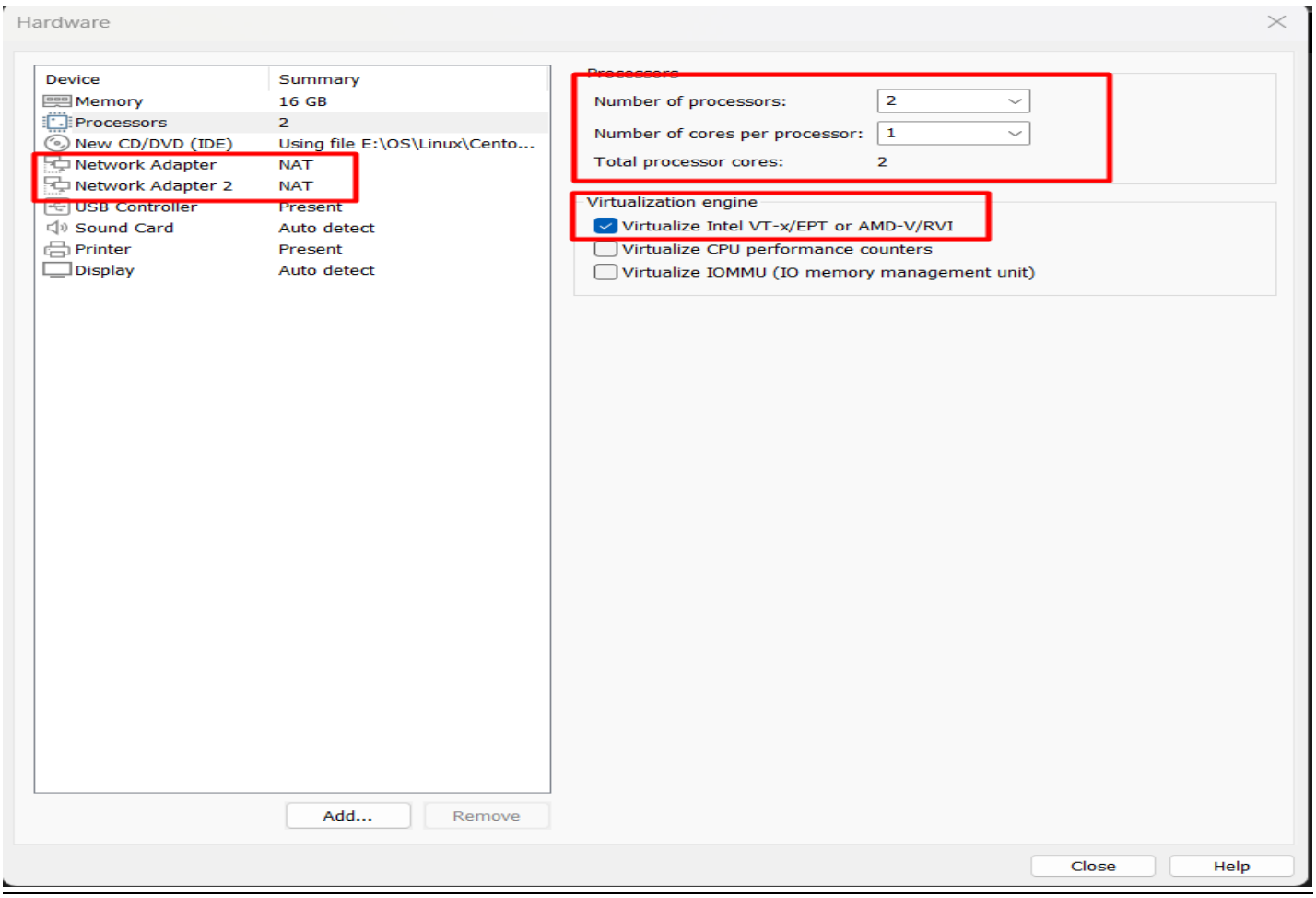
Openstack Manual Installation Guide

Environment:

Use CentOS Stream 8-stream.
A single VM of MINIMUM 12 GB RAM, 2 CPUs and 2 NICs
This lab uses FQDN of openstack.lab.local, you should edit /etc/hosts file

1- Machine preparation



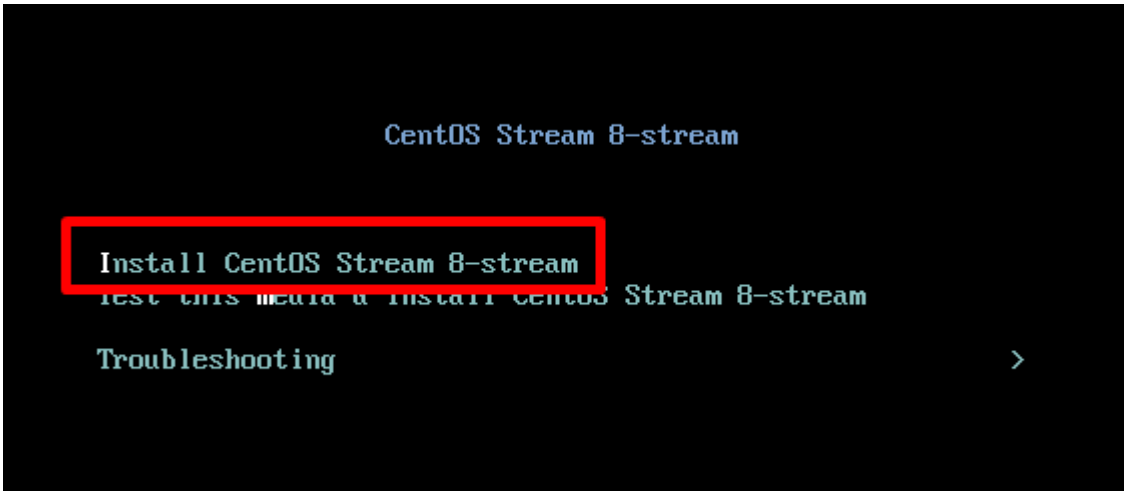
Q1. Why we need to CPUs?
Because we will create instance on this VM so we need more than 1 CPU.

Q2. Why Two NICs?
On this guide we will use just one of them but we want to imagine this is a real platform so we will have two types of traffic (Management, Business).

Q3. What is Virtualize Intel VT-X/EPT or AMD-V/RVI?
This feature to enable the nested virtualization.

2- Operating System Installation

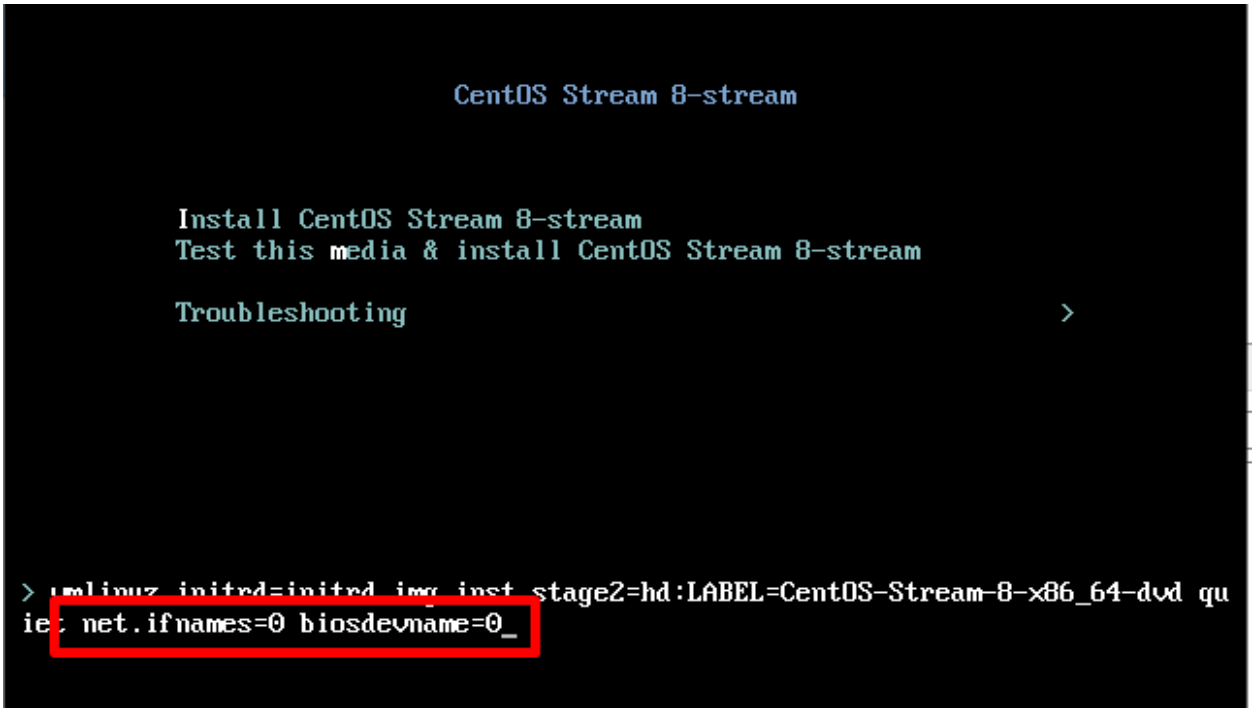
During the installation of the CentOS OS. Move to Install CentOS Stream 8-stream and click tab on your keyboard.



Type a space to separate than the last kernel option, type

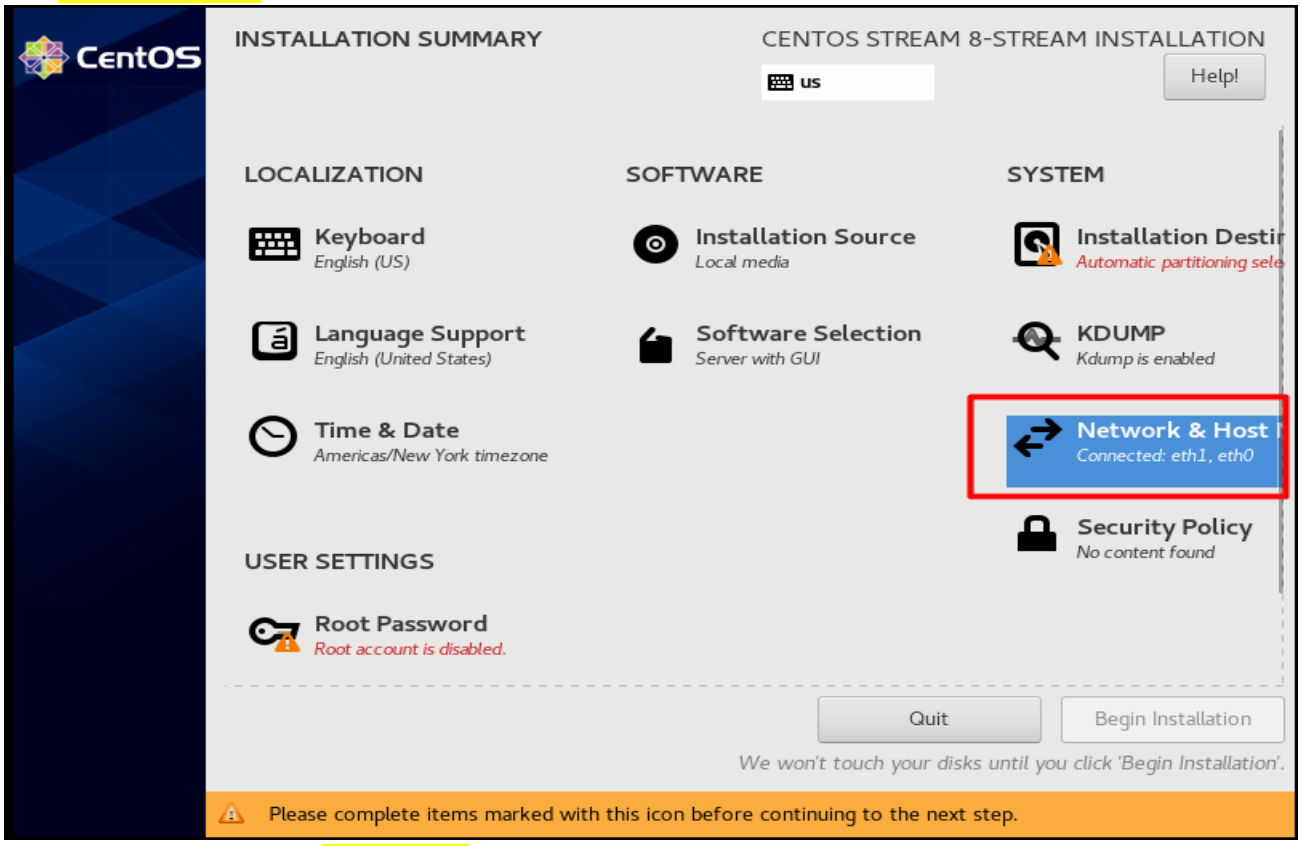
```
net.ifnames=0 biosdevname=0
```

Then hit Enter.

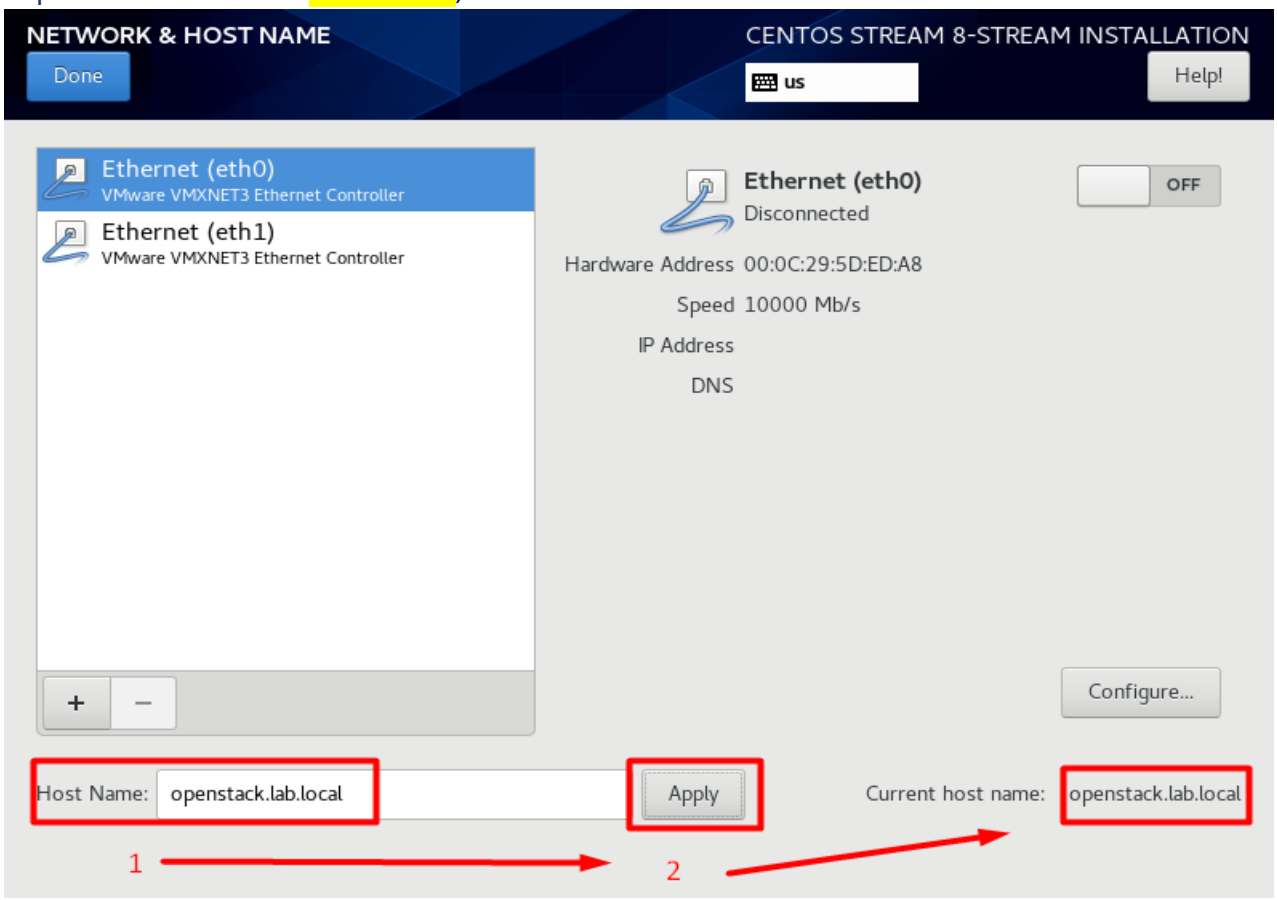


This will enable old Linux NIC card naming (eth0, eth1, …etc).

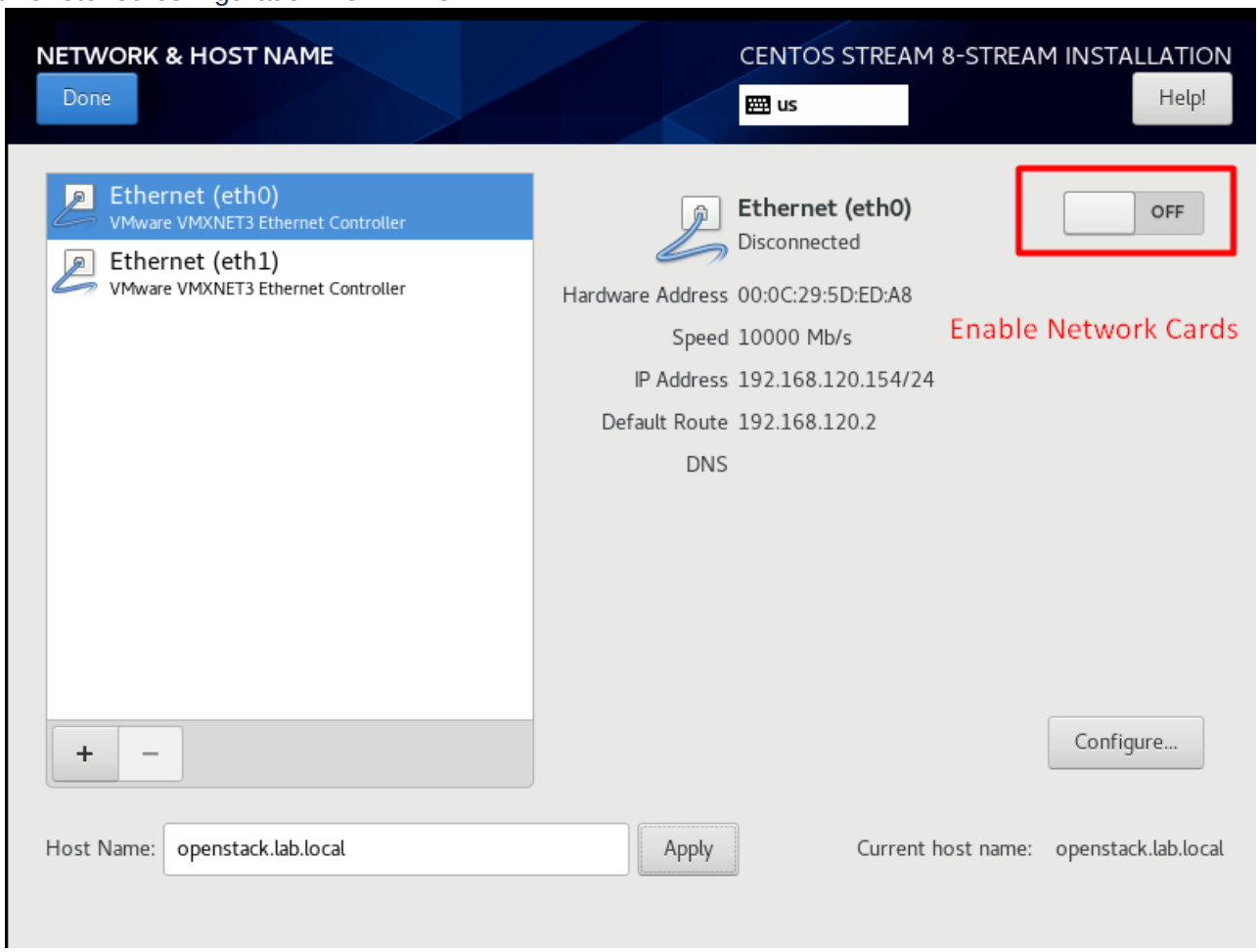
Now you see the installation screen,
Click on Network & Host.



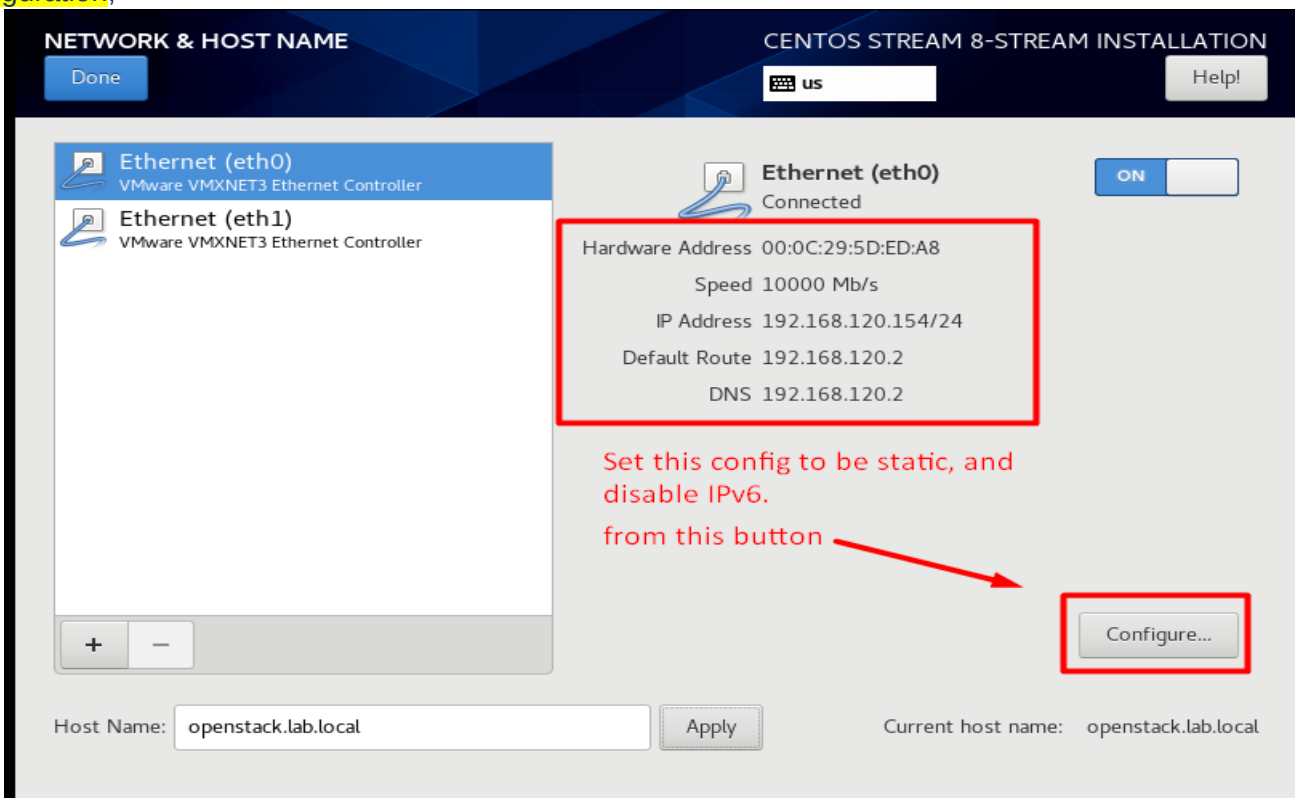
First step we need to set the Host Name,



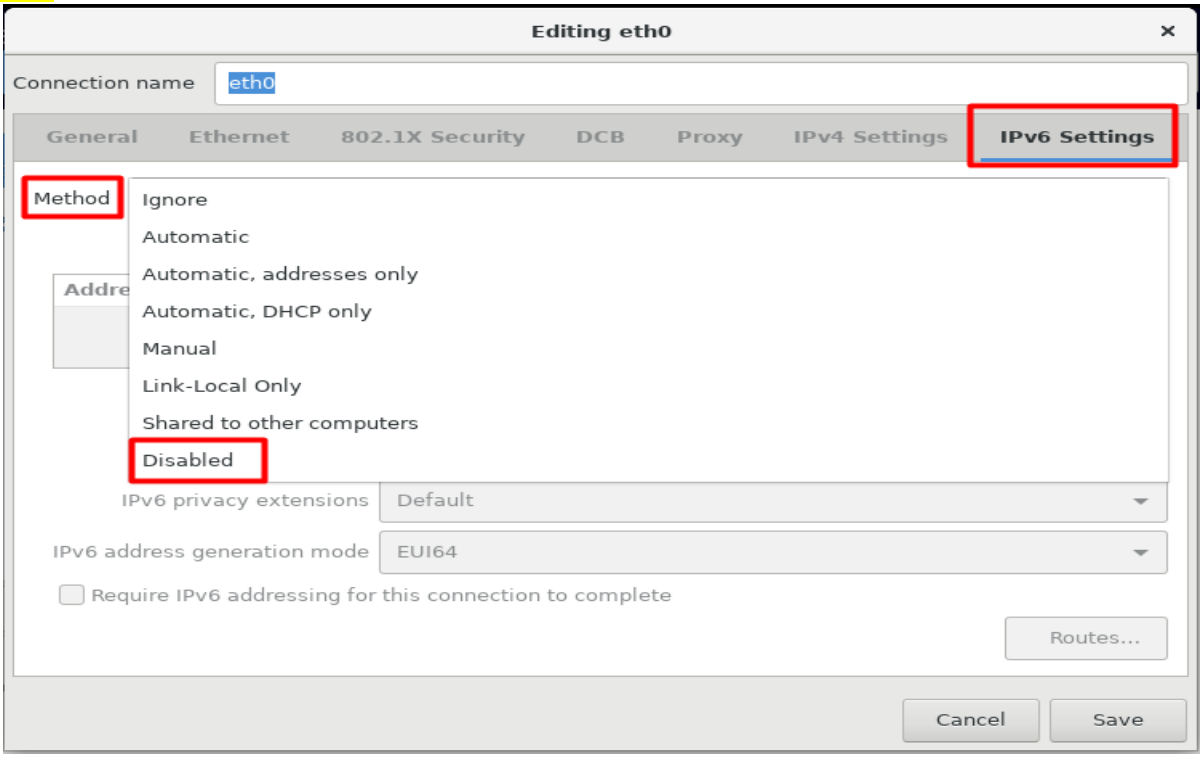
Now, the network card got an IP from the DHCP. configure the IP manually by clicking configure. Give the card the same fetched configuration from DHCP.



