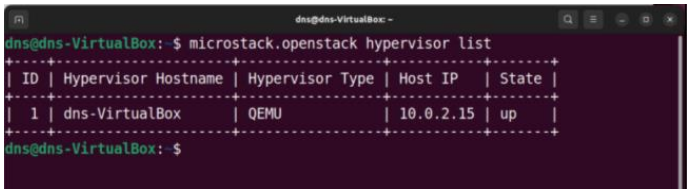


c). Enter "gocubsgo" as the password to login to the instance. Create a folder "test" and display it.

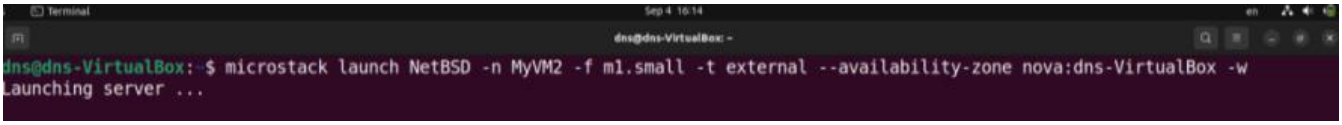


Step 8. Try Creating another Instance with NetBSD Image using the Command

a). Get the host name using microstack.openstack hypervisor list



b). Use the Terminal Command microstack launch NetBSD -n MyVM2 -f m1.small -t external --availability-zone nova:dns-VirtualBox



5). Learning Outcome:-

Installing OpenStack via terminal commands cultivates practical skills in cloud infrastructure deployment, reinforcing understanding of IaaS implementation.

- Creating images and instances through the command line enhances proficiency in resource management and provisioning, fostering adeptness in OpenStack utilization.
- Mastery of terminal-based operations facilitates efficient administration, troubleshooting, and customization, empowering users to harness OpenStack's full potential for scalable and resilient infrastructure solutions.