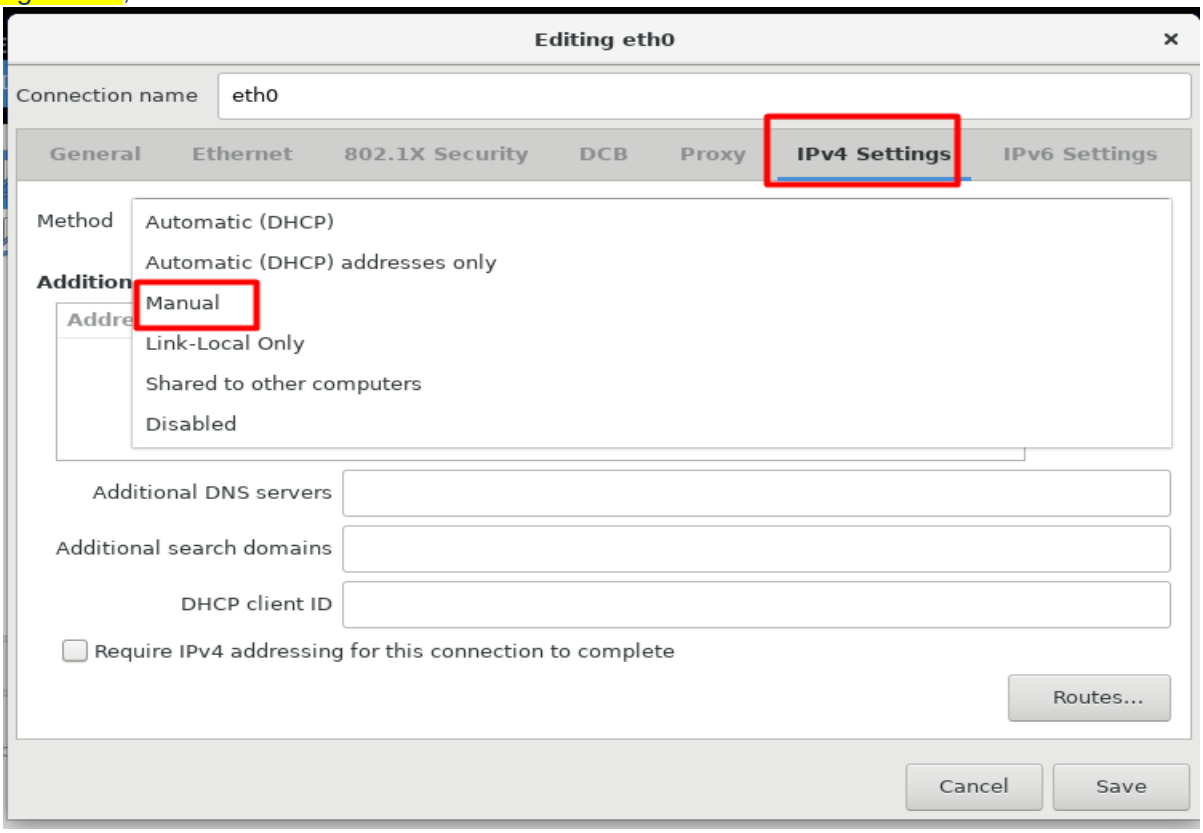
Configuration,



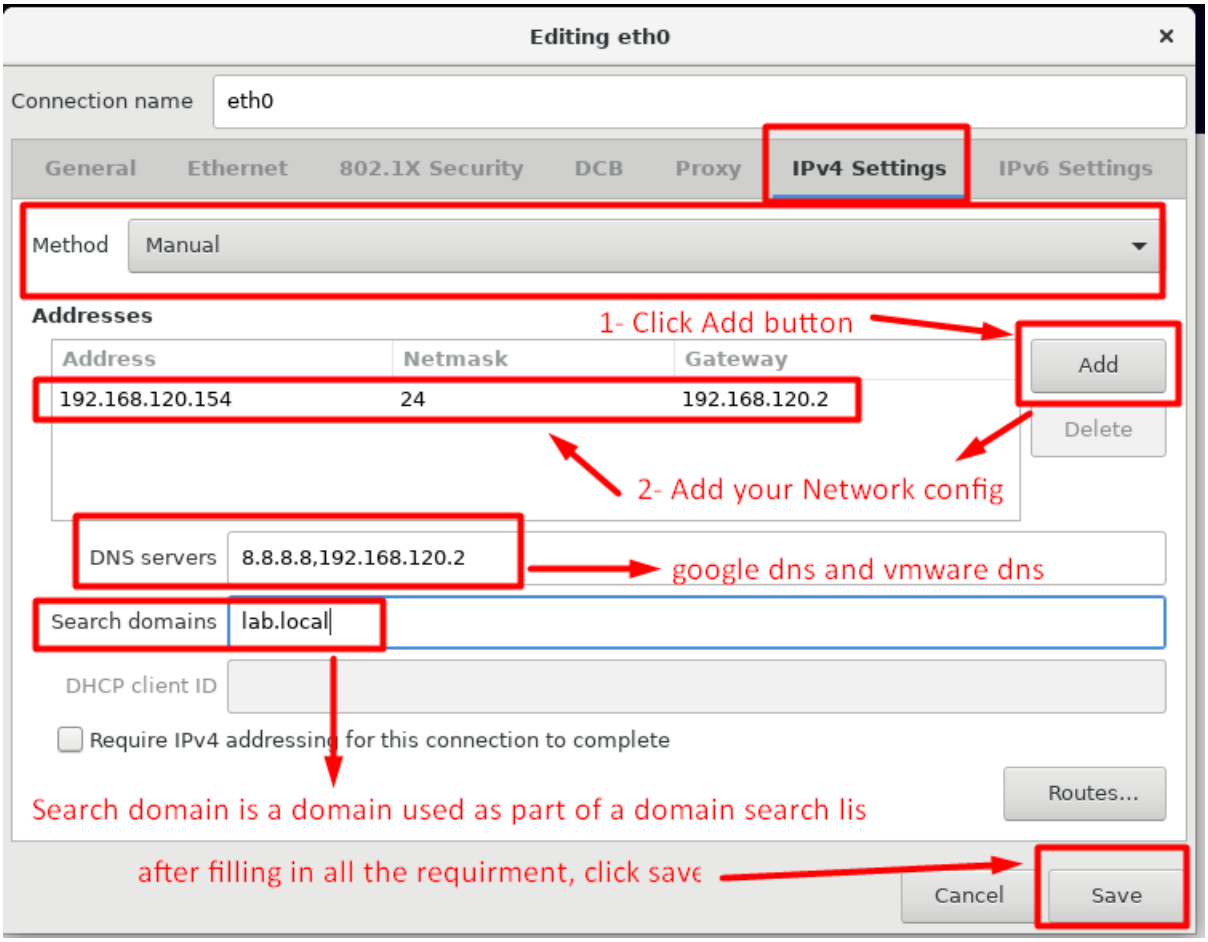
Disable IPv6,



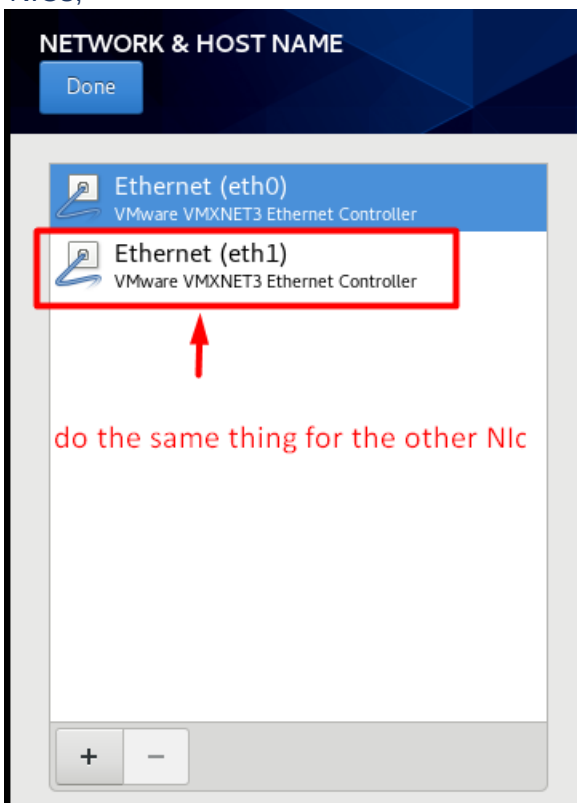
IPv4 Configuration,



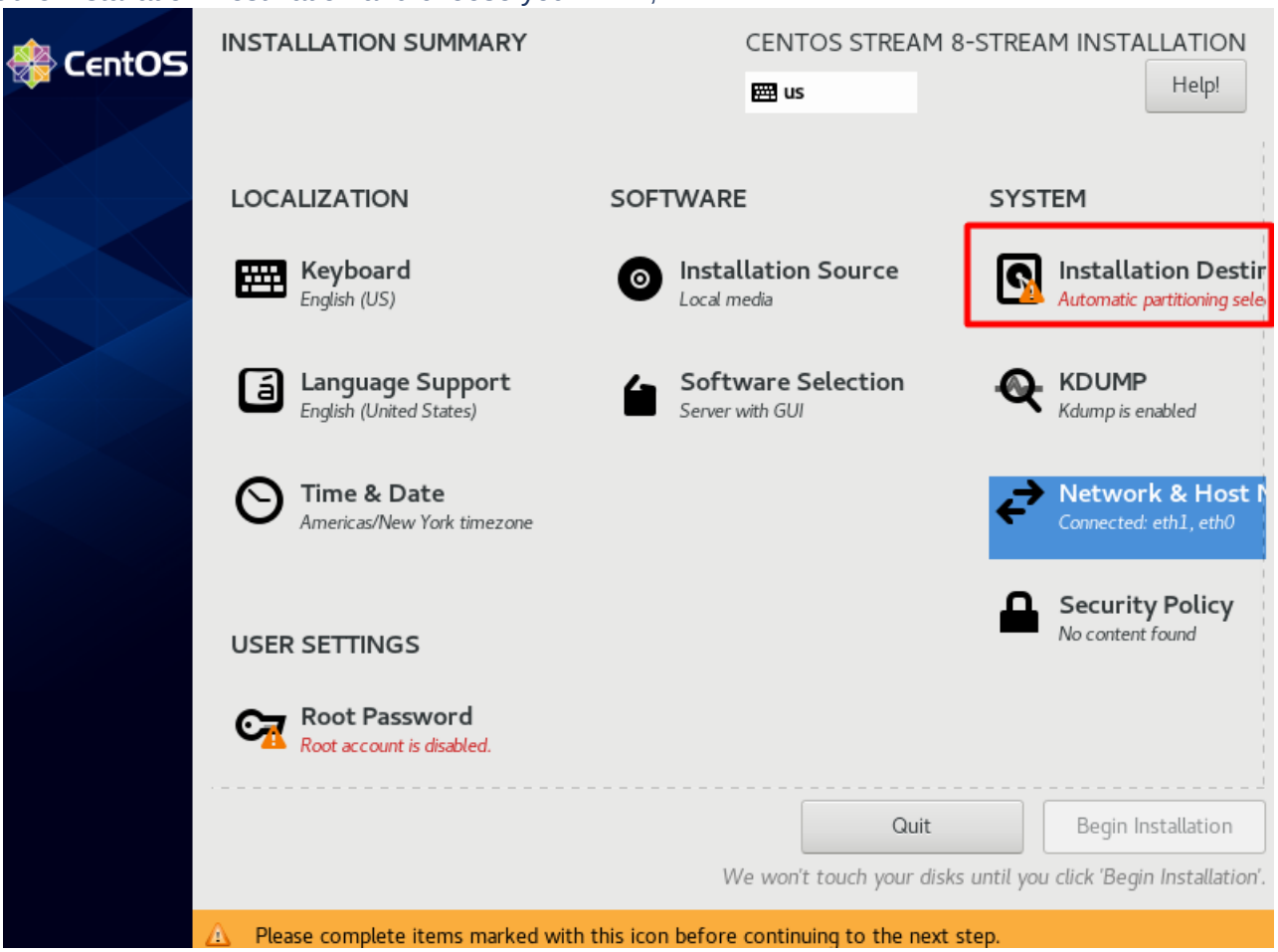
Then,



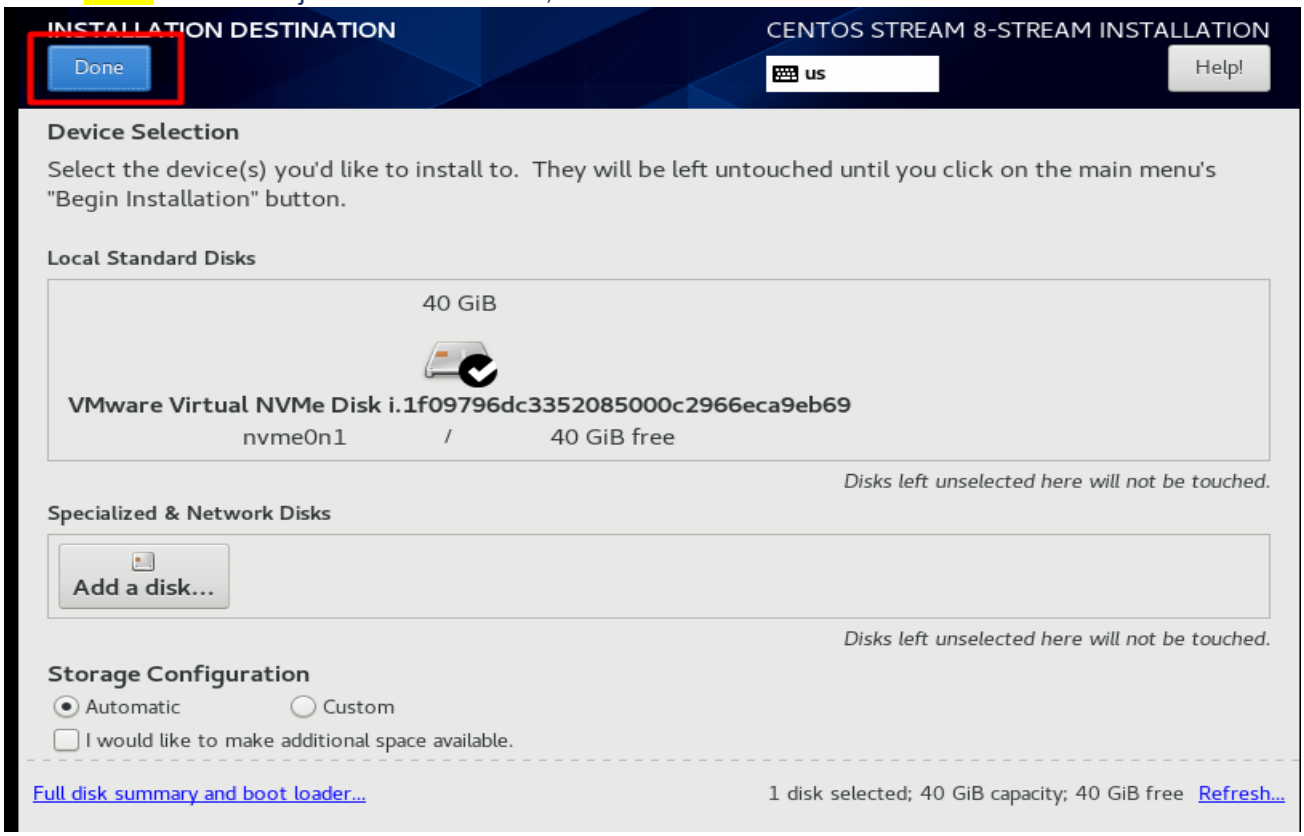
And do the same for the other NICs,



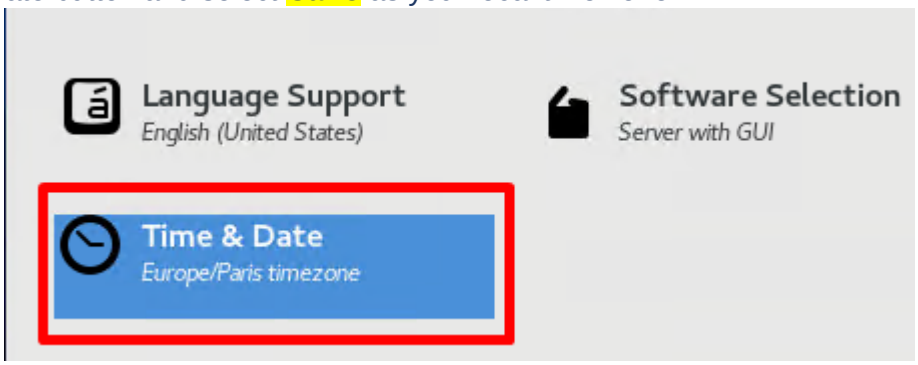
Select the Installation Destination and choose your HDD,



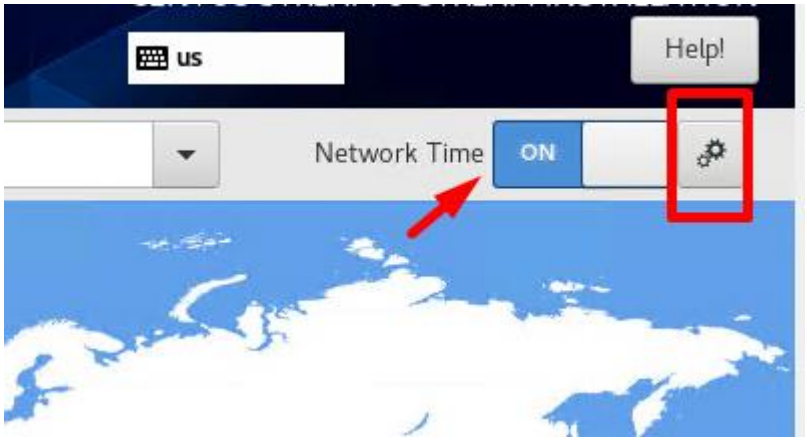
just click to Done button if u just have one HDD,

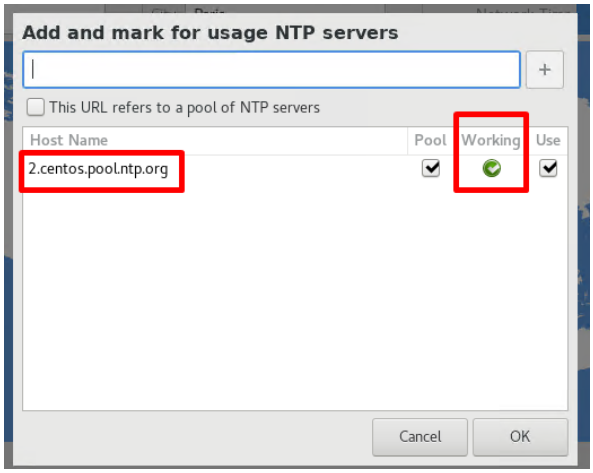


Click the Time and Date button and select **Cairo** as your local time zone.



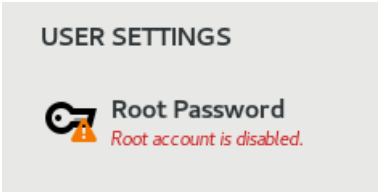
Make sure that NTP on the top right is enabled, click on the gear icon and wait for a moment to make sure it is syncing with centos public NTP servers.

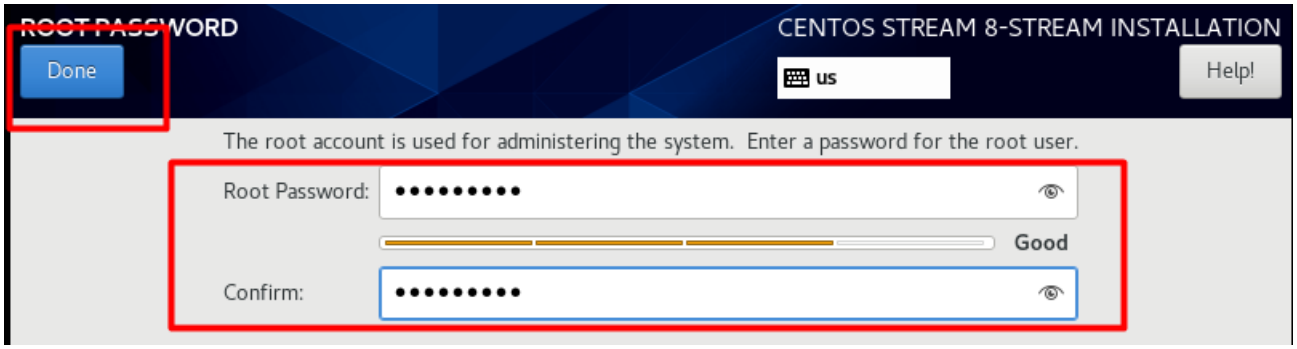




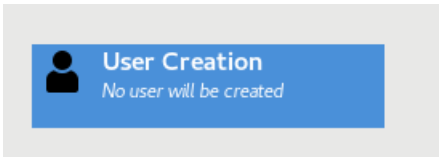
For Software Selection, please, select Server with GUI

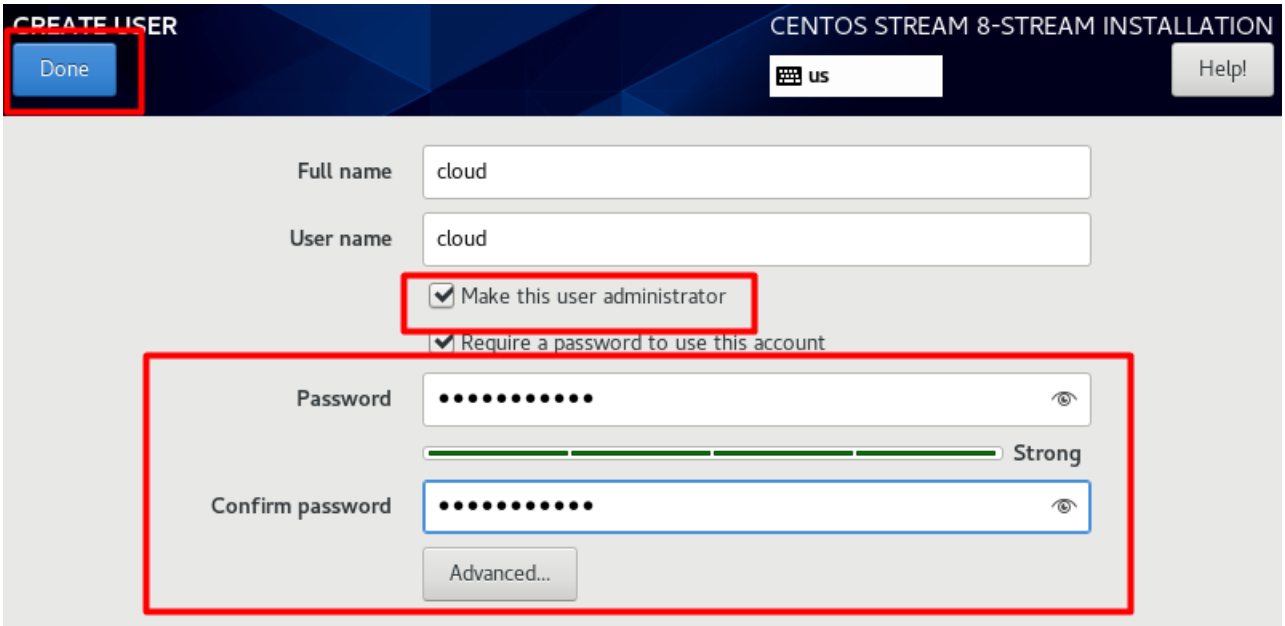
Then create root password,



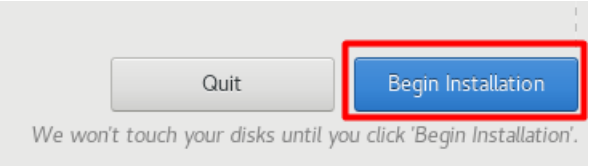


Then create user and make him Admin,

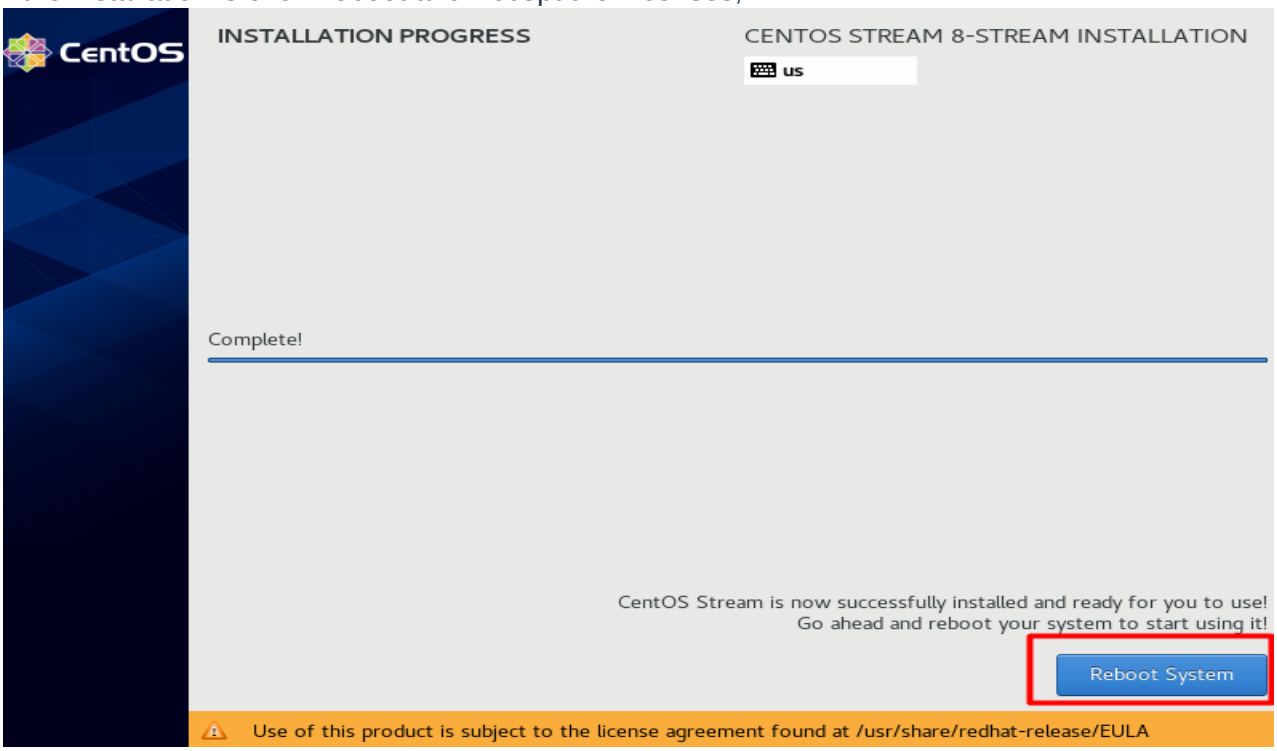




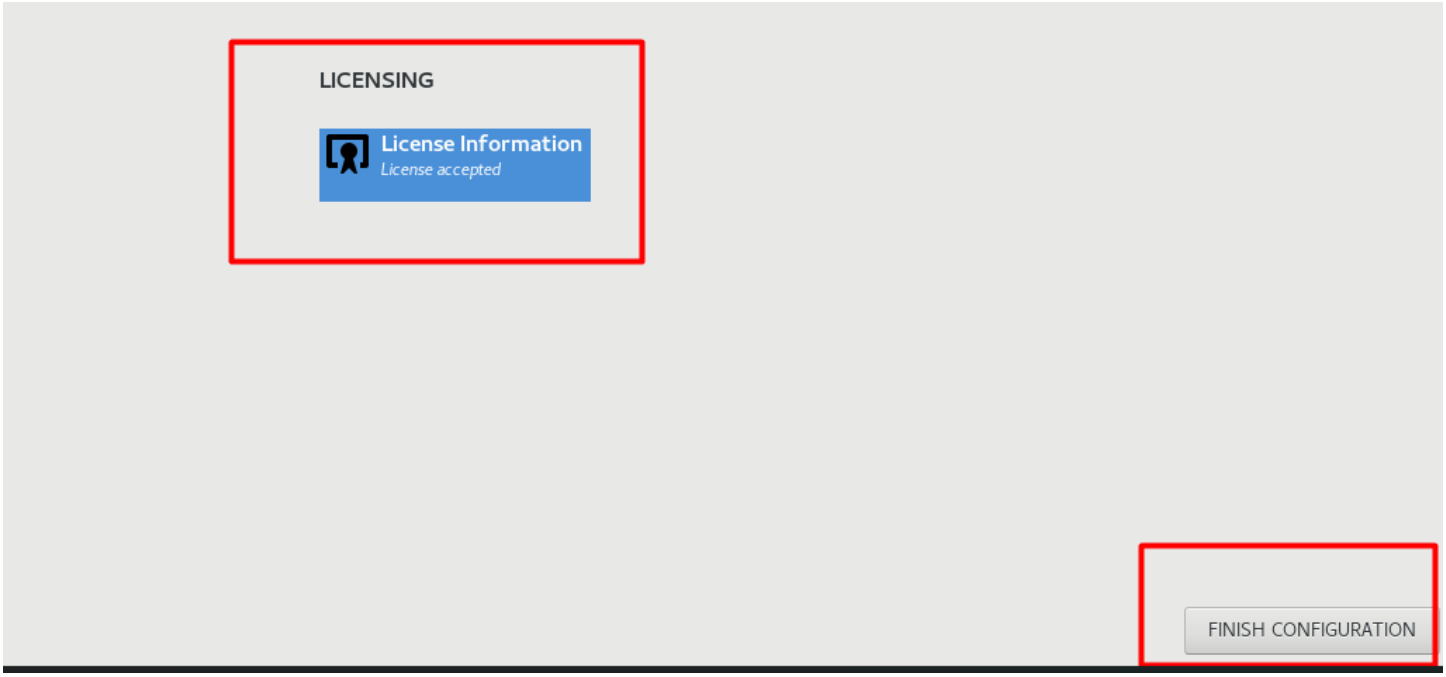
Once all are set. Begin the OS installation.



When the installation is over Reboot and Accept the Licenses,



Then,

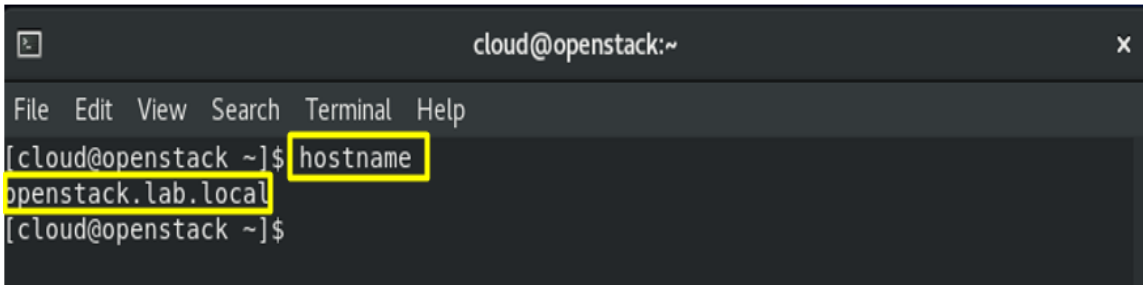


3- Prerequisites Deployment:

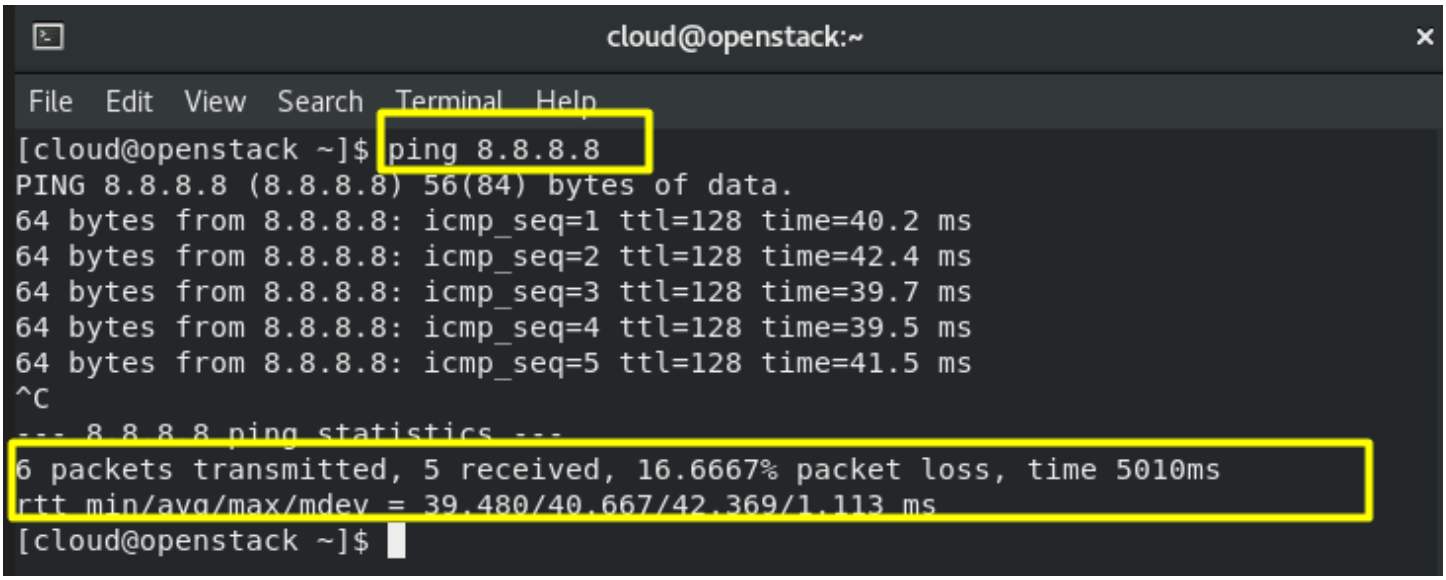
As a prerequisite, you have to install the needed repos and Adding to that, you must disable some services and enable the legacy network service.

The below section illustrates the actions we have to follow:

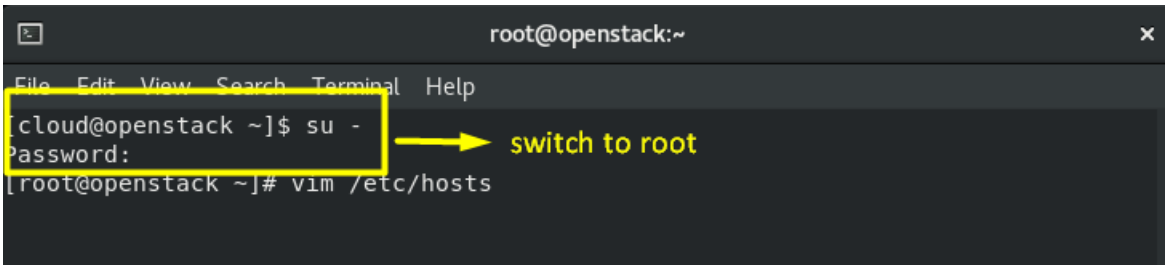
Firstly, we need to check the hostname, and check if we can reach the internet or not, and switch to be root.



Ping check,

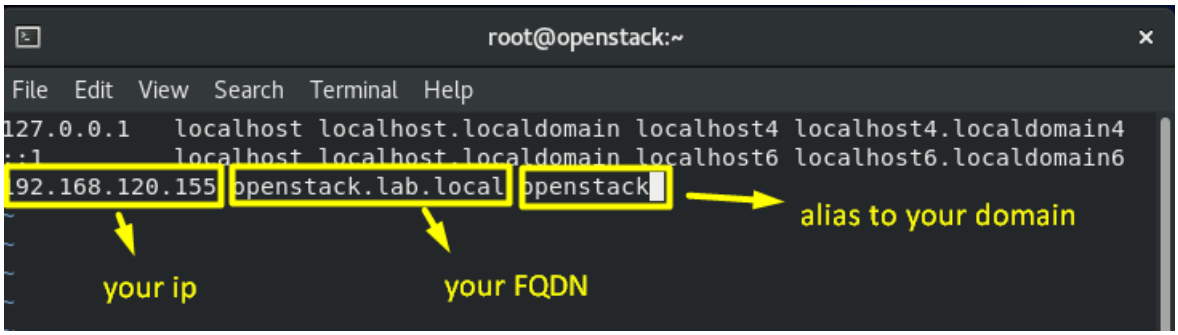


Switch to root,



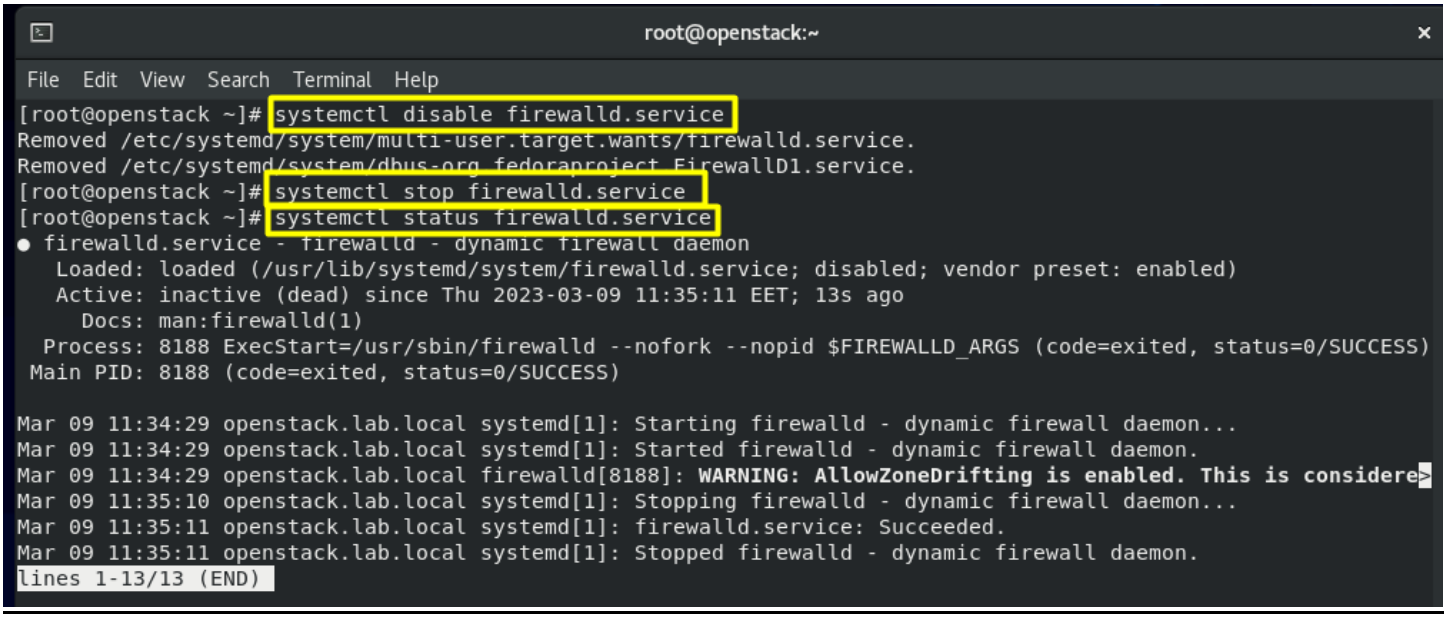
Environment Setup:

1- Add the hostname to /etc/hosts and make an alias for it,



2- Disable and stop firewalld

```
systemctl disable firewalld
systemctl stop firewalld
systemctl status firewalld
```



3- Disable SeLinux

```
setenforce 0

sed -i 's/SELINUX=.*/SELINUX=disabled/' /etc/selinux/config
```

Cat the selinux config file, make sure it is disabled now.

```
[root@openstack ~]# sed -i 's/SELINUX=.*/SELINUX=disabled/' /etc/selinux/config
[root@openstack ~]# cat /etc/selinux/config

# This file controls the state of SELinux on the system.
# SELINUX=disabled
#     enforcing - SELinux security policy is enforced.
#     permissive - SELinux prints warnings instead of enforcing.
#     disabled - No SELinux policy is loaded.
SELINUX=disabled
# SELINUXTYPE= can take one of these three values:
#     targeted - Targeted processes are protected,
#     minimum - Modification of targeted policy. Only selected processes are protected.
#     mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

```
root@openstack:~
File  Edit  View  Search  Terminal  Help
[root@openstack ~]# getenforce
Enforcing
[root@openstack ~]# setenforce 0
[root@openstack ~]# getenforce
Permissive
[root@openstack ~]#
```

change SELinux to be permissive

4- Disable and stop Networkmanager

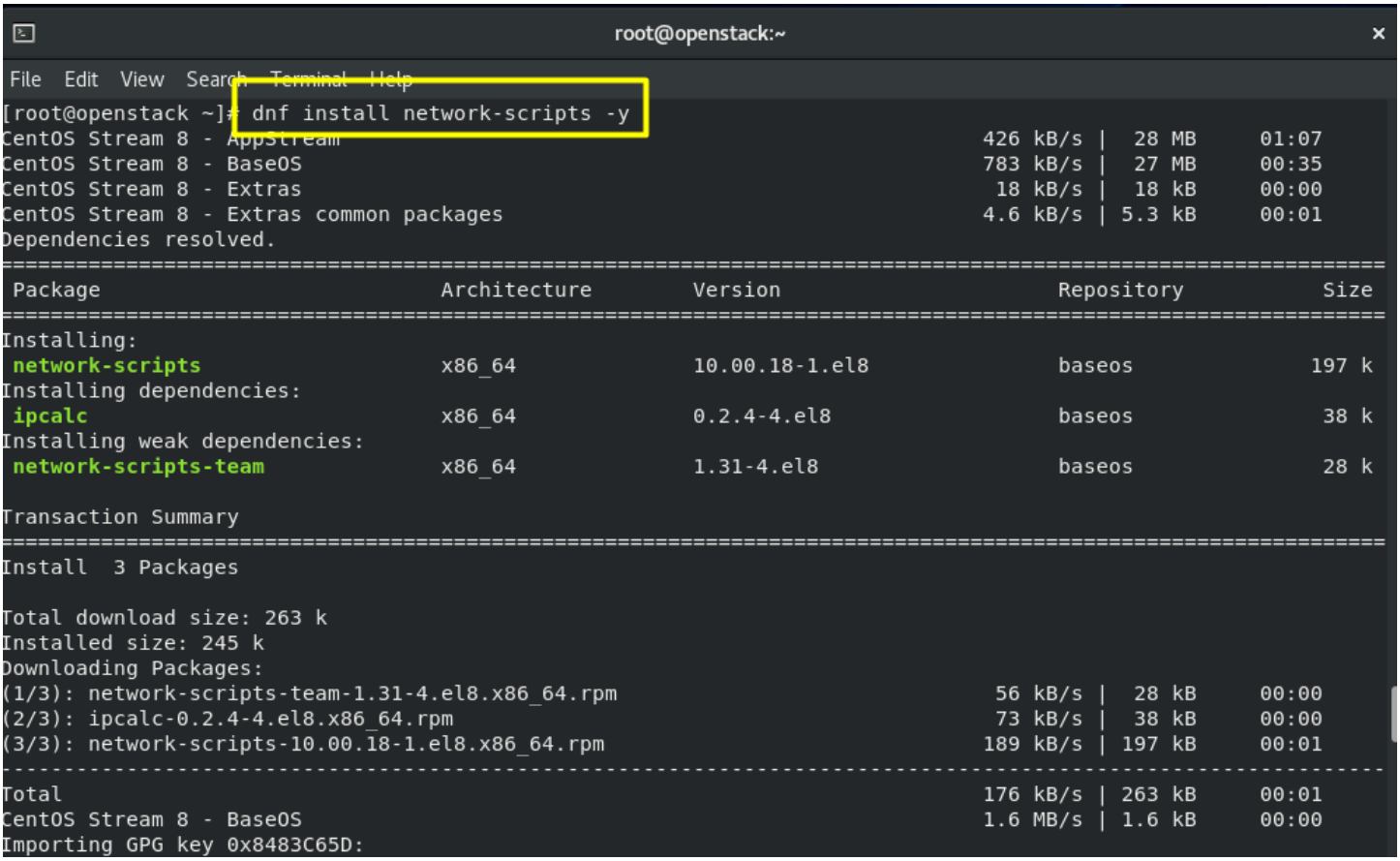
```
systemctl disable NetworkManager
systemctl stop NetworkManager
systemctl status NetworkManager
```

```
root@openstack:~
File  Edit  View  Search  Terminal  Help
[root@openstack ~]# systemctl disable NetworkManager
Removed /etc/systemd/system/multi-user.target.wants/NetworkManager.service.
Removed /etc/systemd/system/dbus-org.freedesktop.nm-dispatcher.service.
Removed /etc/systemd/system/network-online.target.wants/NetworkManager-wait-online.service.
[root@openstack ~]# systemctl stop NetworkManager
[root@openstack ~]# systemctl status NetworkManager
● NetworkManager.service - Network Manager
   Loaded: loaded (/usr/lib/systemd/system/NetworkManager.service; disabled; vendor preset: enabled)
   Active: inactive (dead)
     Docs: man:NetworkManager(8)

Mar 09 11:18:30 openstack.lab.local NetworkManager[1198]: <info>  [1678353510.2509] device (virbr0): state ch>
Mar 09 11:18:30 openstack.lab.local NetworkManager[1198]: <info>  [1678353510.2513] device (virbr0): Activati>
Mar 09 11:19:07 openstack.lab.local NetworkManager[1198]: <info>  [1678353547.7951] agent-manager: agent[ae0f>
Mar 09 11:19:21 openstack.lab.local NetworkManager[1198]: <info>  [1678353561.5328] agent-manager: agent[e36c>
Mar 09 11:39:37 openstack.lab.local systemd[1]: Stopping Network Manager...
Mar 09 11:39:37 openstack.lab.local NetworkManager[1198]: <info>  [1678354777.9762] caught SIGTERM, shutting >
Mar 09 11:39:37 openstack.lab.local NetworkManager[1198]: <info>  [1678354777.9772] manager: NetworkManager s>
Mar 09 11:39:37 openstack.lab.local NetworkManager[1198]: <info>  [1678354777.9874] exiting (success)
Mar 09 11:39:38 openstack.lab.local systemd[1]: NetworkManager.service: Succeeded.
Mar 09 11:39:38 openstack.lab.local systemd[1]: Stopped Network Manager.
lines 1-15/15 (END)
```

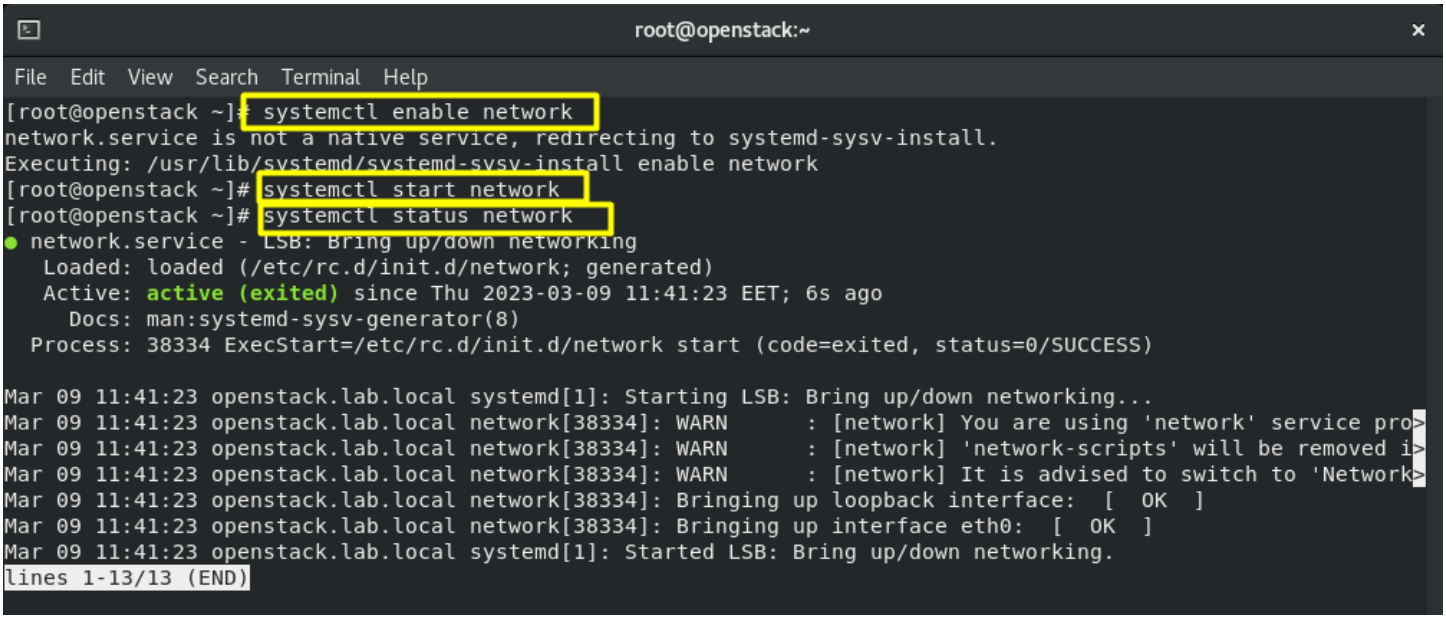
5- Download network-scripts

```
dnf install network-scripts -y
```



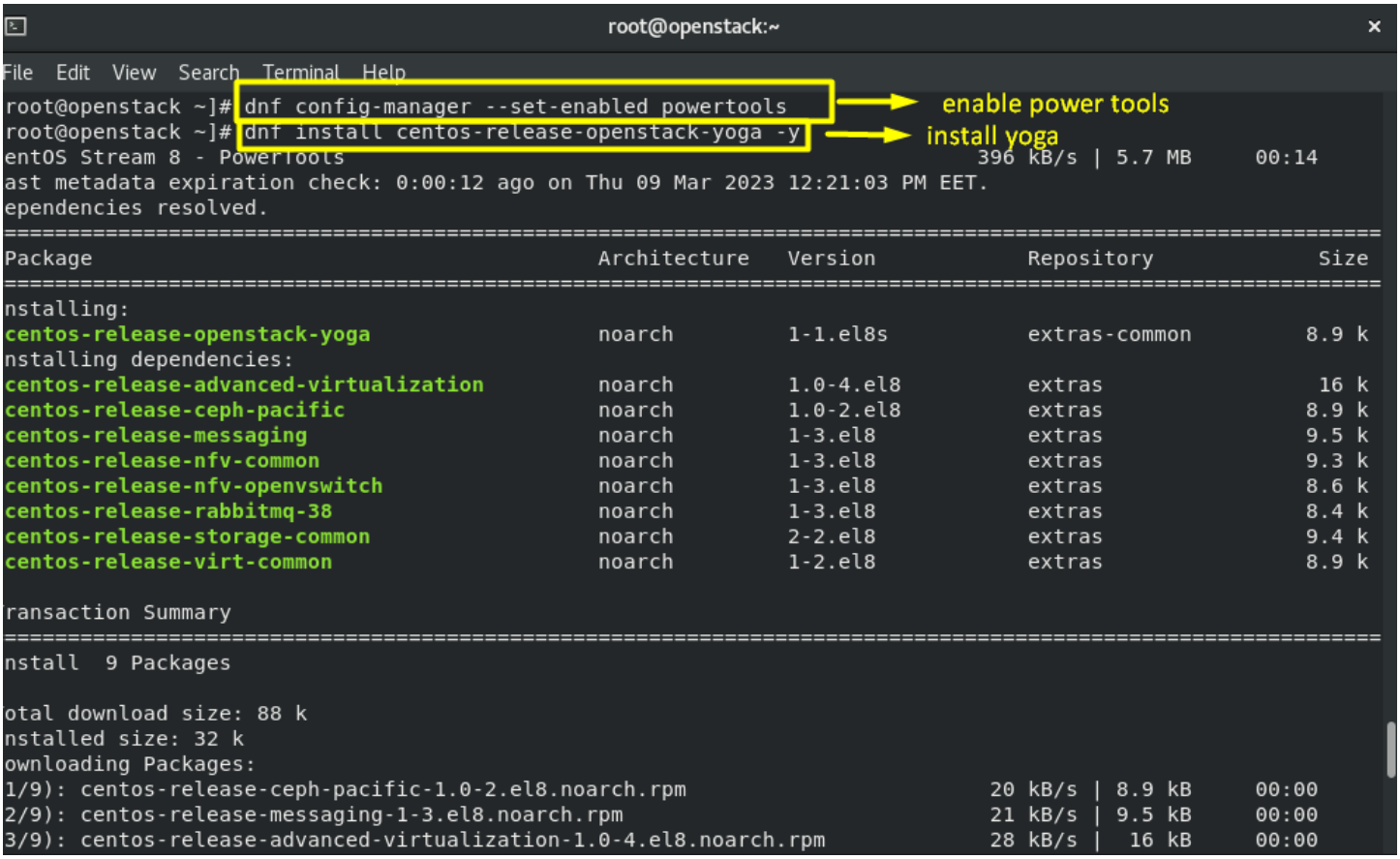
6- Enable and Start network-scripts

```
systemctl enable network
systemctl start network
systemctl status network
```



7- Enable power tools and install yoga,

```
dnf config-manager --enable powertools
dnf install -y centos-release-openstack-yoga
```

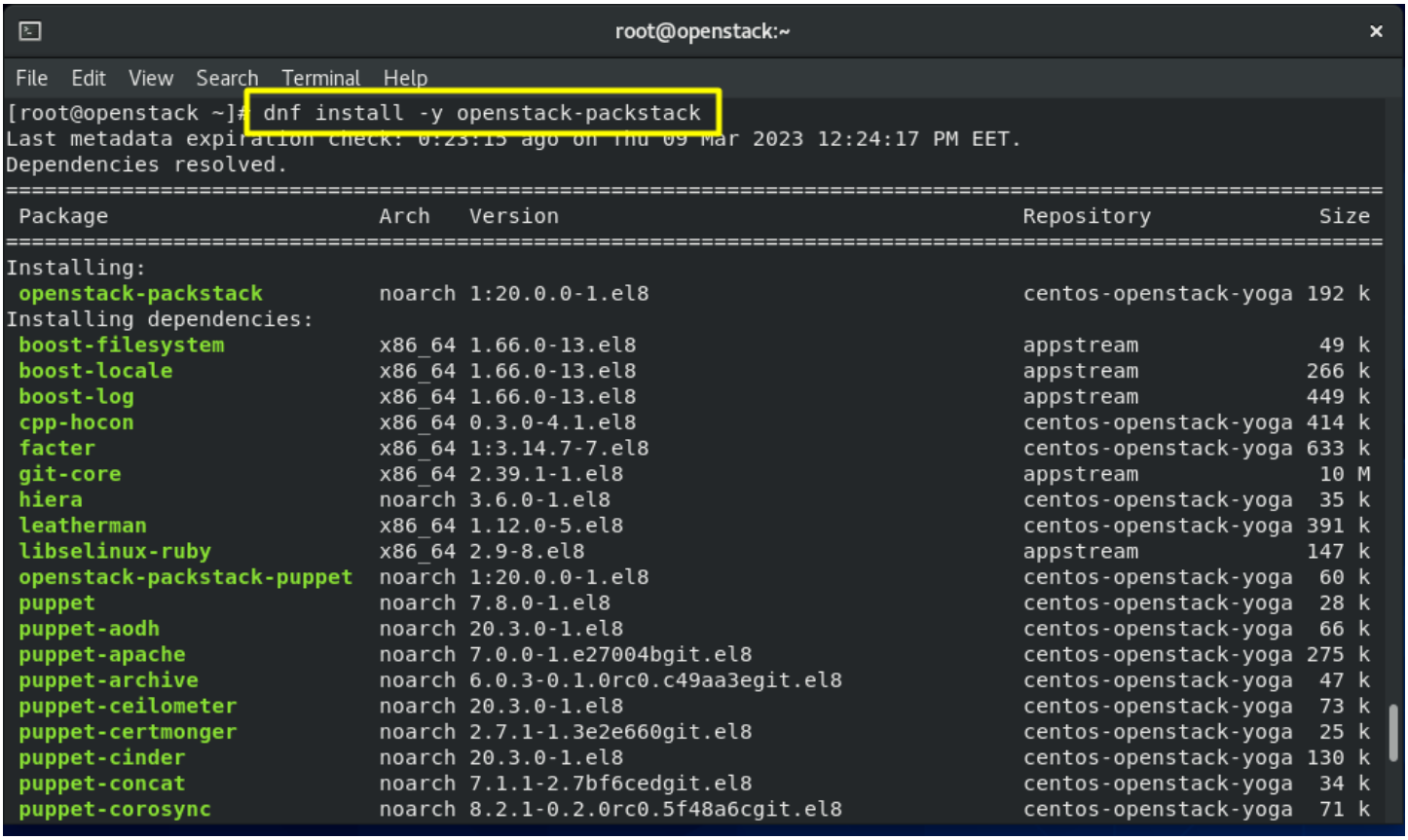


8- Update the system,

```
dnf -y update
```

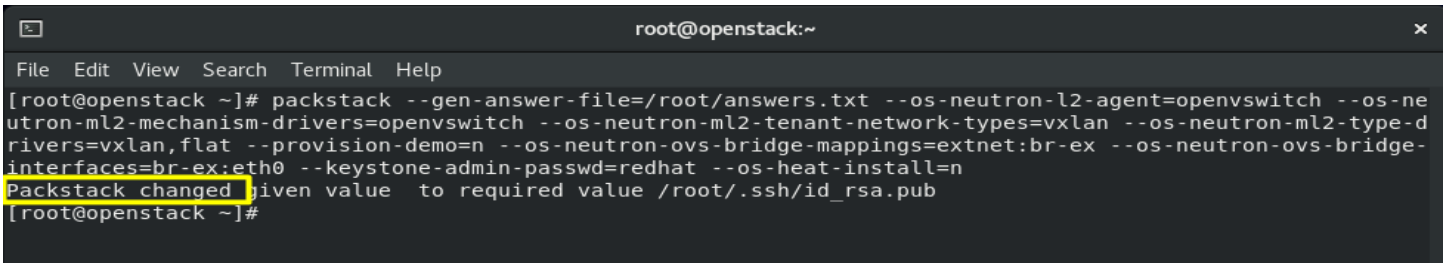
9- Install Packstack,

```
dnf install -y openstack-packstack
```

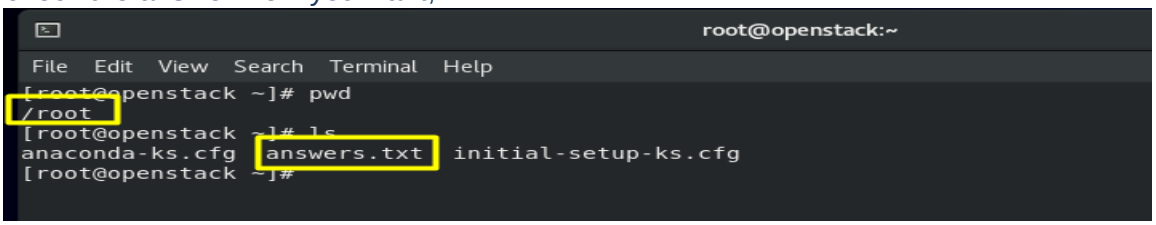


10- Generate answer file,

```
packstack --gen-answer-file=/root/answers.txt --os-neutron-l2-agent=openvswitch --os-neutron-ml2-mechanism-drivers=openvswitch --os-neutron-ml2-tenant-network-types=vxlan --os-neutron-ml2-type-drivers=vxlan,flat --provision-demo=n --os-neutron-ovs-bridge-mappings=extnet:br-ex --os-neutron-ovs-bridge-interfaces=br-ex:eth0 --keystone-admin-passwd=redhat --os-heat-install=n
```



You can check the answer file if you want,



Here is a breakdown of the different options and arguments used in the command,

packstack: This is the name of the utility that is being invoked.

--gen-answer-file=/root/answers.txt: This option specifies the name and location of the answer file that will be generated.

--os-neutron-l2-agent=openvswitch: This option specifies that Open vSwitch will be used as the L2 agent for Neutron.

--os-neutron-ml2-mechanism-drivers=openvswitch: This option specifies that Open vSwitch will be used as the ML2 mechanism driver for Neutron.

--os-neutron-ml2-tenant-network-types=vxlan: This option specifies that VXLAN will be used as the tenant network type for Neutron ML2.

--os-neutron-ml2-type-drivers=vxlan,flat: This option specifies the type drivers that will be used for Neutron ML2, which are VXLAN and flat.

--provision-demo=n: This option specifies that the demo project will not be provisioned during the installation process.

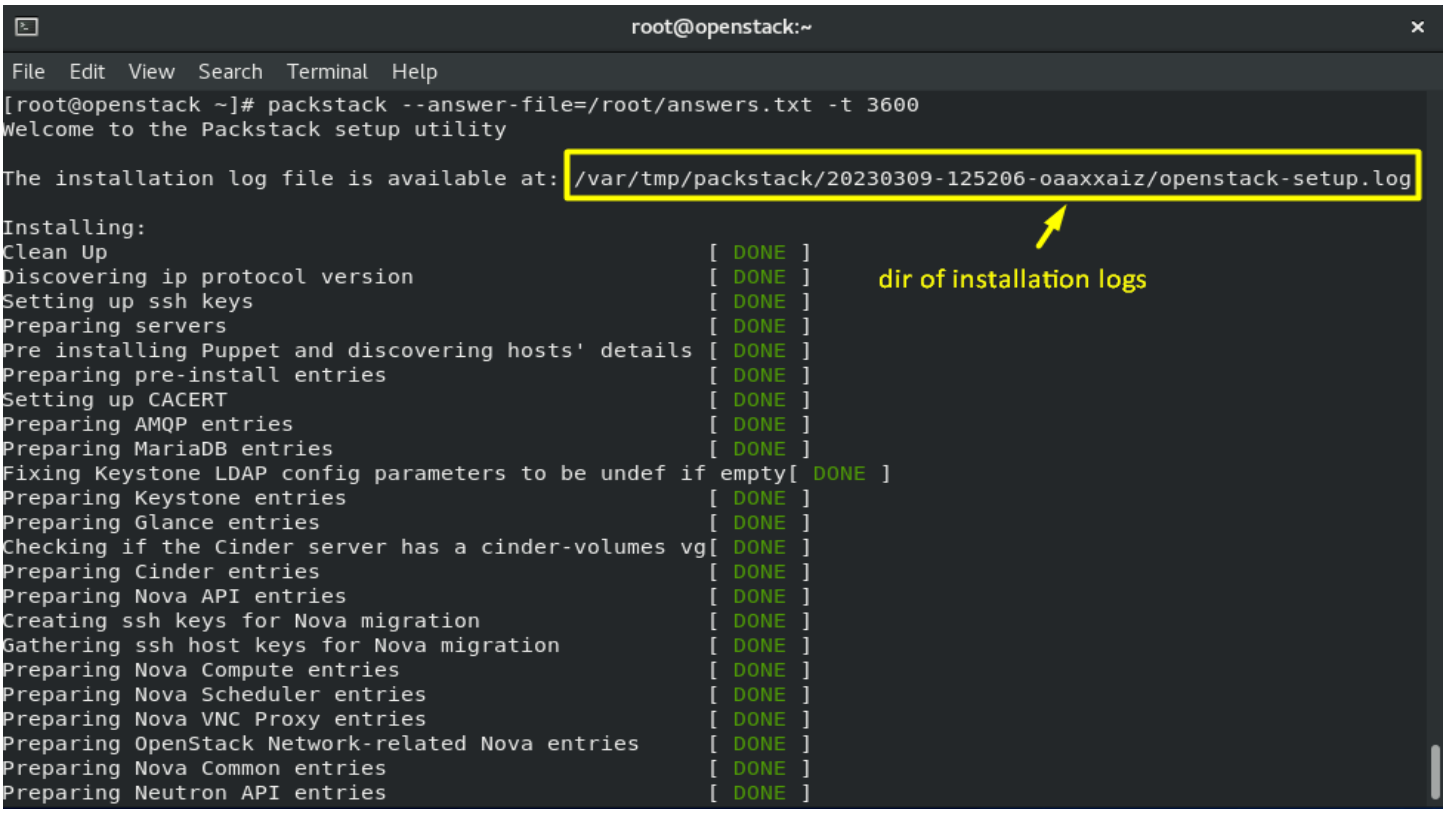
--os-neutron-ovs-bridge-mappings=extnet:br-ex: This option specifies the mapping between the external network (extnet) and the OVS bridge (br-ex).

--os-neutron-ovs-bridge-interfaces=br-ex:ens192: This option specifies the mapping between the OVS bridge (br-ex) and the network interface (ens192).

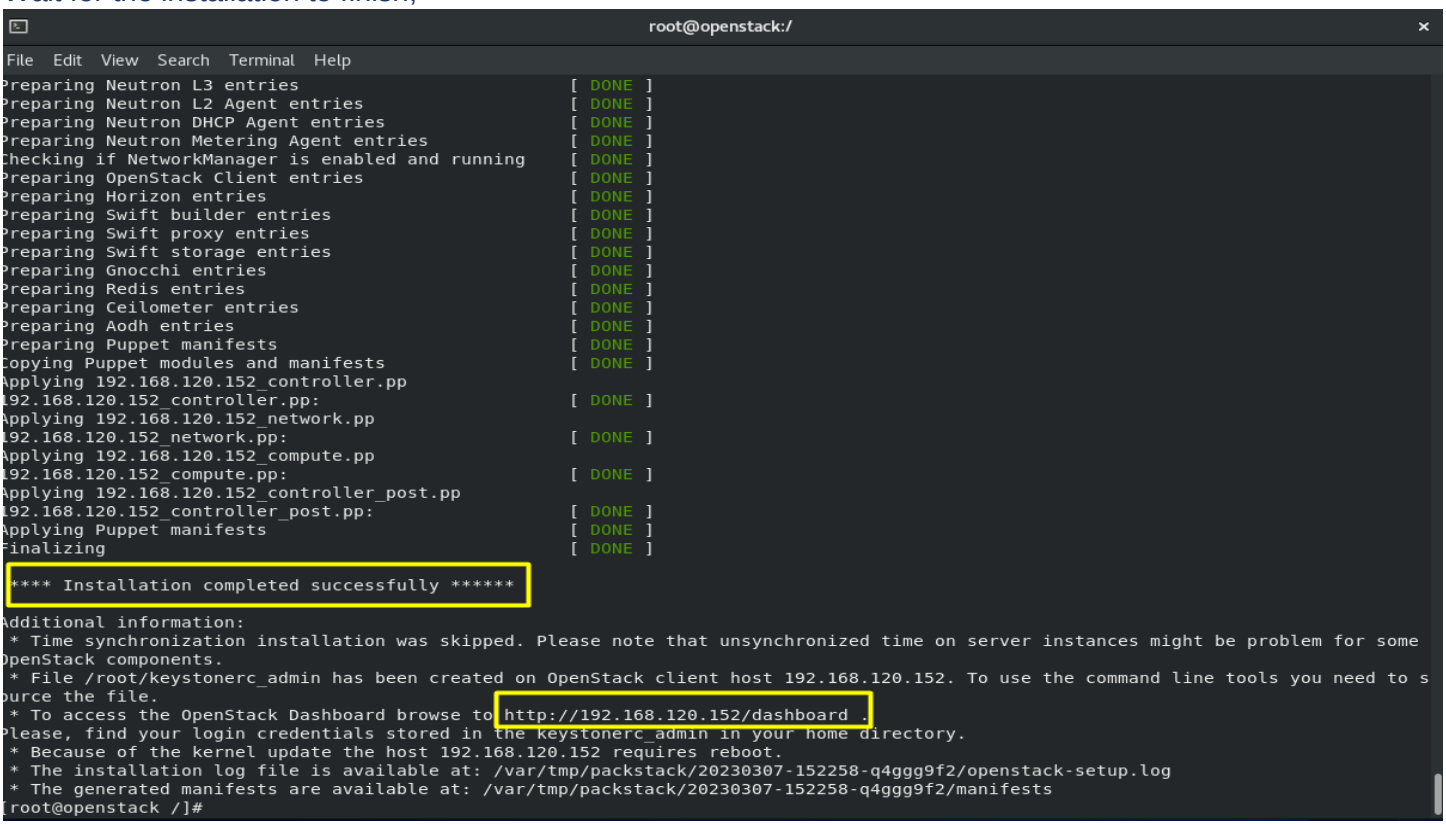
--keystone-admin-passwd=redhat: This option specifies the password for the Keystone admin user.
--os-heat-install=n: This option specifies that the Heat service will not be installed during the installation process.

11- Start the installation,

```
packstack --answer-file=/root/answers.txt -t 3600
```

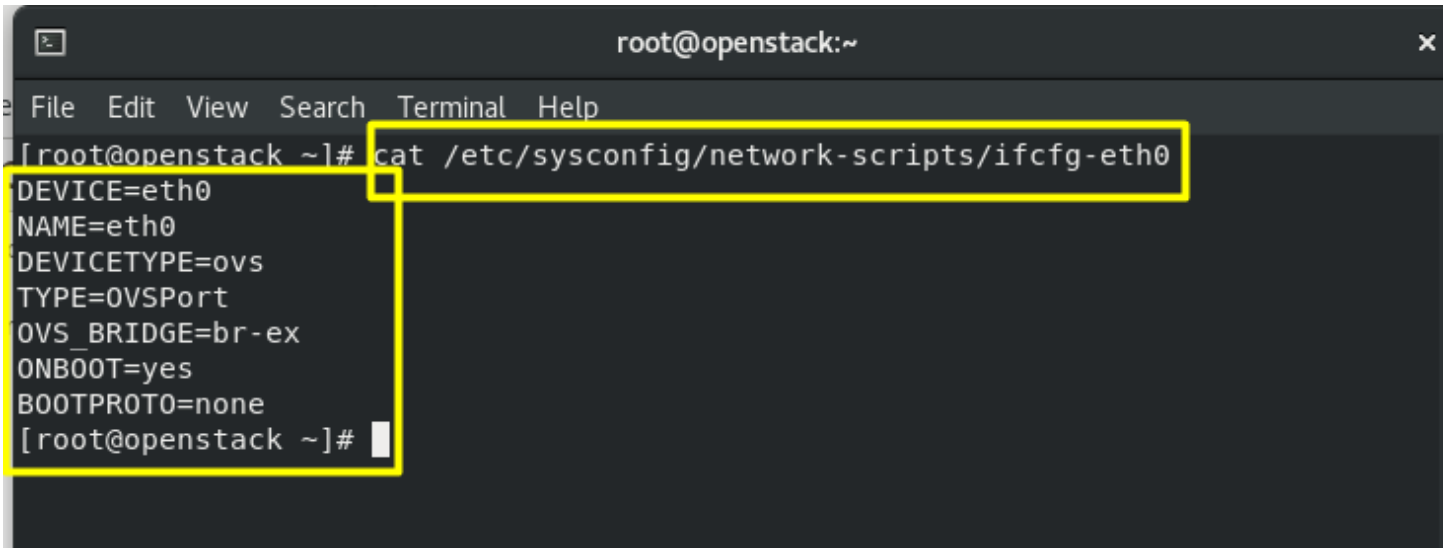


Wait for the installation to finish,

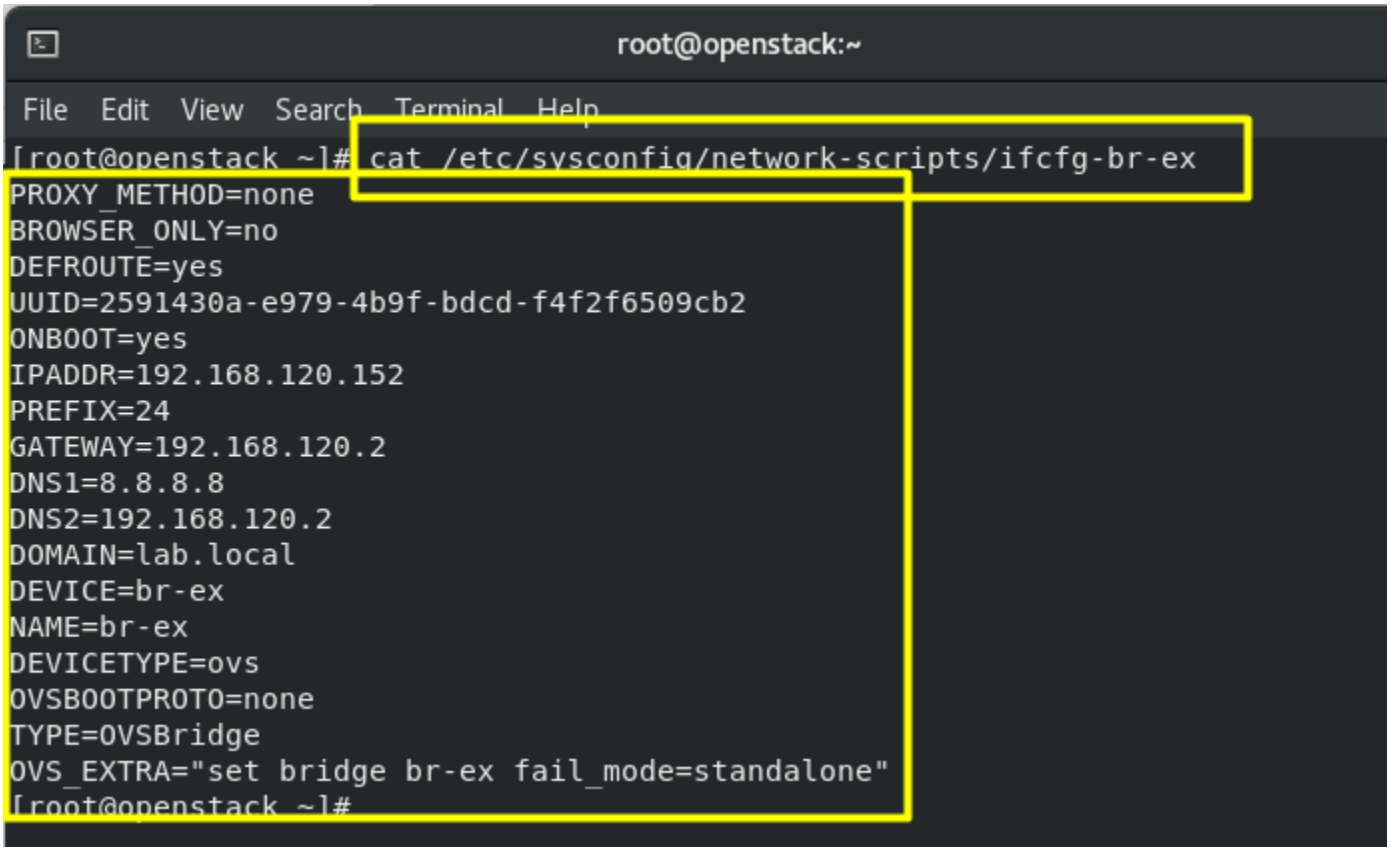


After the deployment is done successfully, make sure that br-ex and eth0 interfaces are configured correct as the below >> you should configure them manually then restart network if they aren't the same as below.

eth0,

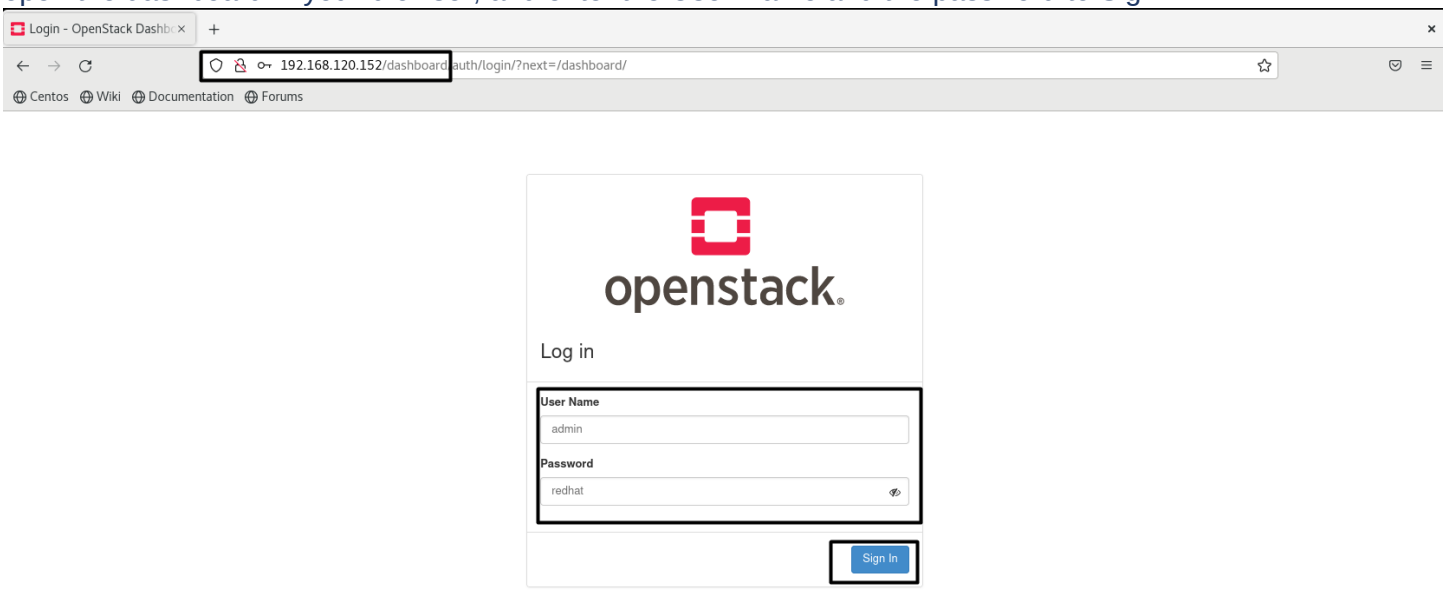


br-ex,

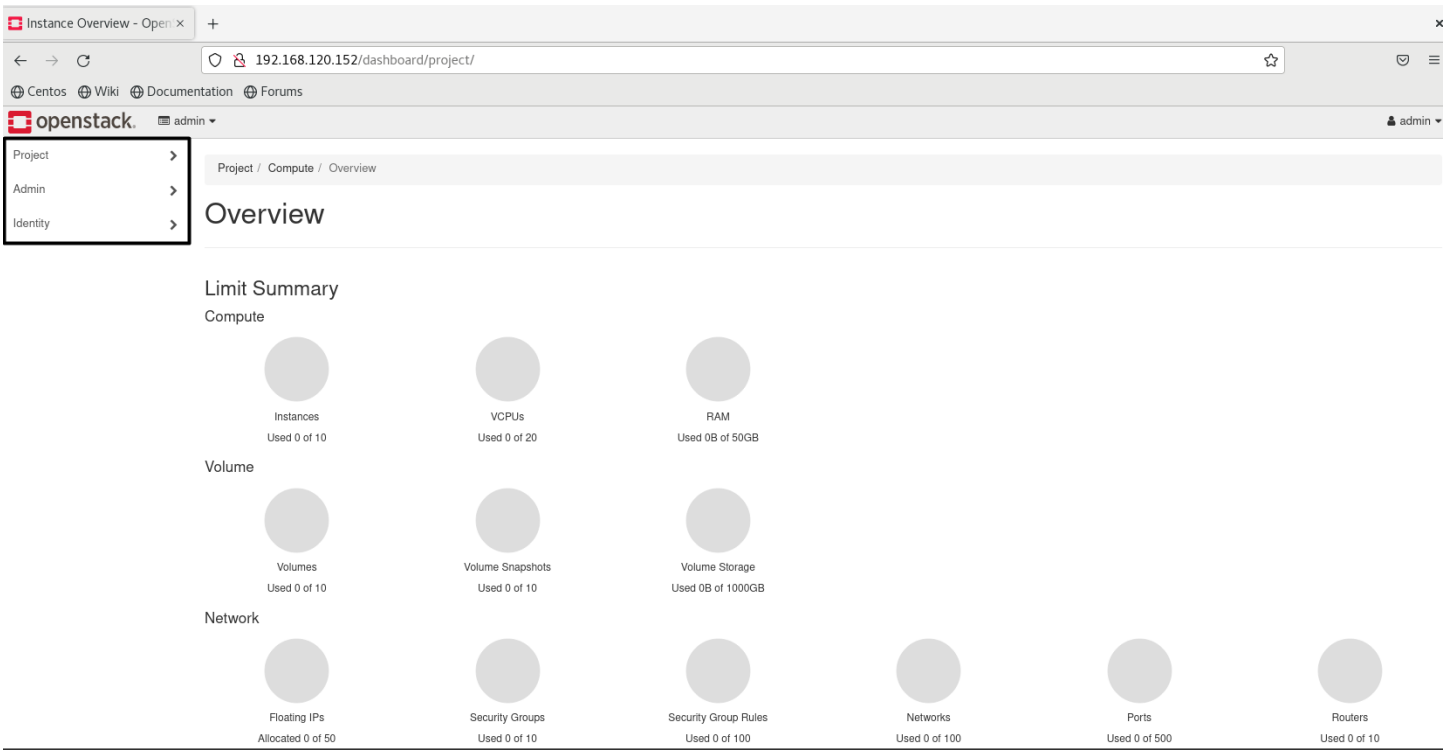


4- Validation:

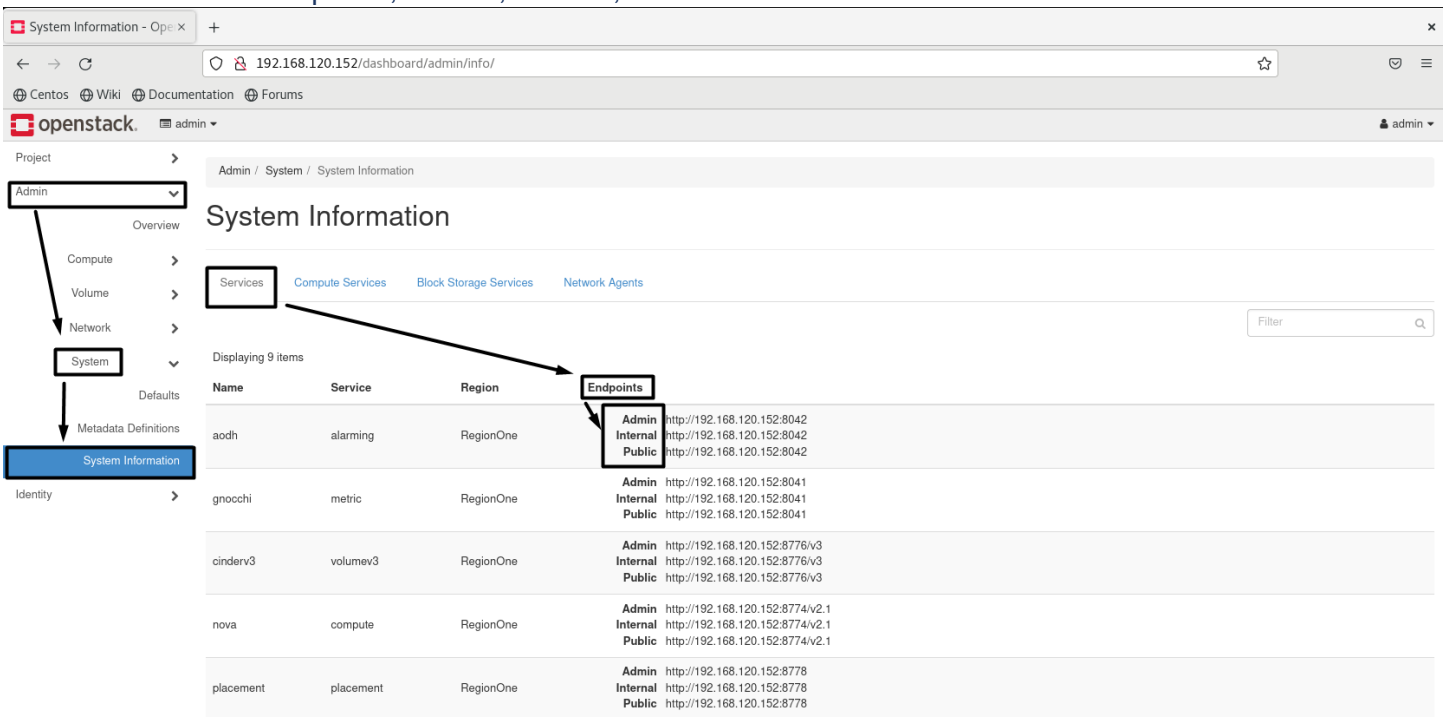
open the dashboard in your browser, and enter the User Name and the password to Sign In.



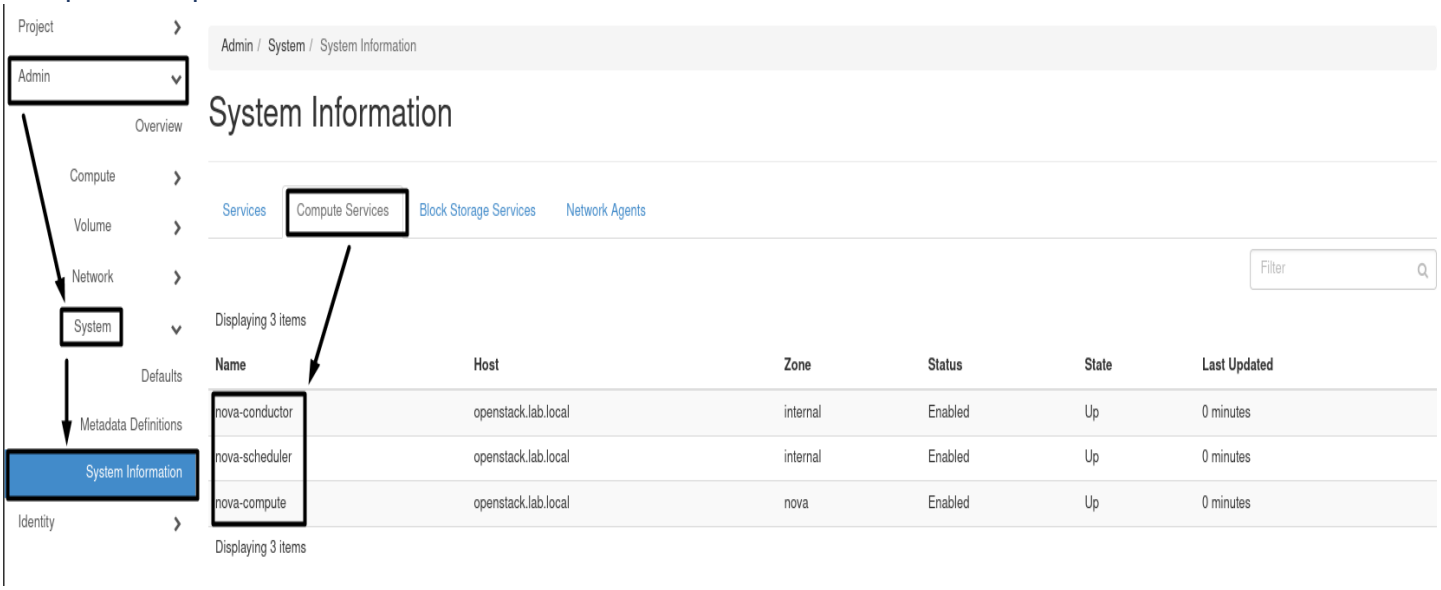
Congratulations 😎,



Then go to, Admin→ System→ System Information,
Each service has 3 Endpoints, “Admin, Internal, Public”.



Compute Component,



Here is a breakdown of the Compute Components,

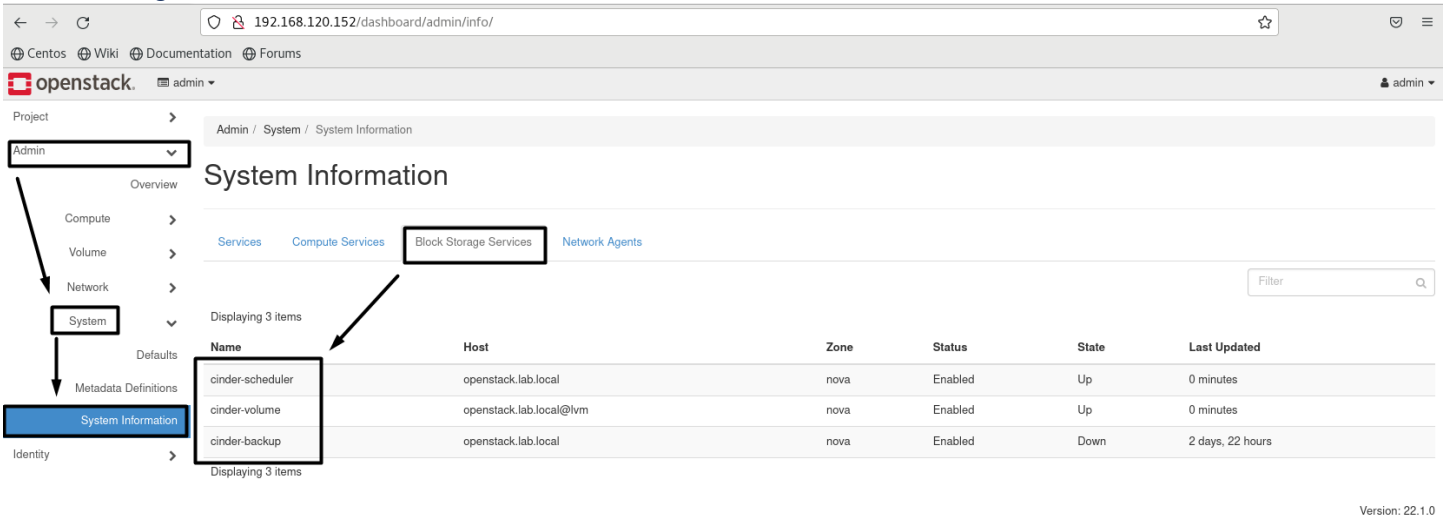
These three components are part of the OpenStack Nova project, which is the compute module in the OpenStack cloud computing platform.

nova-conductor: It is a control plane service that runs on the Nova API server and is responsible for coordinating and validating operations that modify the state of Nova objects, such as instances and flavors. It ensures that the database is updated correctly and that the requested operation is valid based on policy rules.

nova-scheduler: It is also a control plane service that runs on the Nova API server and is responsible for selecting the best compute node to run a new instance. It receives requests for new instances from the API server and uses filters and weighting algorithms to choose the most suitable compute node based on factors such as resource availability and workload balancing.

nova-compute: It is a compute plane service that runs on each compute node and is responsible for managing the virtualization of instances on that node. It interacts with the hypervisor, such as KVM or Xen, to create, start, stop, pause, and delete instances. It also manages the network connectivity of the instances by attaching them to the appropriate virtual networks.

Block Storage Services,



Here is a breakdown of the Block Storage Services,

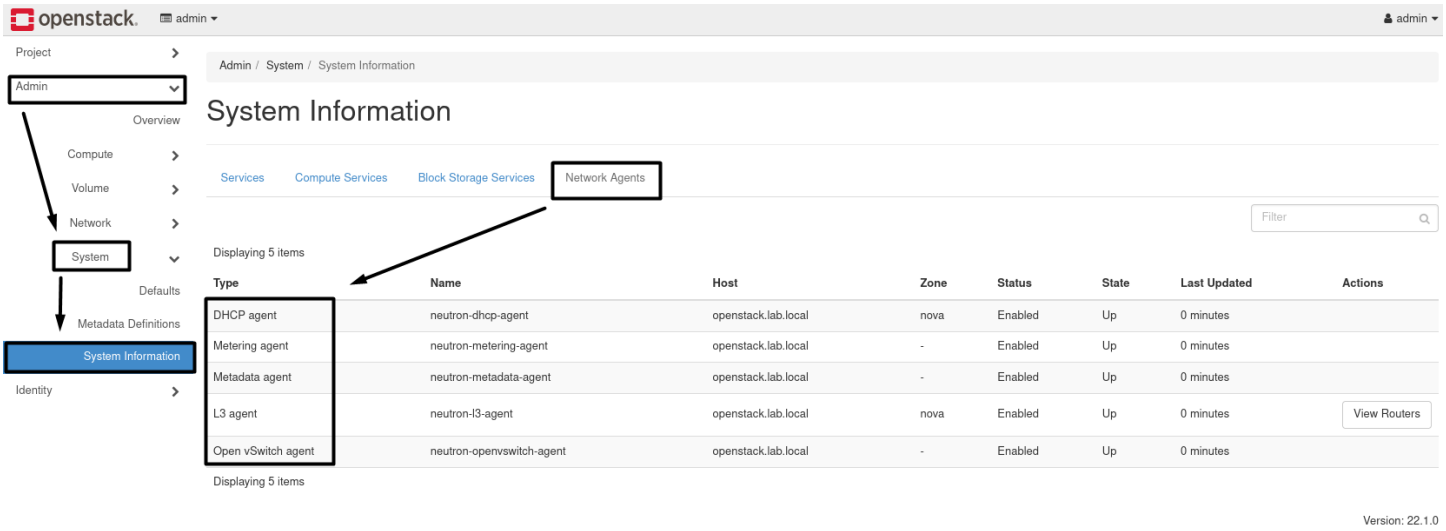
These three components are part of the OpenStack Cinder project, which provides block storage to the OpenStack cloud computing platform.

cinder-scheduler: It is a control plane service that runs on the Cinder API server and is responsible for selecting the best backend storage device to create a new volume. It receives requests for new volumes from the API server and uses filters and weighting algorithms to choose the most suitable backend based on factors such as capacity, performance, and availability.

cinder-volume: It is a compute plane service that runs on each storage node and is responsible for managing the physical storage devices, such as disks or storage arrays, that provide the backend storage for Cinder volumes. It interacts with the storage drivers to create, attach, detach, and delete volumes on the backend.

cinder-backup: It is a control plane service that runs on the Cinder API server and is responsible for performing backups of Cinder volumes. It receives backup requests from the API server and coordinates the backup process with the cinder-volume service on the storage node where the volume is located. It uses the configured backup driver to perform the actual backup and stores the backup data in the specified backup storage location.

Network Agents,



Here is a breakdown of the Network Agents,

These are various agents that are part of the Neutron networking service in OpenStack.

neutron-dhcp-agent: This agent is responsible for managing DHCP (Dynamic Host Configuration Protocol) for Neutron networks. It runs on each compute node and provides DHCP services to instances connected to the network.

neutron-metering-agent: This agent is responsible for collecting network usage data for billing and monitoring purposes. It runs on each compute node and collects network usage information from the Open vSwitch (OVS) kernel module.

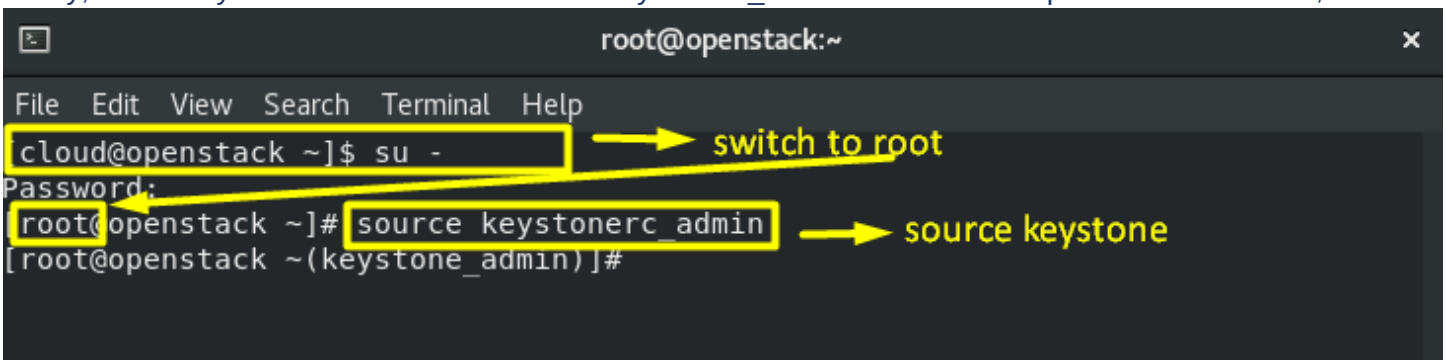
neutron-metadata-agent: This agent is responsible for providing metadata services to instances running on the Neutron network. It runs on each compute node and provides instances with metadata information about the instance itself and the network it is running on.

neutron-l3-agent: This agent is responsible for providing Layer 3 (routing) services for Neutron networks. It runs on each network node and provides routing services between different Neutron networks.

neutron-openvswitch-agent: This agent is responsible for managing the Open vSwitch (OVS) virtual switch on each compute node. It provides virtual networking connectivity to instances and manages the OVS configuration for Neutron networks.

5- Build Our Platform:

Firstly, we need you to be root and source the keystonerc_admin file to run the openstack commands,

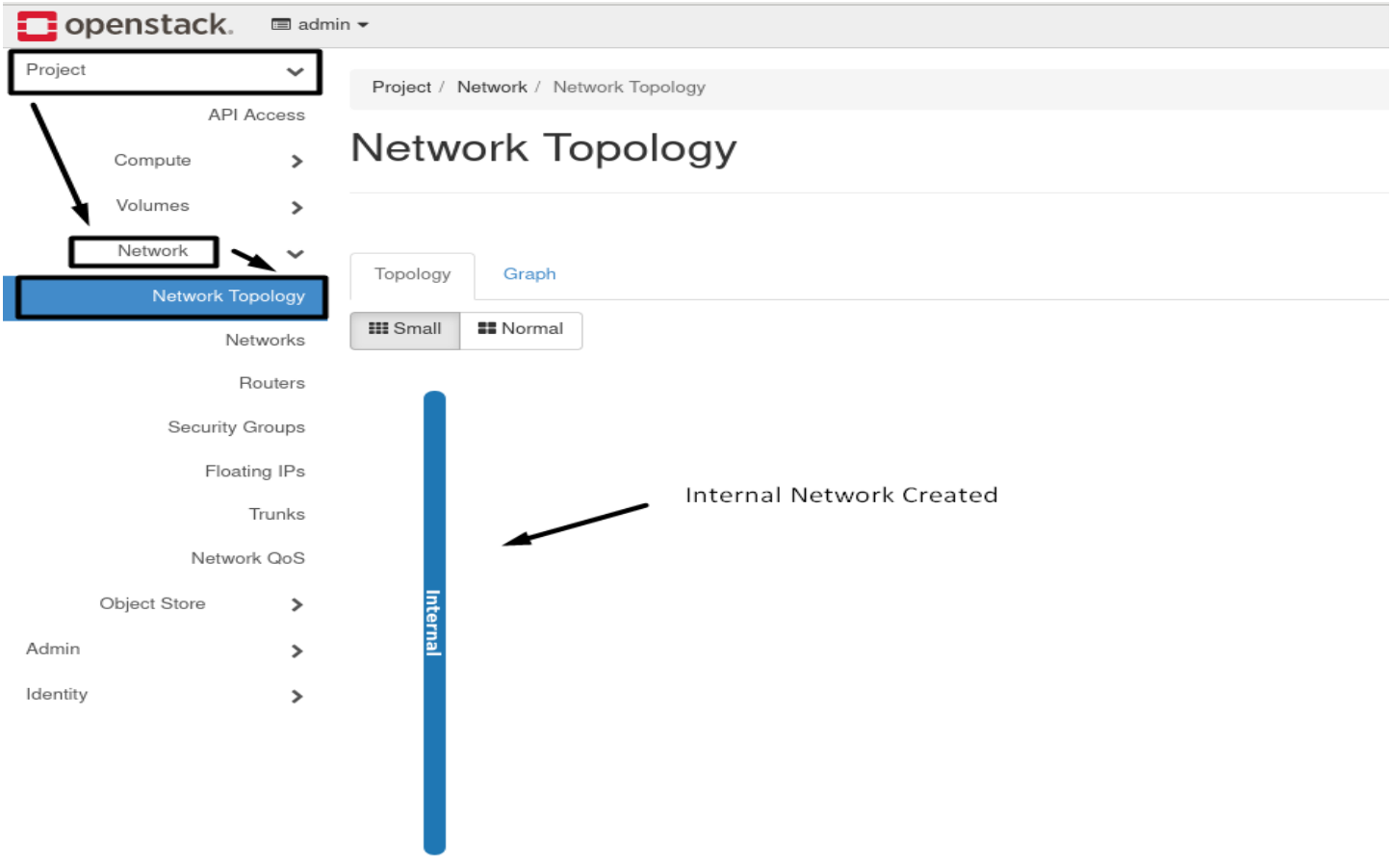


5.1- Create a Private Network:

neutron net-create Internal

```
root@openstack:~
File  Edit  View  Search  Terminal  Help
[root@openstack ~(keystone_admin)]# neutron net-create Internal
neutron CLI is deprecated and will be removed in the Z cycle. Use openstack CLI instead.
Created a new network:
+---------------------------+--------------------------------------+
| Field                     | Value                                |
+---------------------------+--------------------------------------+
| admin_state_up            | True                                 |
| availability_zone_hints   |                                      |
| availability_zones        |                                      |
| created_at                | 2023-03-10T13:52:45Z                 |
| description               |                                      |
| id                        | 16aafa56-9b71-44cd-b499-9dc2290448d3 |
| ipv4_address_scope        |                                      |
| ipv6_address_scope        |                                      |
| is_default                | False                                |
| mtu                       | 1450                                 |
| name                      | Internal                             |
| port_security_enabled     | True                                 |
| project_id                | b9b772e1d11f401a8f488ee9eff93302     |
| provider:network_type     | vxlan                                |
| provider:physical_network |                                      |
| provider:segmentation_id  | 75                                   |
| qos_policy_id             |                                      |
| revision_number           | 1                                    |
| router:external           | False                                |
| shared                    | False                                |
| status                    | ACTIVE                               |
| subnets                   |                                      |
| tags                      |                                      |
| tenant_id                 | b9b772e1d11f401a8f488ee9eff93302     |
| updated_at                | 2023-03-10T13:52:45Z                 |
+---------------------------+--------------------------------------+
[root@openstack ~(keystone_admin)]#
```

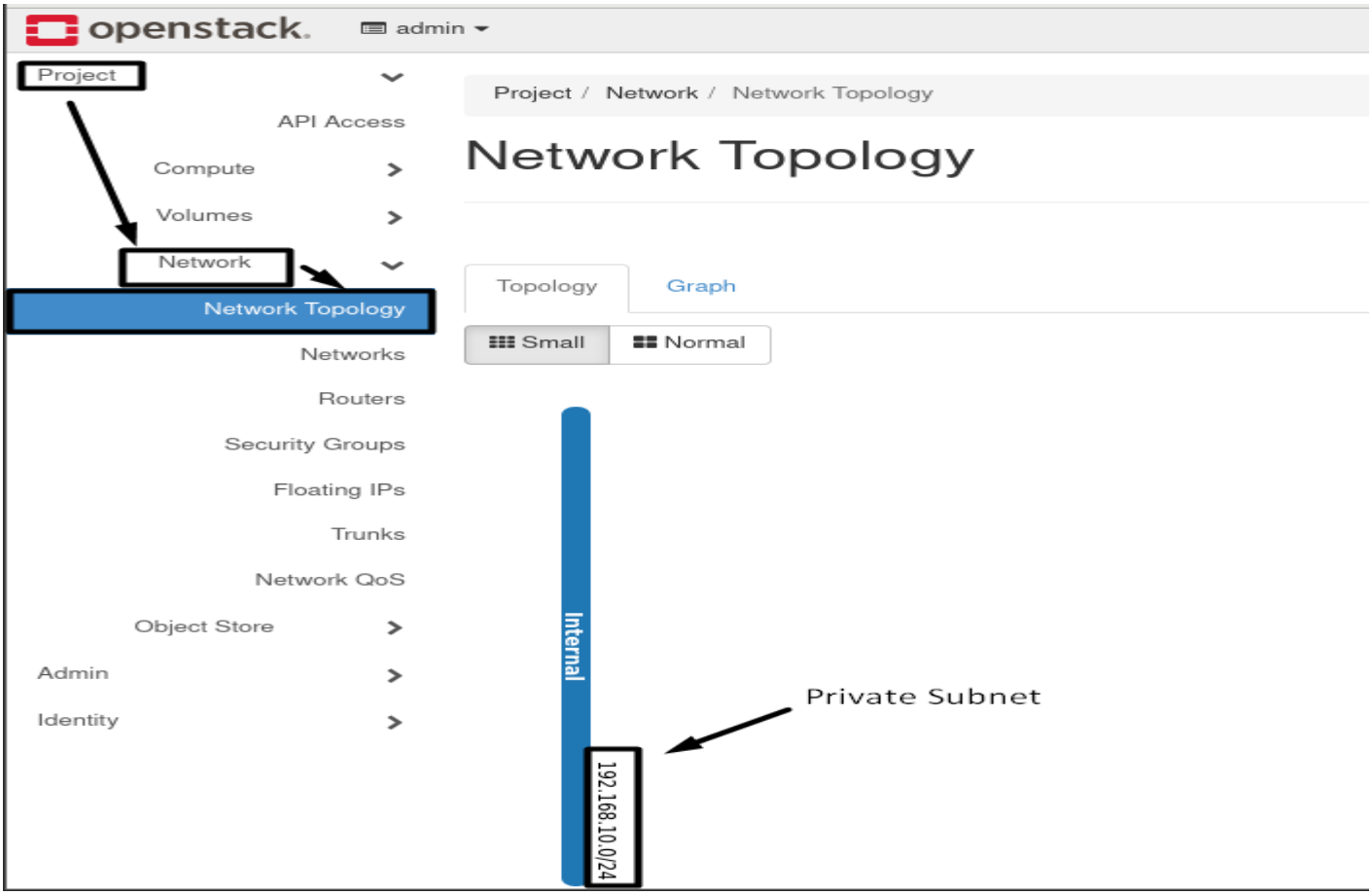
You can check the result form the GUI from Project→ Network → Network Topology,



5.2- Create a Private Subnet:

```
openstack subnet create --network Internal --subnet-range 192.168.10.0/24 --dhcp Internal_subnet
```

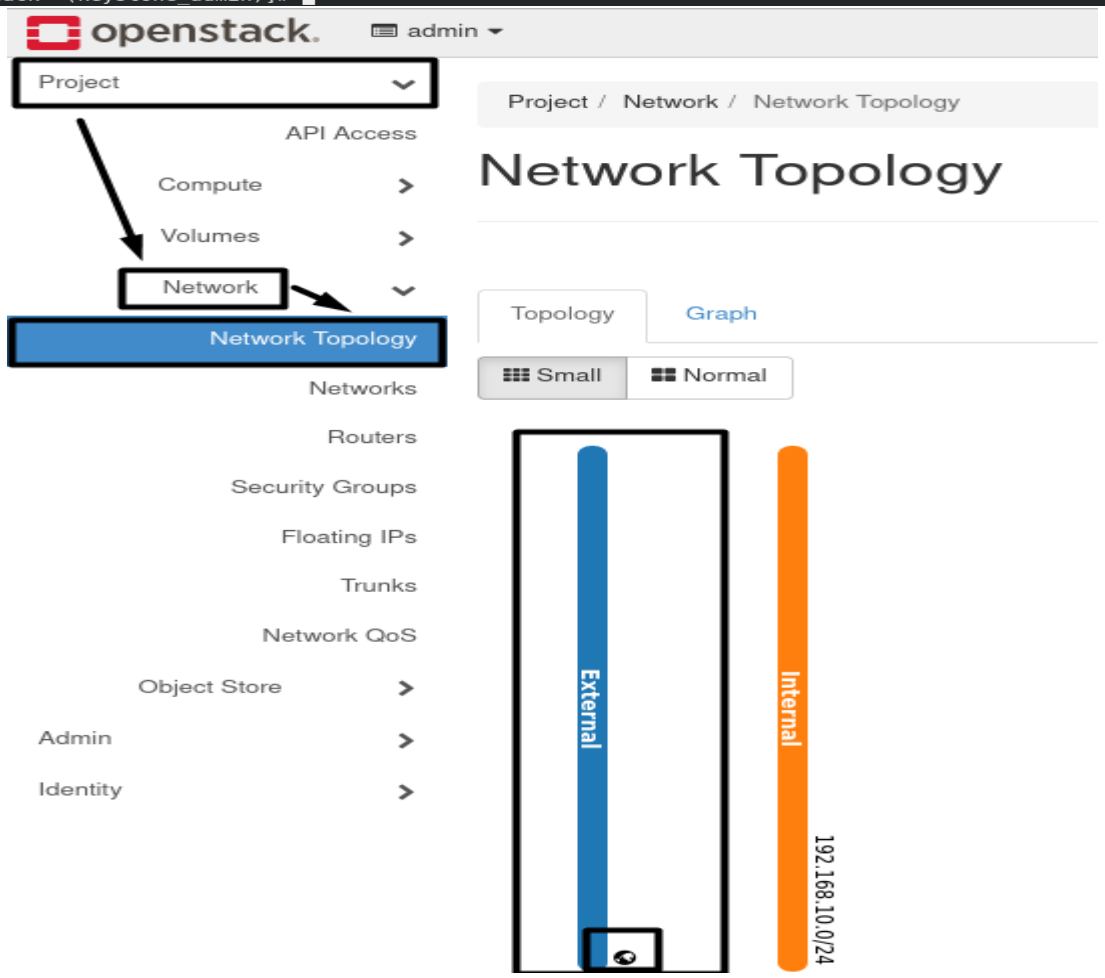
```
root@openstack:~
File  Edit  View  Search  Terminal  Help
[root@openstack ~(keystone_admin)]# openstack subnet create --network Internal --subnet-range 192.168.10.0/24 --dh
cp Internal_subnet
+----------------------+--------------------------------------+
| Field                | Value                                |
+----------------------+--------------------------------------+
| allocation_pools     | 192.168.10.2-192.168.10.254          |
| cidr                 | 192.168.10.0/24                      |
| created_at           | 2023-03-10T13:57:04Z                 |
| description          |                                      |
| dns_nameservers      |                                      |
| dns_publish_fixed_ip | None                                 |
| enable_dhcp          | True                                 |
| gateway_ip           | 192.168.10.1                         |
| host_routes          |                                      |
| id                   | acc308e4-62c4-4271-b55a-f6938020b485 |
| ip_version           | 4                                    |
| ipv6_address_mode    | None                                 |
| ipv6_ra_mode         | None                                 |
| name                 | Internal_subnet                      |
| network_id           | 16aafa56-9b71-44cd-b499-9dc2290448d3 |
| project_id           | b9b772e1d11f401a8f488ee9eff93302     |
| revision_number      | 0                                    |
| segment_id           | None                                 |
| service_types        |                                      |
| subnetpool_id        | None                                 |
| tags                 |                                      |
| updated_at           | 2023-03-10T13:57:04Z                 |
+----------------------+--------------------------------------+
[root@openstack ~(keystone_admin)]#
```



5.3- Create an External Network:

```
openstack network create External --provider-network-type flat --provider-physical-network extnet --external
```

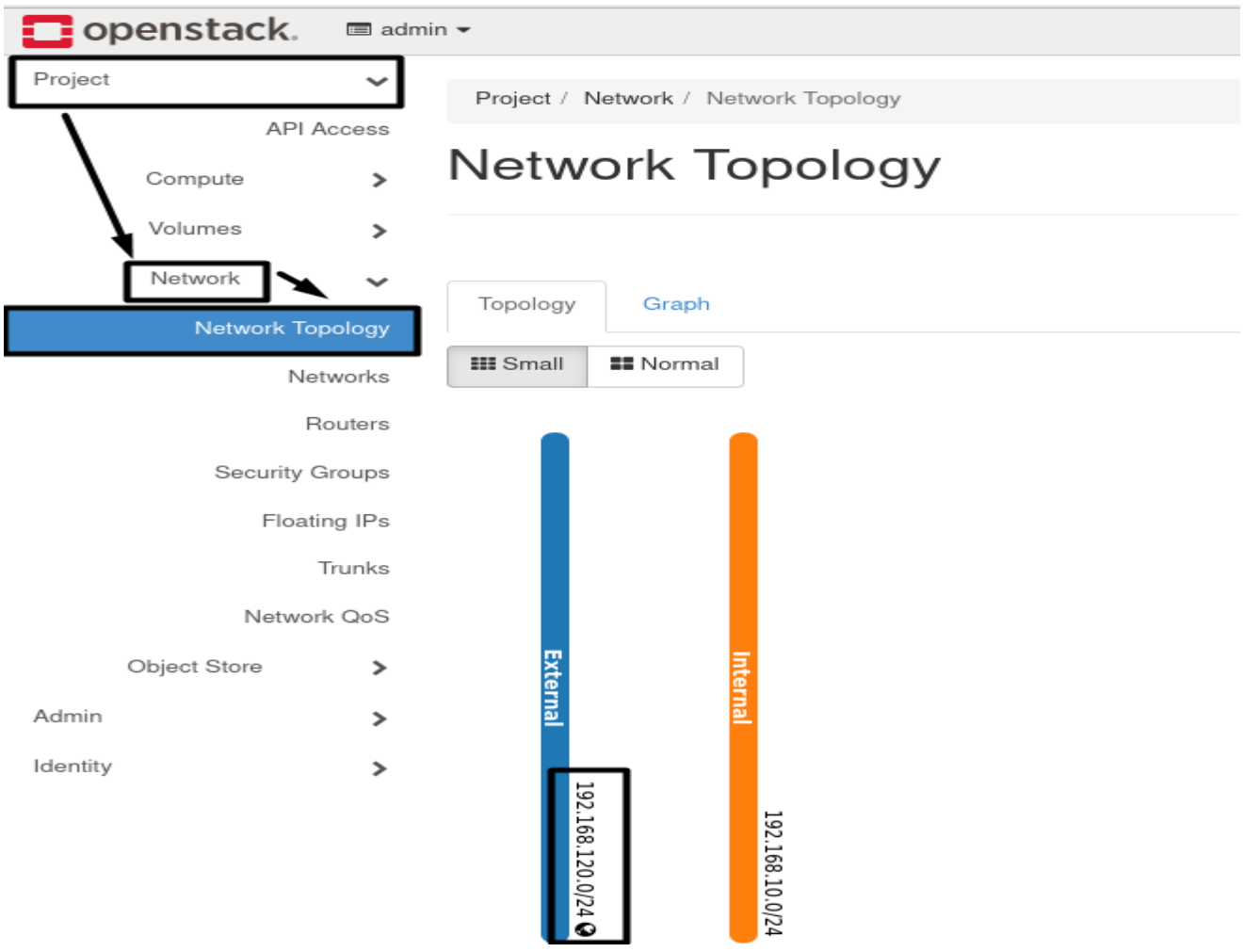
```
root@openstack:~
File  Edit  View  Search  Terminal  Help
[root@openstack ~(keystone_admin)]# openstack network create External --provider-network-type flat --provider-phys
ical-network extnet --external
+---------------------------+--------------------------------------+
| Field                     | Value                                |
+---------------------------+--------------------------------------+
| admin_state_up            | UP                                   |
| availability_zone_hints   |                                      |
| availability_zones        |                                      |
| created_at                | 2023-03-10T14:01:51Z                 |
| description               |                                      |
| dns_domain                | None                                 |
| id                        | ec3609b0-cf2e-459b-b8e8-7db4fc79003d |
| ipv4_address_scope        | None                                 |
| ipv6_address_scope        | None                                 |
| is_default                | False                                |
| is_vlan_transparent       | None                                 |
| mtu                       | 1500                                 |
| name                      | External                             |
| port_security_enabled     | True                                 |
| project_id                | b9b772e1d11f401a8f488ee9eff93302     |
| provider:network_type     | flat                                 |
| provider:physical_network | extnet                               |
| provider:segmentation_id  | None                                 |
| qos_policy_id             | None                                 |
| revision_number           | 1                                    |
| router:external           | External                             |
| segments                  | None                                 |
| shared                    | False                                |
| status                    | ACTIVE                               |
| subnets                   |                                      |
| tags                      |                                      |
| updated_at                | 2023-03-10T14:01:51Z                 |
+---------------------------+--------------------------------------+
[root@openstack ~(keystone_admin)]#
```



5.4- Create an External Subnet:

```
openstack subnet create External_subnet --no-dhcp --allocation-pool start=192.168.120.160,end=192.168.120.170 --gateway 192.168.120.2 --network External --subnet-range 192.168.120.0/24
```

```
root@openstack:~
File  Edit  View  Search  Terminal  Help
[root@openstack ~(keystone_admin)]# openstack subnet create External_subnet --no-dhcp --allocation-pool start=192.168.120.160,end=192.168.120.170 --gateway 192.168.120.2 --network External --subnet-range 192.168.120.0/24
+----------------------+--------------------------------------+
| Field                | Value                                |
+----------------------+--------------------------------------+
| allocation_pools     | 192.168.120.160-192.168.120.170      |
| cidr                 | 192.168.120.0/24                     |
| created_at           | 2023-03-10T14:05:00Z                 |
| description          |                                      |
| dns_nameservers      |                                      |
| dns_publish_fixed_ip | None                                 |
| enable_dhcp          | False                                |
| gateway_ip           | 192.168.120.2                        |
| host_routes          |                                      |
| id                   | 22be7b77-b18e-454e-b971-b5ddc2d5ad31 |
| ip_version           | 4                                    |
| ipv6_address_mode    | None                                 |
| ipv6_ra_mode         | None                                 |
| name                 | External_subnet                      |
| network_id           | ec3609b0-cf2e-459b-b8e8-7db4fc79003d |
| project_id           | b9b772e1d11f401a8f488ee9eff93302     |
| revision_number      | 0                                    |
| segment_id           | None                                 |
| service_types        |                                      |
| subnetpool_id        | None                                 |
| tags                 |                                      |
| updated_at           | 2023-03-10T14:05:00Z                 |
+----------------------+--------------------------------------+
[root@openstack ~(keystone_admin)]#
```

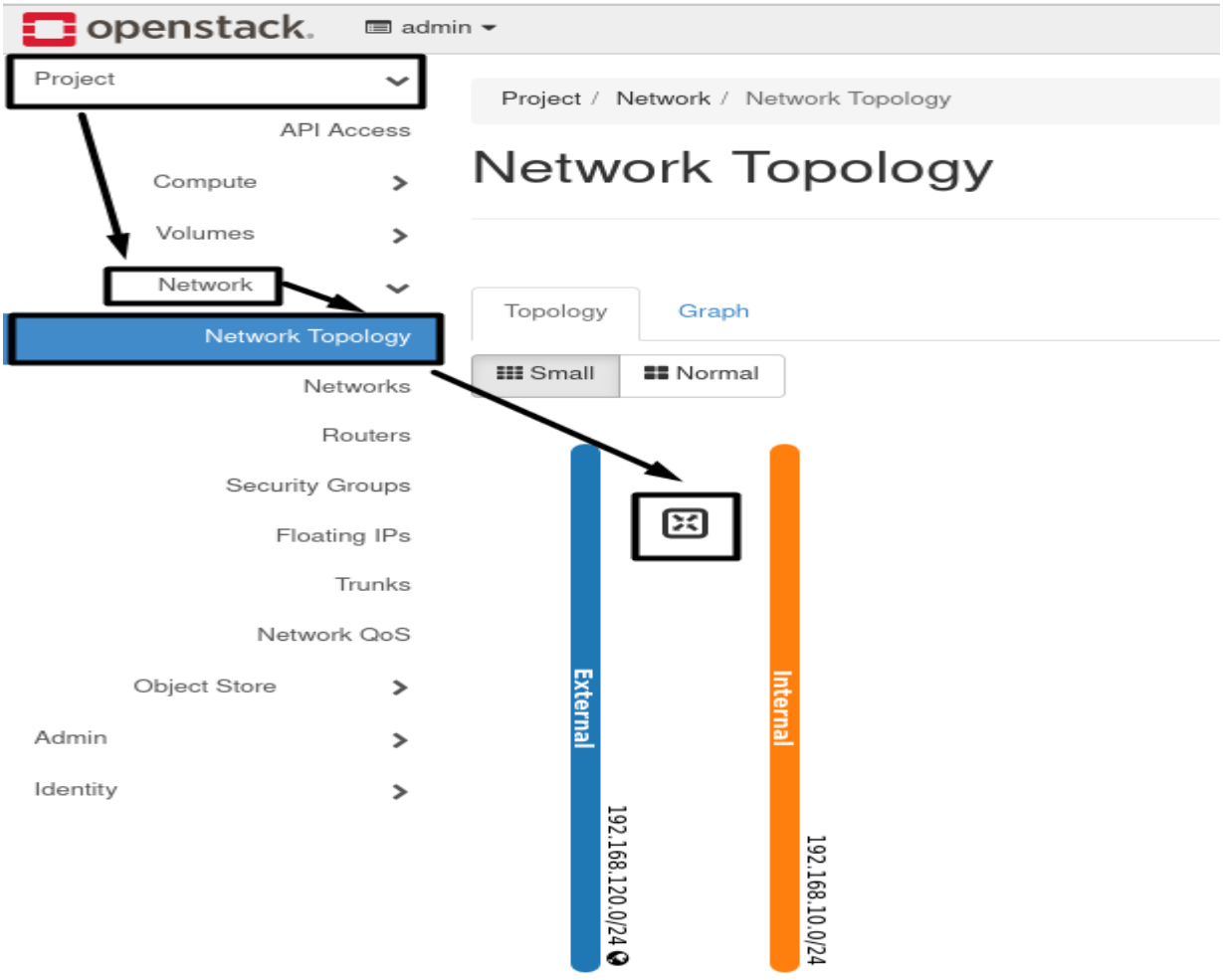


5.5- Create a Router:

To connect the external network and the internal network to each other.

```
neutron router-create router
```

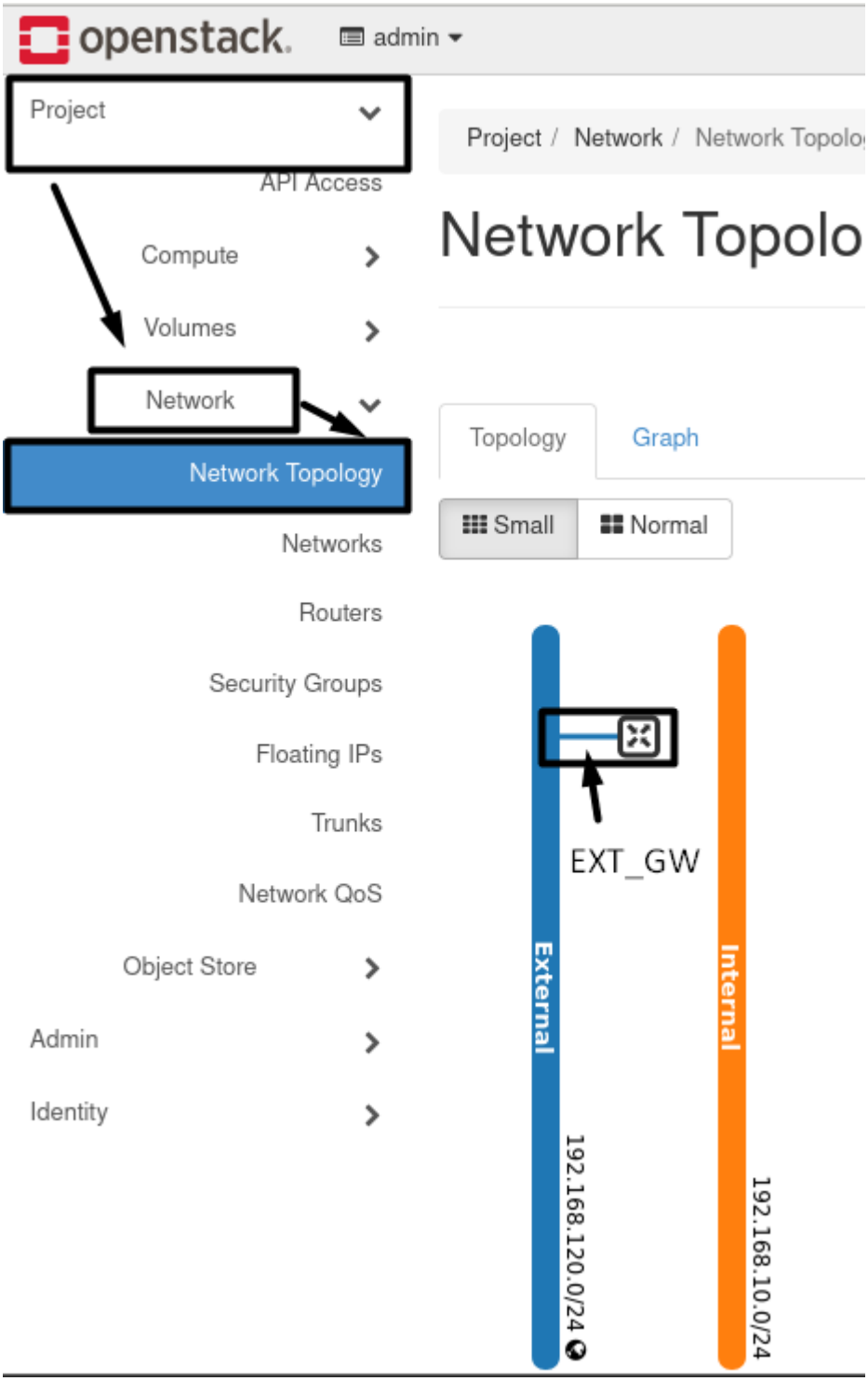
```
root@openstack:~
File  Edit  View  Search  Terminal  Help
[root@openstack ~(keystone_admin)]# neutron router-create router
neutron CLI is deprecated and will be removed in the Z cycle. Use openstack CLI instead.
Created a new router:
+-------------------------+--------------------------------------+
| Field                   | Value                                |
+-------------------------+--------------------------------------+
| admin_state_up          | True                                 |
| availability_zone_hints |                                      |
| availability_zones      |                                      |
| created_at              | 2023-03-10T14:09:13Z                 |
| description             |                                      |
| distributed             | False                                |
| external_gateway_info   |                                      |
| flavor_id               |                                      |
| ha                      | False                                |
| id                      | 44e388cd-e59e-4ce6-993b-1c31960a35c2 |
| name                    | router                               |
| project_id              | b9b772e1d11f401a8f488ee9eff93302     |
| revision_number         | 1                                    |
| routes                  |                                      |
| status                  | ACTIVE                               |
| tags                    |                                      |
| tenant_id               | b9b772e1d11f401a8f488ee9eff93302     |
| updated_at              | 2023-03-10T14:09:13Z                 |
+-------------------------+--------------------------------------+
```



5.6- Set Router Gateway, Using External Network:

```
neutron router-gateway-set router External
```

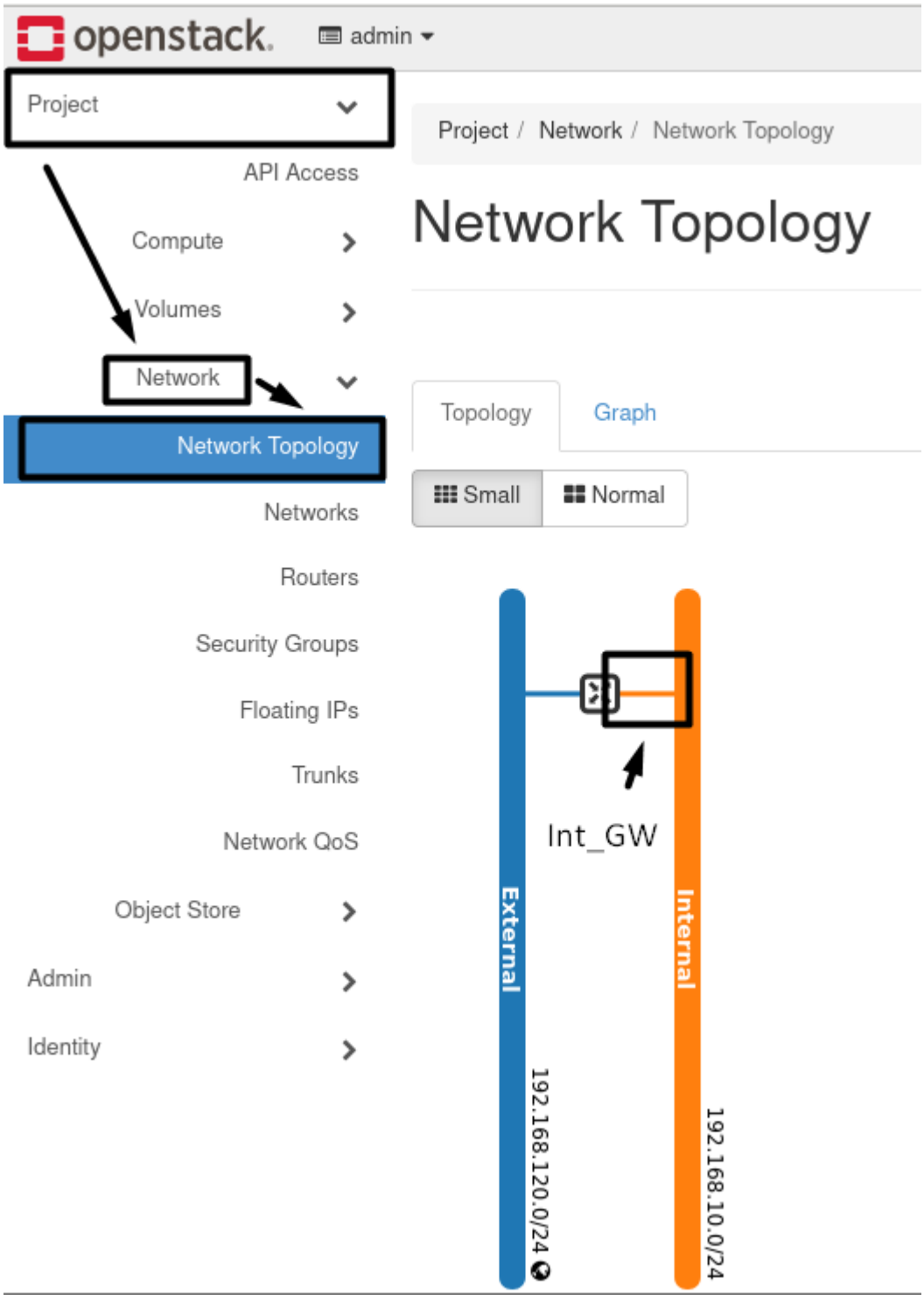
```
root@openstack:~
File  Edit  View  Search  Terminal  Help
[root@openstack ~(keystone_admin)]# neutron router-gateway-set router External
neutron CLI is deprecated and will be removed in the Z cycle. Use openstack CLI instead.
Set gateway for router router
[root@openstack ~(keystone_admin)]#
```



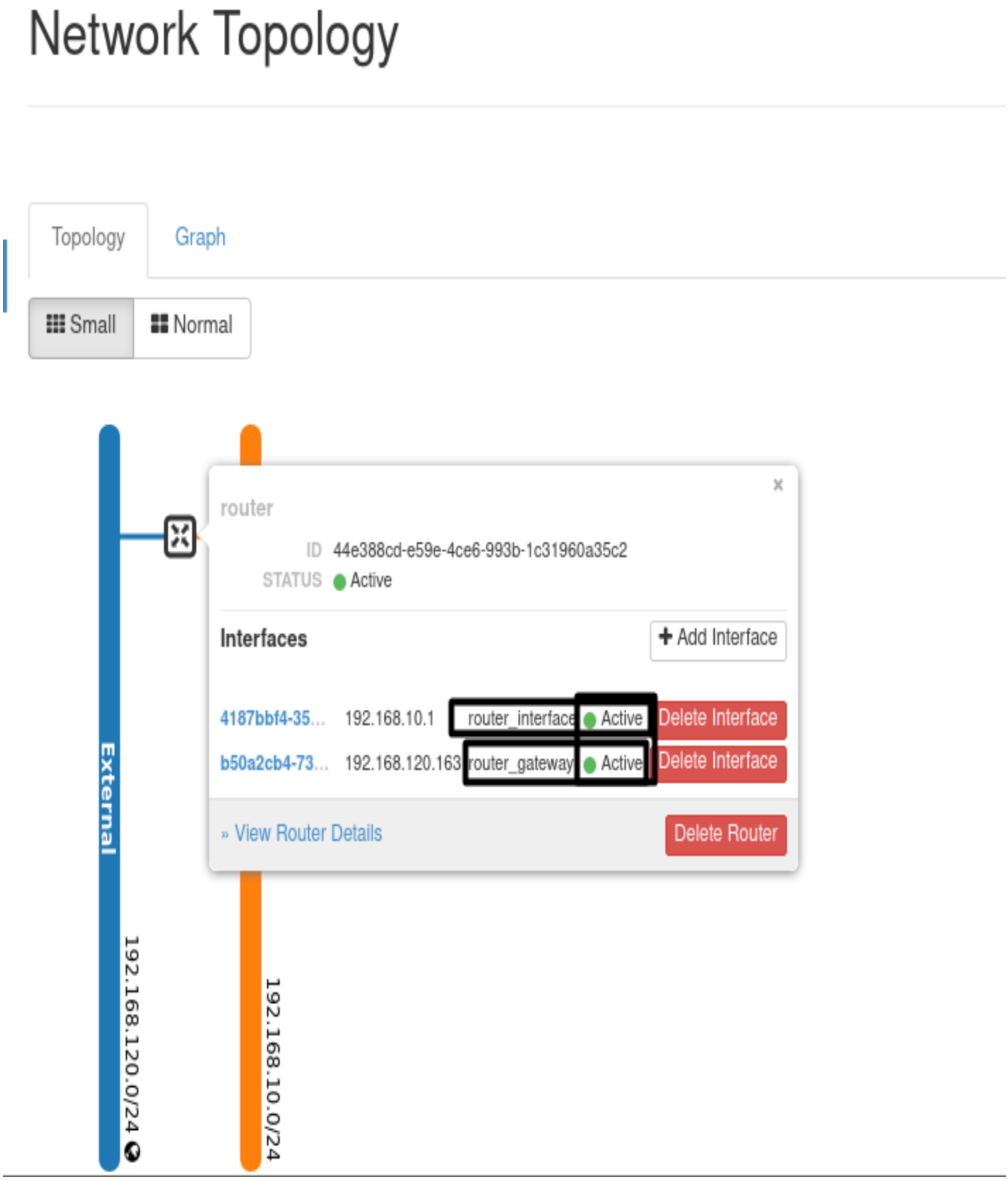
5.7- Set Router Gateway, Using Internal Network:

```
neutron router-interface-add router Internal_subnet
```

```
root@openstack:~
File  Edit  View  Search  Terminal  Help
[root@openstack ~(keystone_admin)]# neutron router-interface-add router Internal_subnet
neutron CLI is deprecated and will be removed in the Z cycle. Use openstack CLI instead.
Added interface 4187bbf4-3594-4061-be1b-ee8272446383 to router router.
[root@openstack ~(keystone_admin)]#
```

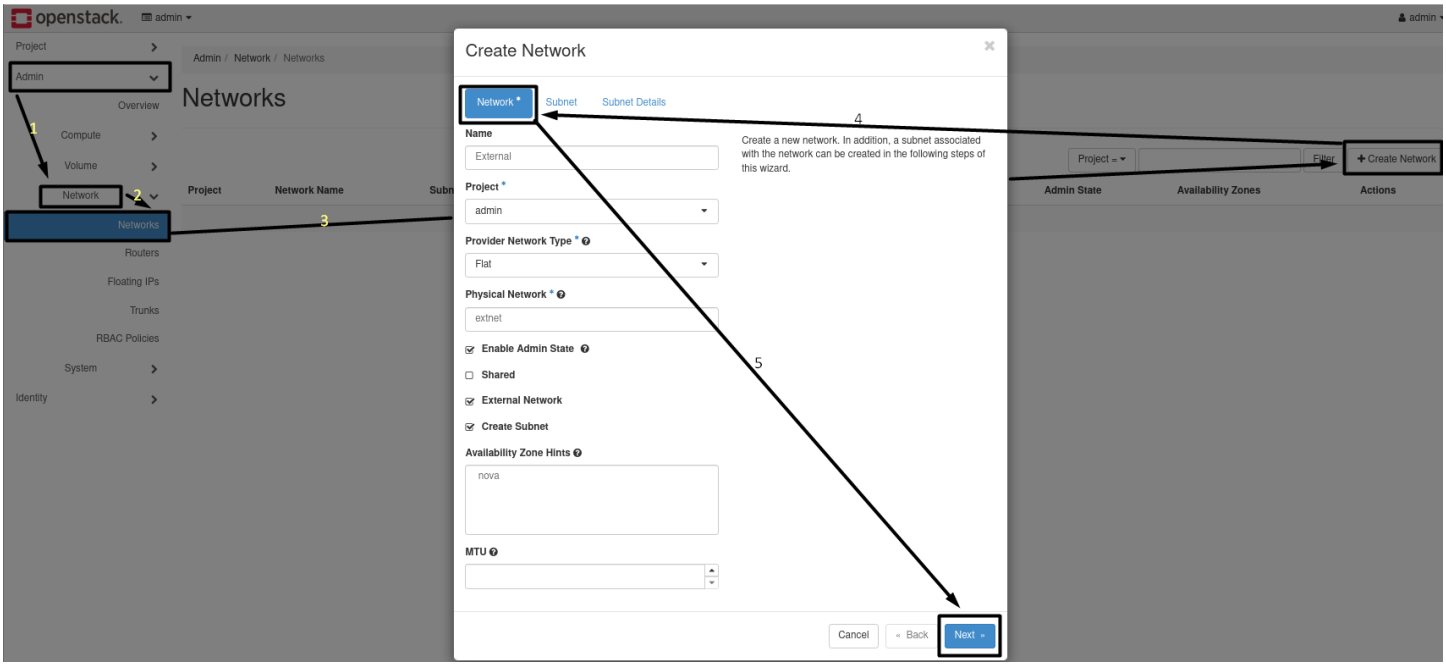


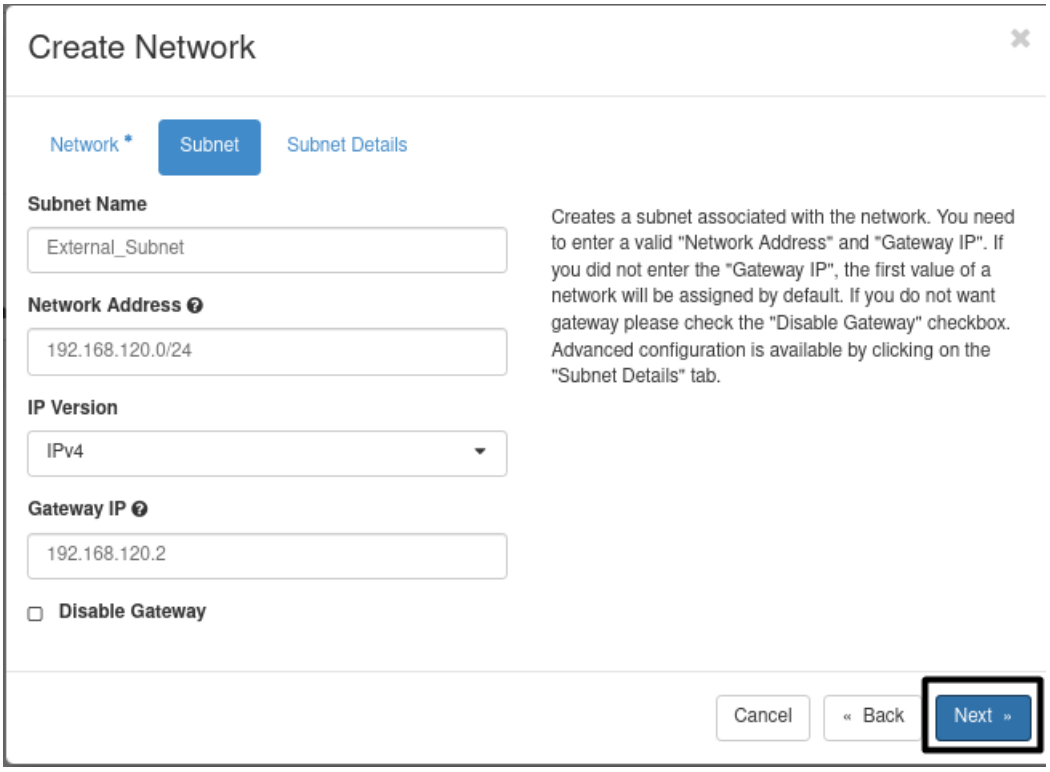
Full Topology

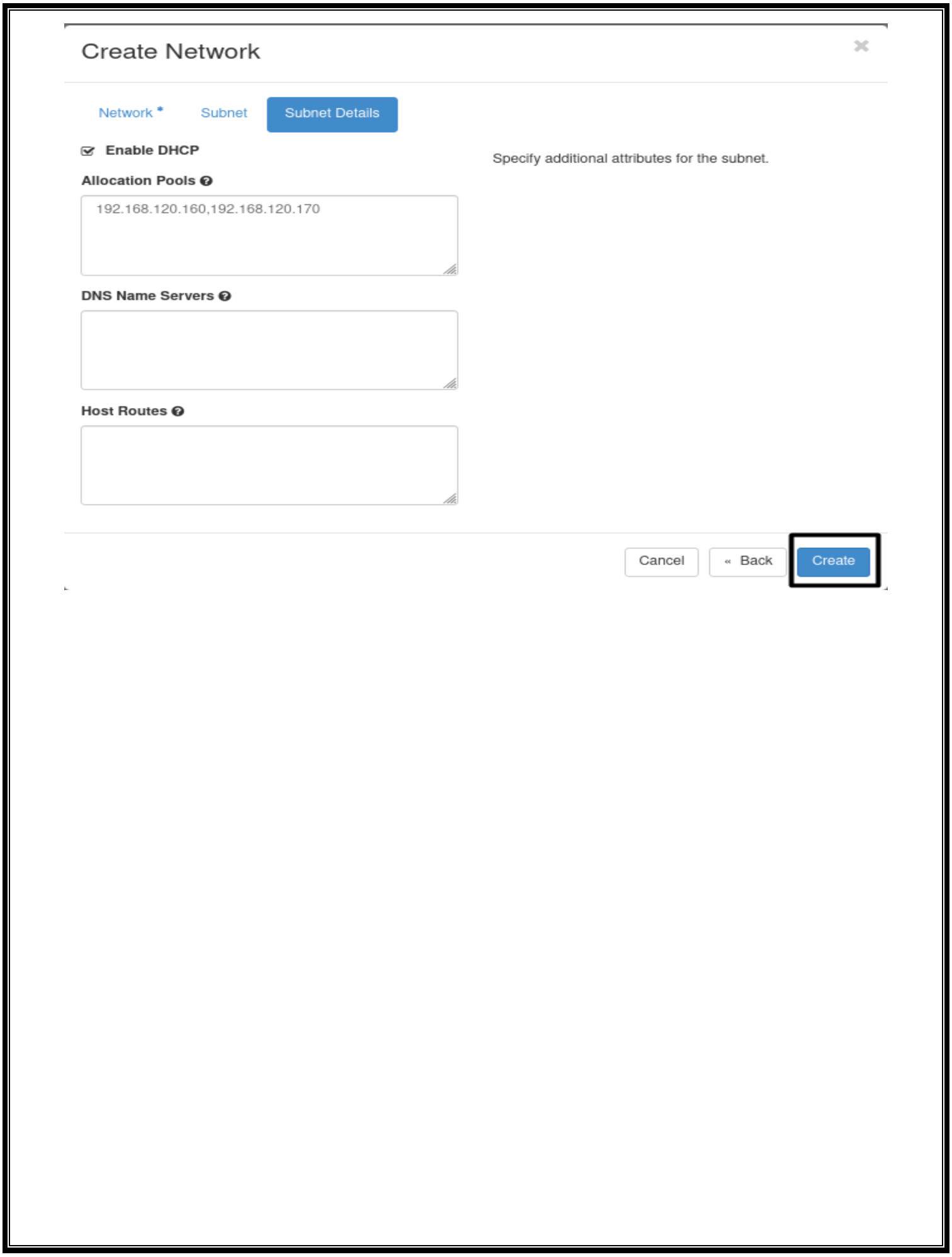


Q1. We do these steps using GUI?
Ans. Yes, we can, let's do it together,
Firstly we need to Delete the router then delete the Internal and External networks.

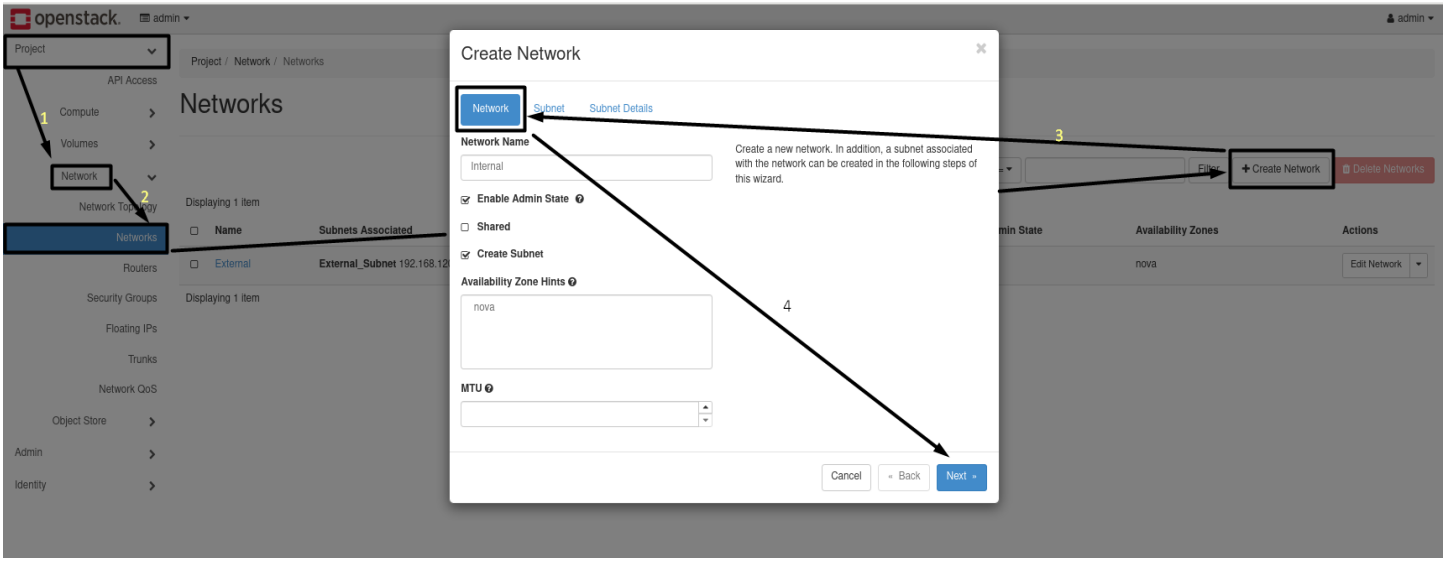
1. Create External Network:

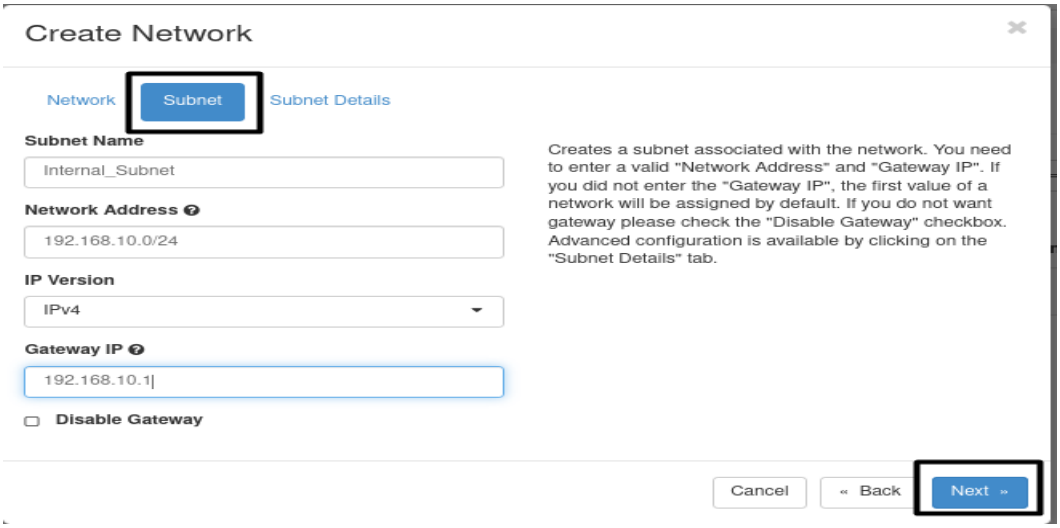


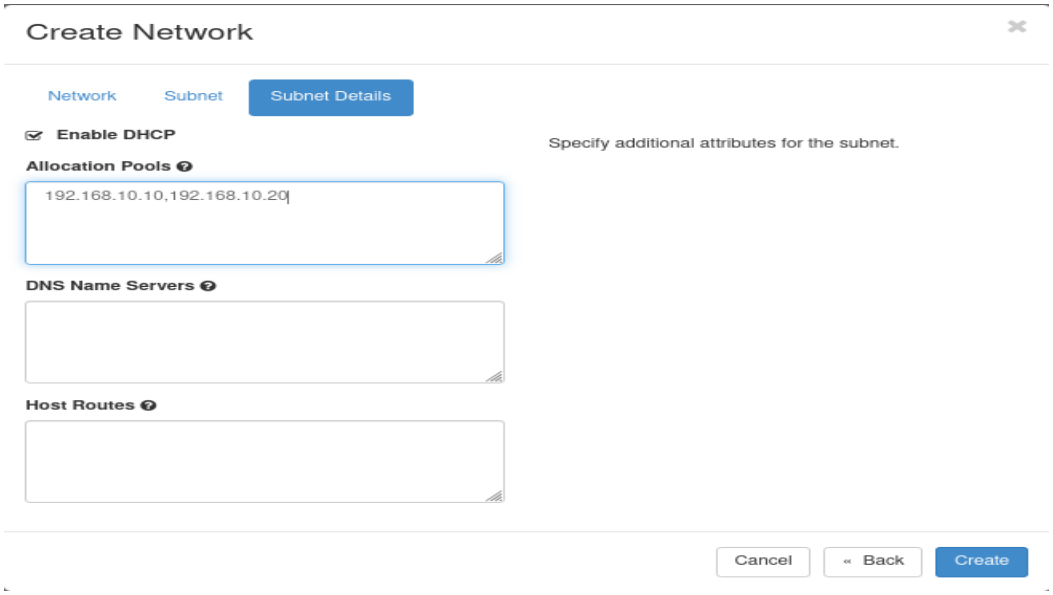



Create Network
Network *
Subnet
Subnet Details
Enable DHCP
Specify additional attributes for the subnet.
Allocation Pools
192.168.120.160,192.168.120.170
DNS Name Servers
Host Routes
Cancel
« Back
Create

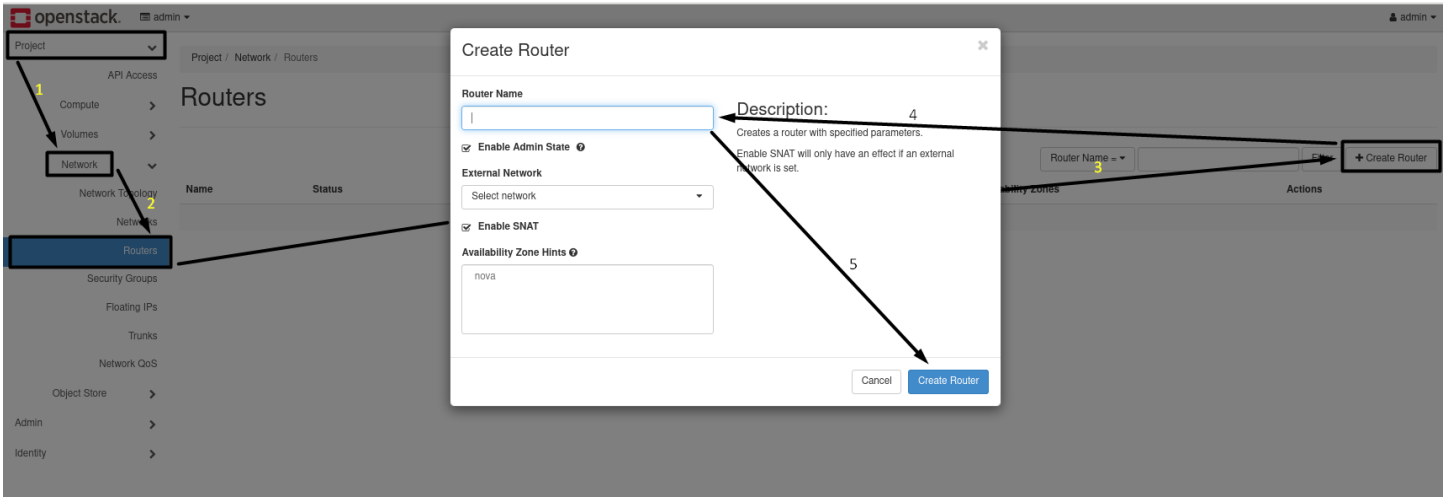
2. Create Internal Network:



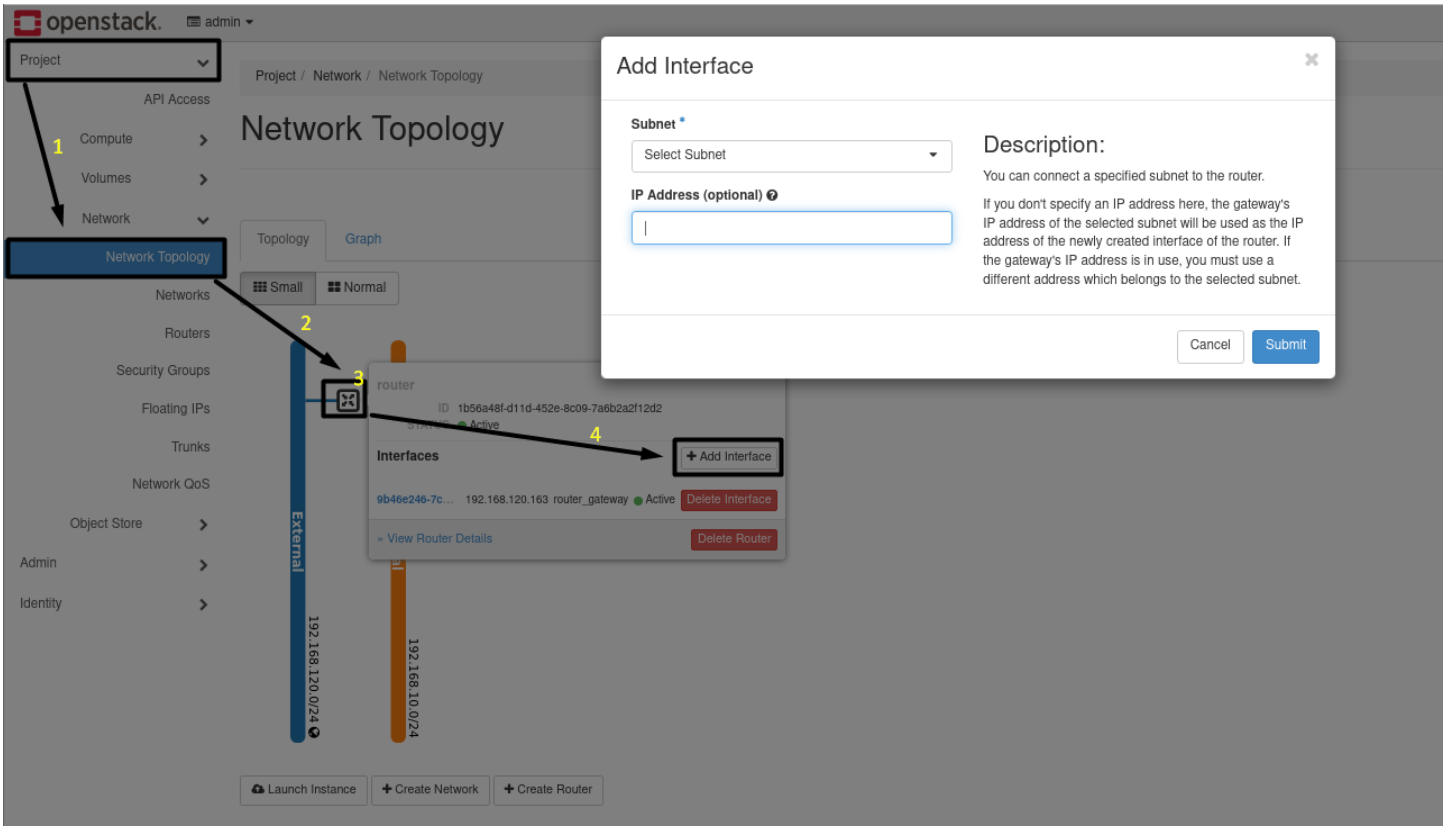




3. Create Router and set his GW:

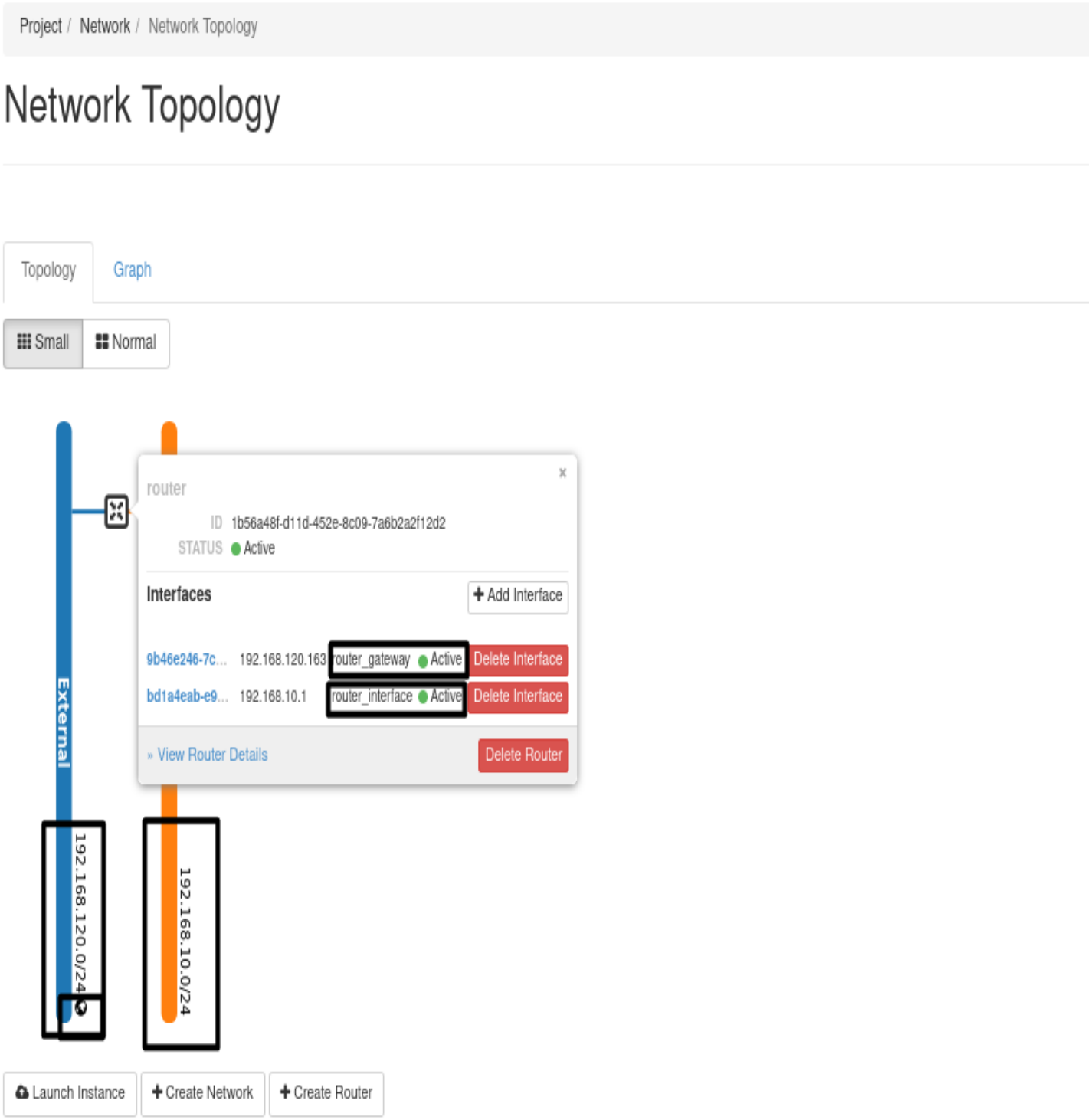


4. Create Router Interface for the Internal Network:
5.



Note: -
You will choose the subnet for the private network that you want, but the IP Address must be the GW of this network.

Full Topology

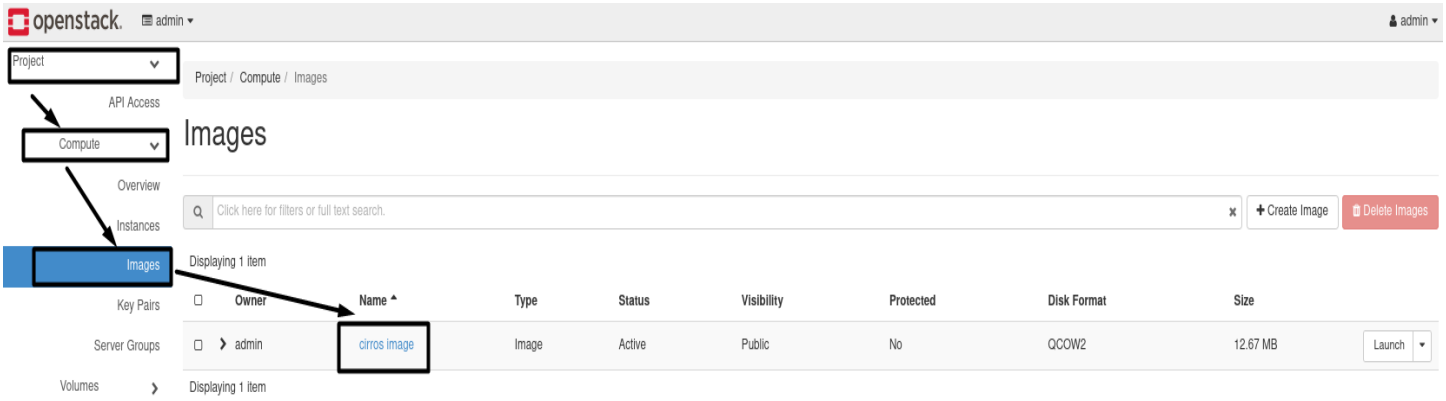


5.8- Install image file and Create image using glance component:

```
curl -L http://download.cirros-cloud.net/0.3.4/cirros-0.3.4-x86_64-disk.img | glance image-create --name='cirros image' --visibility=public --container-format=bare --disk-format=qcow2
```

```
root@openstack:~
File  Edit  View  Search  Terminal  Help
root@openstack ~(keystone_admin)]# curl -L http://download.cirros-cloud.net/0.3.4/cirros-0.3.4-x86_64-disk.img | glance image-cr
ate --name='cirros image' --visibility=public --container-format=bare --disk-format=qcow2
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100   273  100   273    0     0    388      0 --:--:-- --:--:-- --:--:--   388
  0     0    0     0    0     0      0      0 --:--:--  0:00:01 --:--:--     0
100 12.6M  100 12.6M    0     0  1067k      0  0:00:12  0:00:12 --:--:-- 1724k
+------------------+------------------------------------------------------------------------------+
| Property         | Value                                                                        |
+------------------+------------------------------------------------------------------------------+
| checksum         | ee1eca47dc88f4879d8a229cc70a07c6                                             |
| container_format | bare                                                                         |
| created_at       | 2023-03-10T15:13:48Z                                                         |
| disk_format      | qcow2                                                                        |
| id               | 77837a61-5da5-4272-b235-a8dfbd478973                                         |
| min_disk         | 0                                                                            |
| min_ram          | 0                                                                            |
| name             | cirros image                                                                 |
| os_hash_algo     | sha512                                                                       |
| os_hash_value    | 1b03ca1bc3fafe448b90583c12f367949f8b0e665685979d95b004e48574b953316799e23240f4f7 |
|                  | 39d1b5eb4c4ca24d38fdc6f4f9d8247a2bc64db25d6bbdb2                             |
| os_hidden        | False                                                                        |
| owner            | b9b772e1d11f401a8f488ee9eff93302                                             |
| protected        | False                                                                        |
| size             | 13287936                                                                     |
| status           | active                                                                       |
| stores           | file                                                                         |
| tags             | []                                                                           |
| updated_at       | 2023-03-10T15:13:58Z                                                         |
| virtual_size     | 41126400                                                                     |
| visibility       | public                                                                       |
+------------------+------------------------------------------------------------------------------+
root@openstack ~(keystone_admin)]#
```

Validate the Image from the GUI:



Q. What is CirrOS?

CirrOS is a minimal Linux distribution that was designed for use as a test image on clouds such as OpenStack Compute.

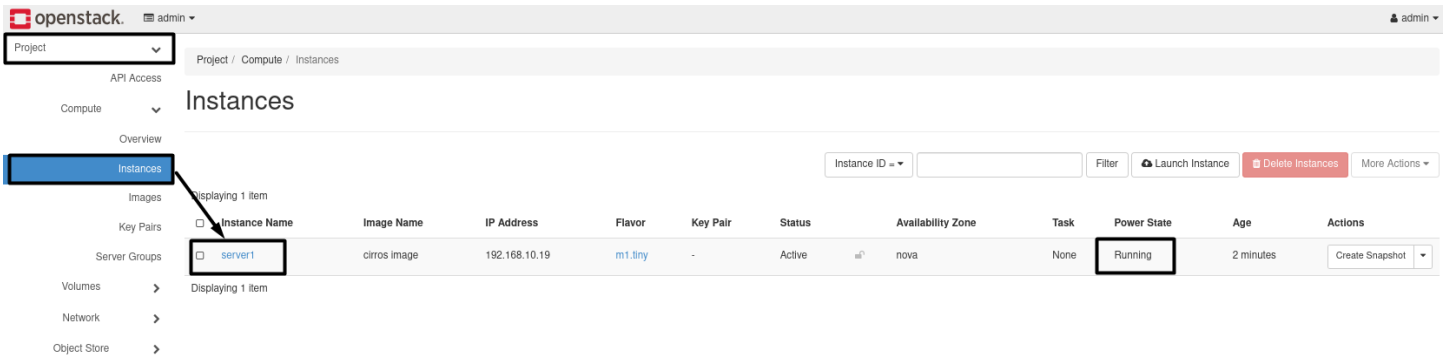
Now We Ready to Start our Instance.

1- Create Instance:

```
openstack server create --image 'cirros image' --flavor m1.tiny --network Internal server1
```

```
root@openstack:~
File  Edit  View  Search  Terminal  Help
[root@openstack ~(keystone_admin)]# openstack server create --image 'cirros image' --flavor m1.tiny  --network Internal server1
+-------------------------------------+-----------------------------------------------------+
| Field                               | Value                                               |
+-------------------------------------+-----------------------------------------------------+
| OS-DCF:diskConfig                   | MANUAL                                              |
| OS-EXT-AZ:availability_zone         |                                                     |
| OS-EXT-SRV-ATTR:host                | None                                                |
| OS-EXT-SRV-ATTR:hypervisor_hostname | None                                                |
| OS-EXT-SRV-ATTR:instance_name       |                                                     |
| OS-EXT-STS:power_state              | NOSTATE                                             |
| OS-EXT-STS:task_state               | scheduling                                          |
| OS-EXT-STS:vm_state                 | building                                            |
| OS-SRV-USG:launched_at              | None                                                |
| OS-SRV-USG:terminated_at            | None                                                |
| accessIPv4                          |                                                     |
| accessIPv6                          |                                                     |
| addresses                           |                                                     |
| adminPass                           | DCnaUsa9gGK7                                        |
| config_drive                        |                                                     |
| created                             | 2023-03-10T15:25:54Z                                |
| flavor                              | m1.tiny (1)                                         |
| hostId                              |                                                     |
| id                                  | 1a17d264-3511-4723-b243-6401245ed730                |
| image                               | cirros image (77837a61-5da5-4272-b235-a8dfbd478973) |
| key_name                            | None                                                |
| name                                | server1                                             |
| progress                            | 0                                                   |
| project_id                          | b9b772e1d11f401a8f488ee9eff93302                    |
| properties                          |                                                     |
| security_groups                     | name='default'                                      |
| status                              | BUILD                                               |
| updated                             | 2023-03-10T15:25:55Z                                |
| user_id                             | b8198308c336419bb9ee834533a77c62                    |
| volumes_attached                    |                                                     |
+-------------------------------------+-----------------------------------------------------+
[root@openstack ~(keystone_admin)]#
```

Validate the Instance from the GUI:



2- Create FloatingIP, to reach our instance from the Internet.

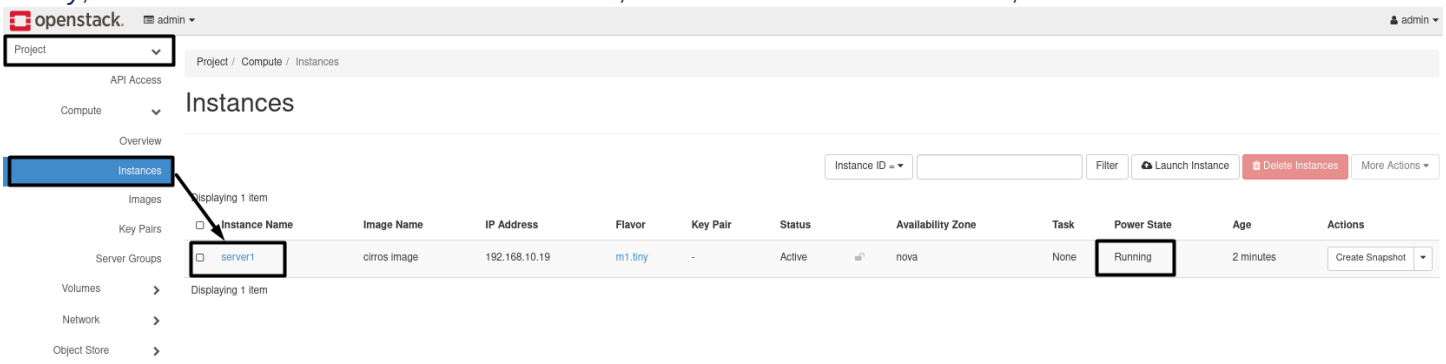
openstack floating ip create External

```
[root@openstack ~(keystone_admin)]# openstack floating ip create External
+---------------------+--------------------------------------+
| Field               | Value                                |
+---------------------+--------------------------------------+
| created_at          | 2023-03-10T15:31:46Z                 |
| description         |                                      |
| dns_domain          | None                                 |
| dns_name            | None                                 |
| fixed_ip_address    | None                                 |
| floating_ip_address | 192.168.120.162                      |
| floating_network_id | 83e850a8-9206-46a0-97e2-ad2af8e4ac98 |
| id                  | 8069f54f-f83e-4dfd-b093-f459c2e31aca |
| name                | 192.168.120.162                      |
| port_details        | None                                 |
| port_id             | None                                 |
| project_id          | b9b772e1d11f401a8f488ee9eff93302     |
| qos_policy_id       | None                                 |
| revision_number     | 0                                    |
| router_id           | None                                 |
| status              | DOWN                                 |
| subnet_id           | None                                 |
| tags                | []                                   |
| updated_at          | 2023-03-10T15:31:46Z                 |
+---------------------+--------------------------------------+
[root@openstack ~(keystone_admin)]#
```

Remember → 192.168.120.162 is the FloatingIP that we created.

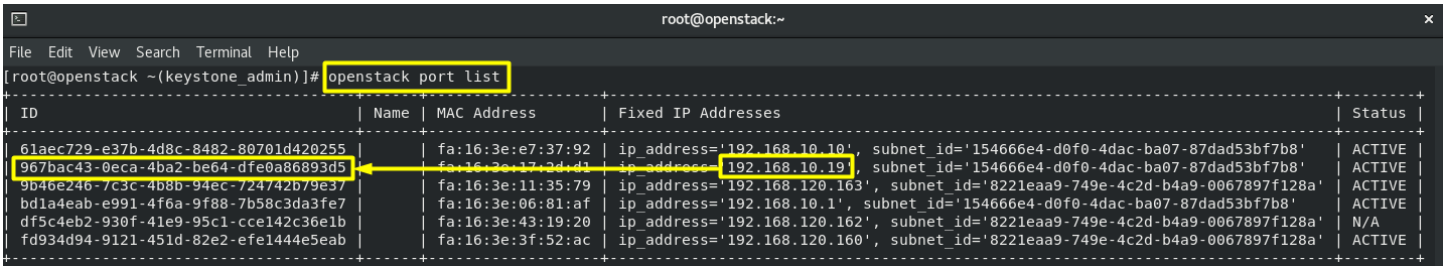
3- Assign the FloatingIP to the Instance_Port.

Firstly, we need to know the IP for this Instance, We can know them from GUI,



So 192.168.10.19 is the IP for this instance, Then lets list the ports,

```
openstack port list
```

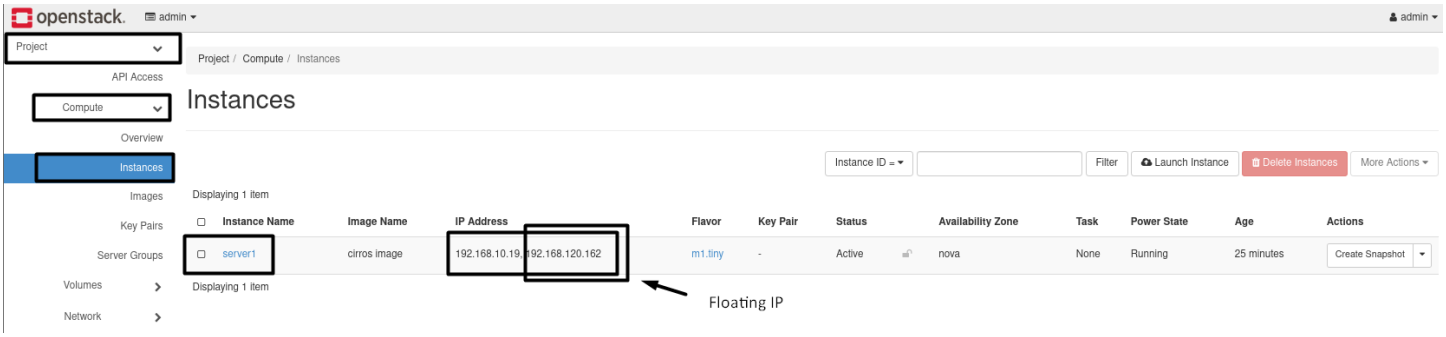


Then let's assigen the FloatingIP for the Instance Port,

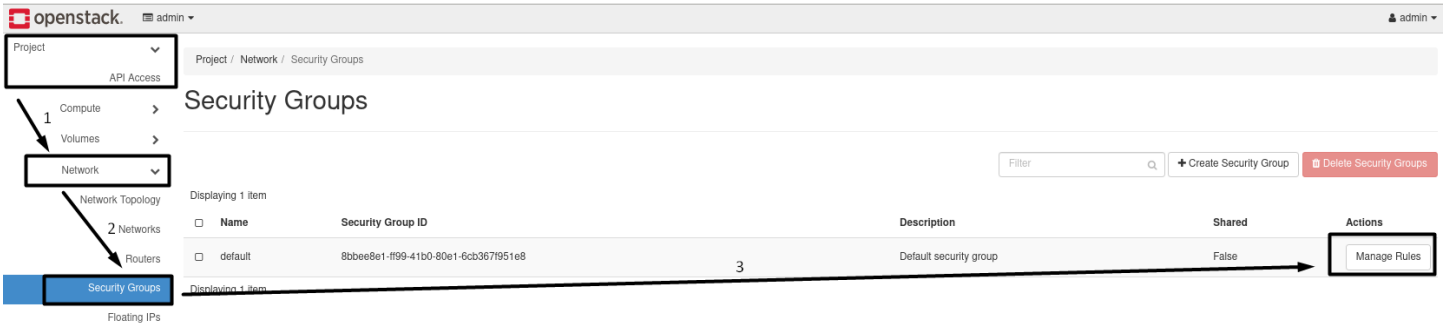
```
openstack floating ip set --port 967bac43-0eca-4ba2-be64-dfe0a86893d5 192.168.120.162
```

```
[root@openstack ~(keystone_admin)]# openstack floating ip set --port 967bac43-0eca-4ba2-be64-dfe0a86893d5 192.168.120.162
[root@openstack ~(keystone_admin)]#
```

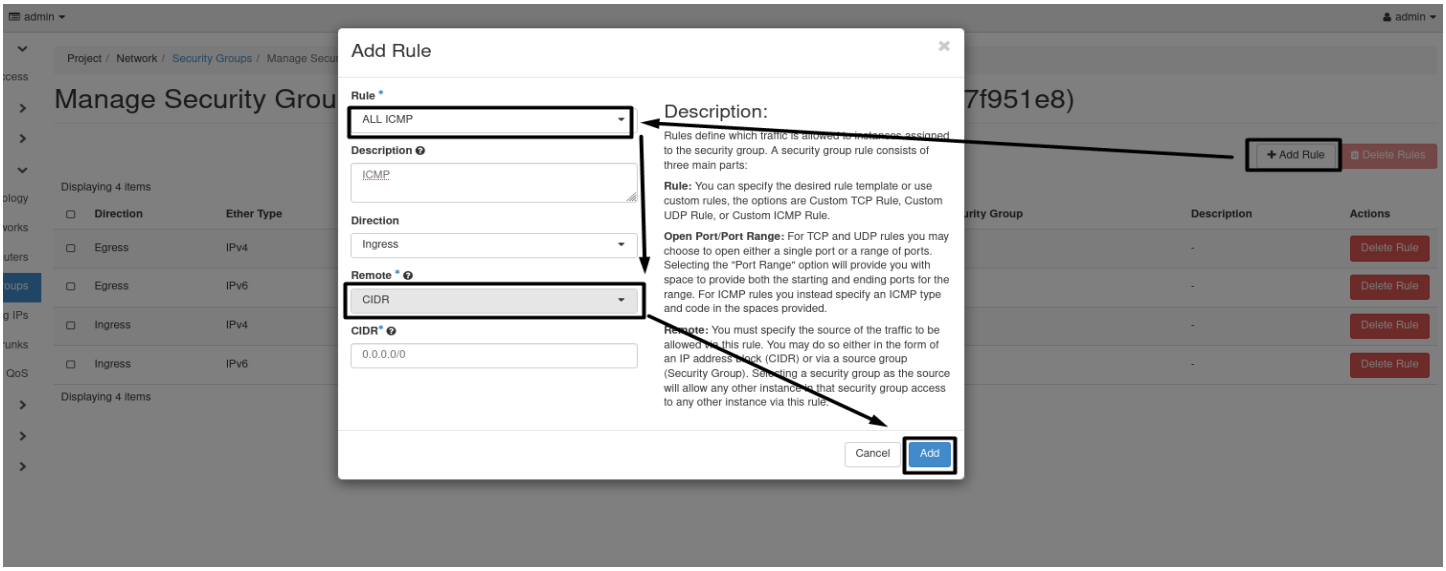
Validate the Instance from the GUI:



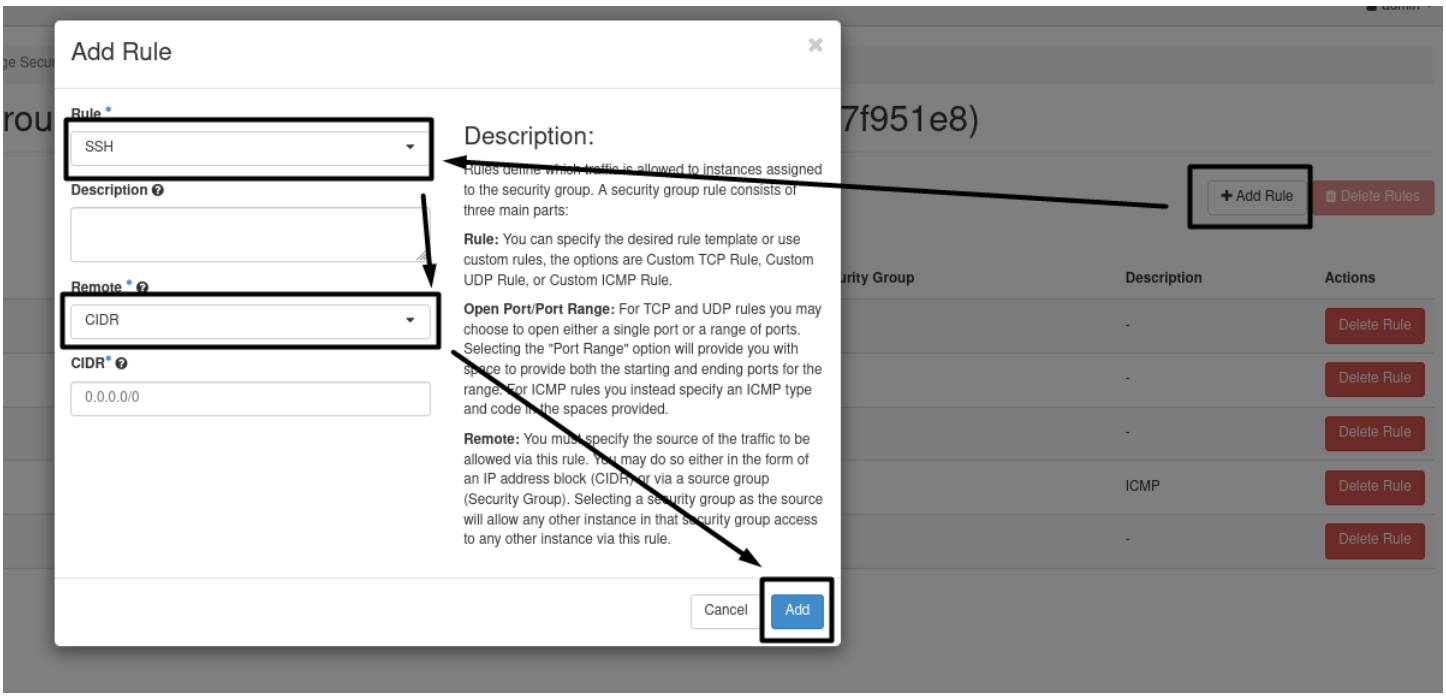
4- Add two rules in the default security group to enable ssh port and ICMP
Project→ Network→ Security Groups → Manage Rule



Then, Add the first Rule, for ICMP.



Then, Add the second Rule, for SSH.

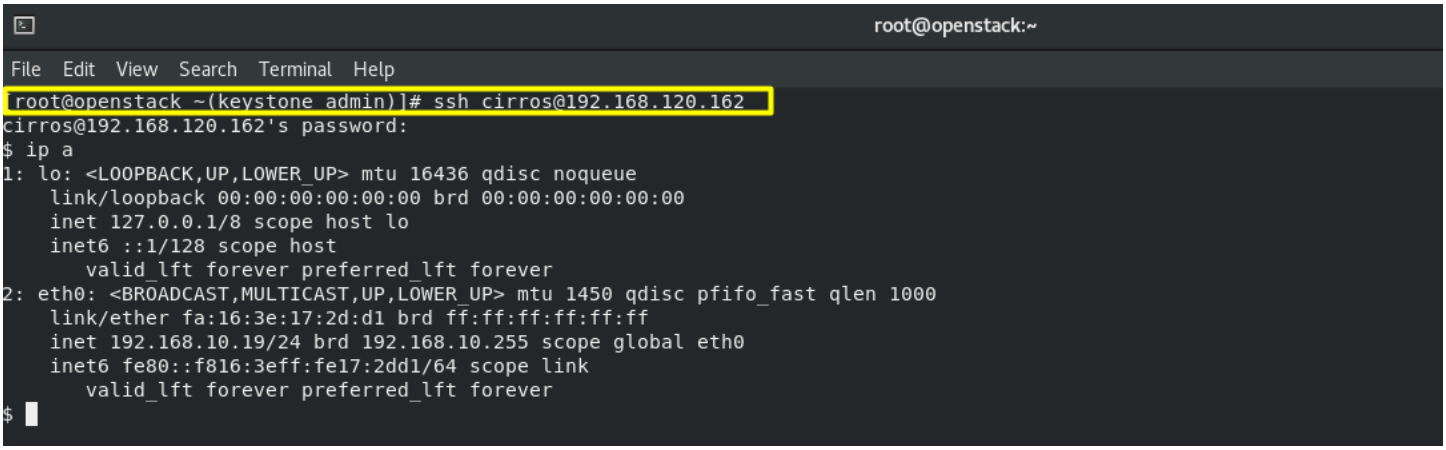


After Adding them you can validate from this screen,

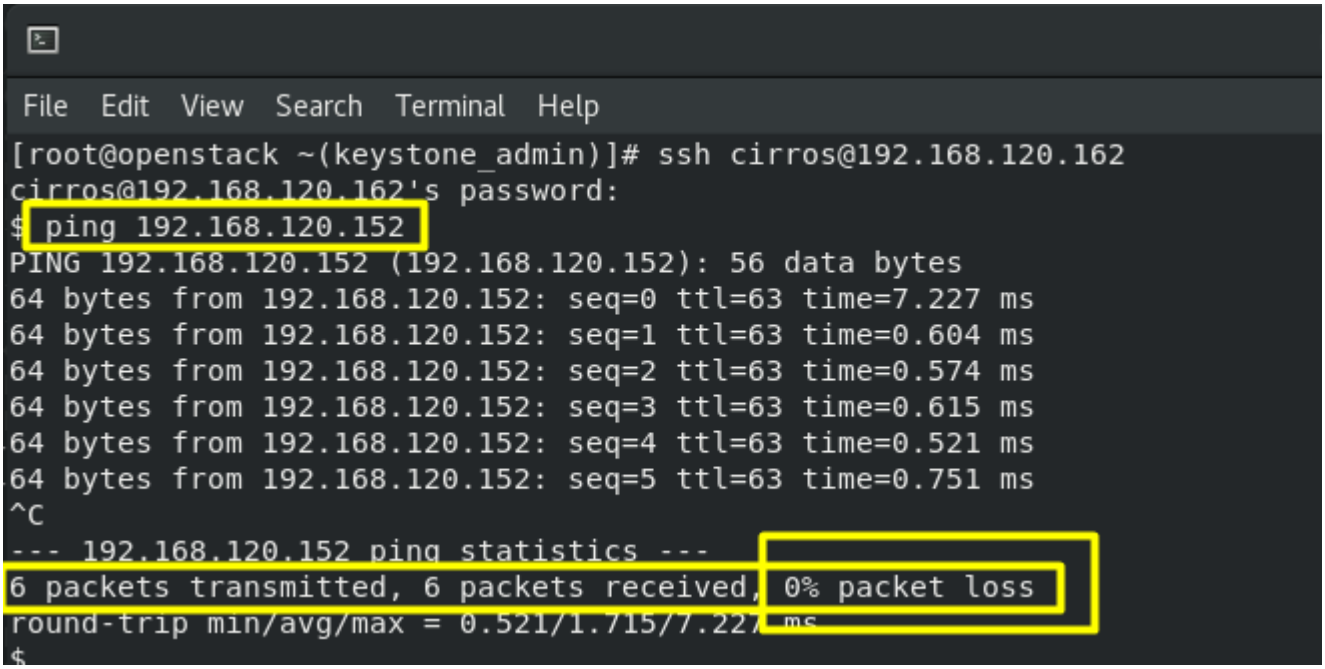
5- Connect to your instance by SSH,

User Name: cirros
Password: cubswin:)

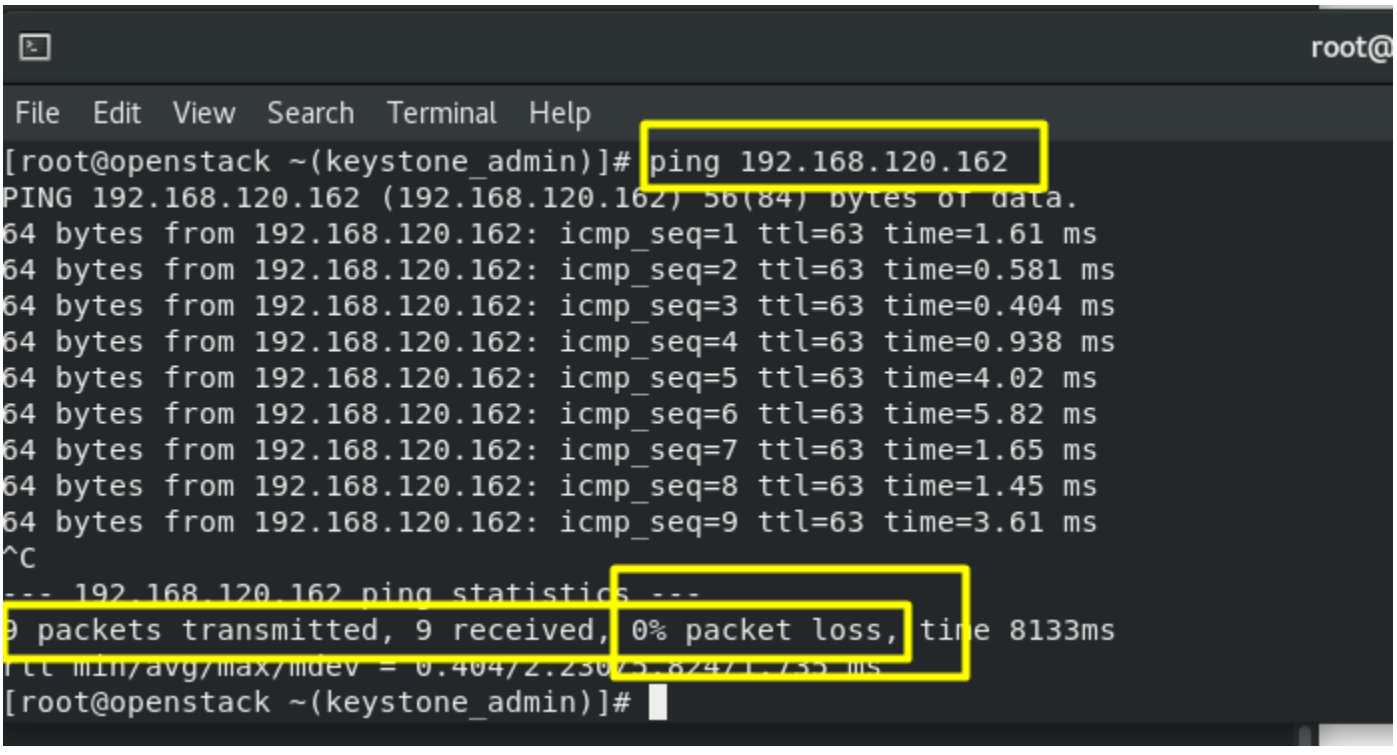
```
ssh cirros@192.168.120.162
```



Ping from the instance to the host,

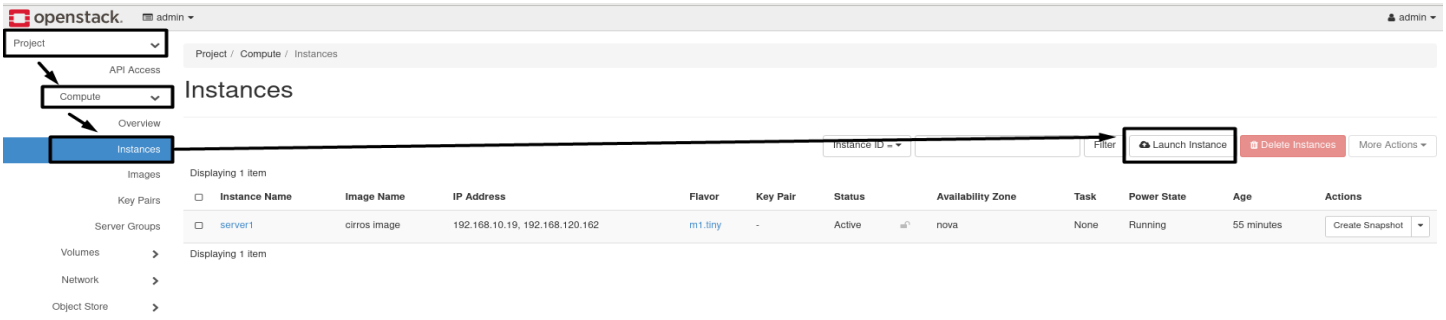


Ping from the host to the instance,

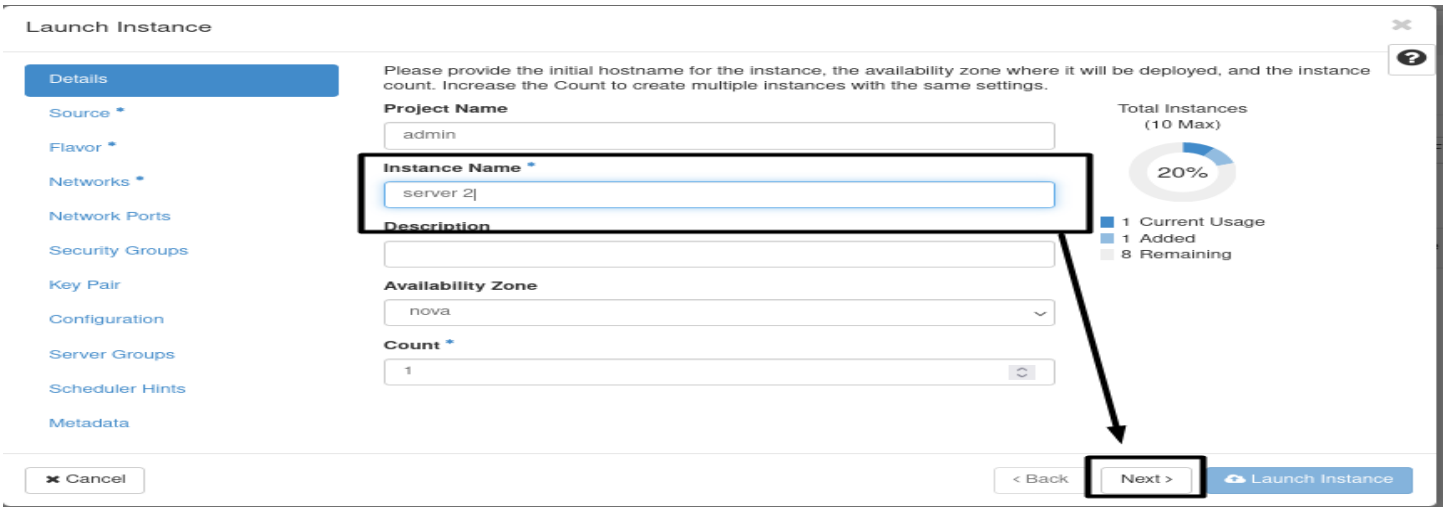


Lets Launch and Instance from GUI,

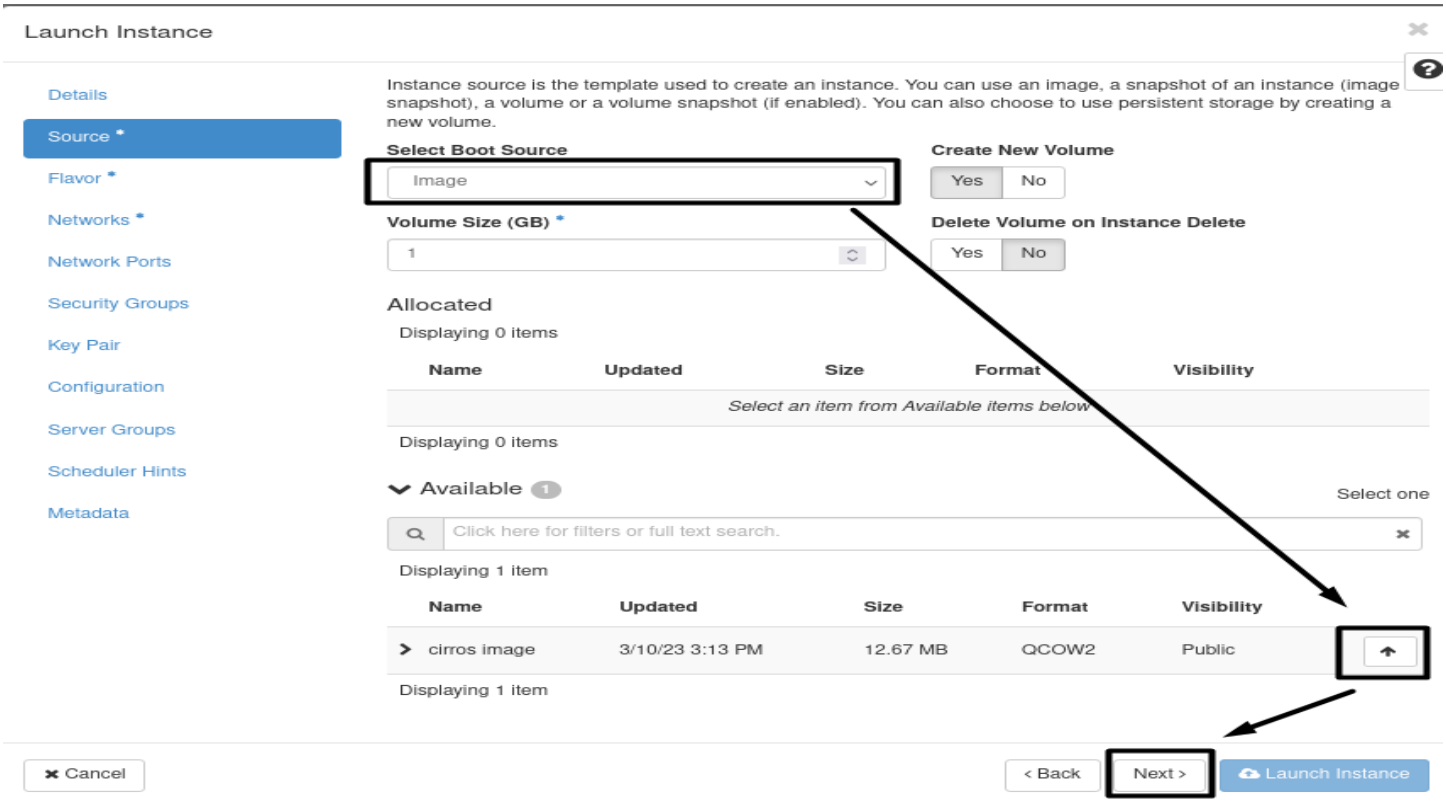
1.



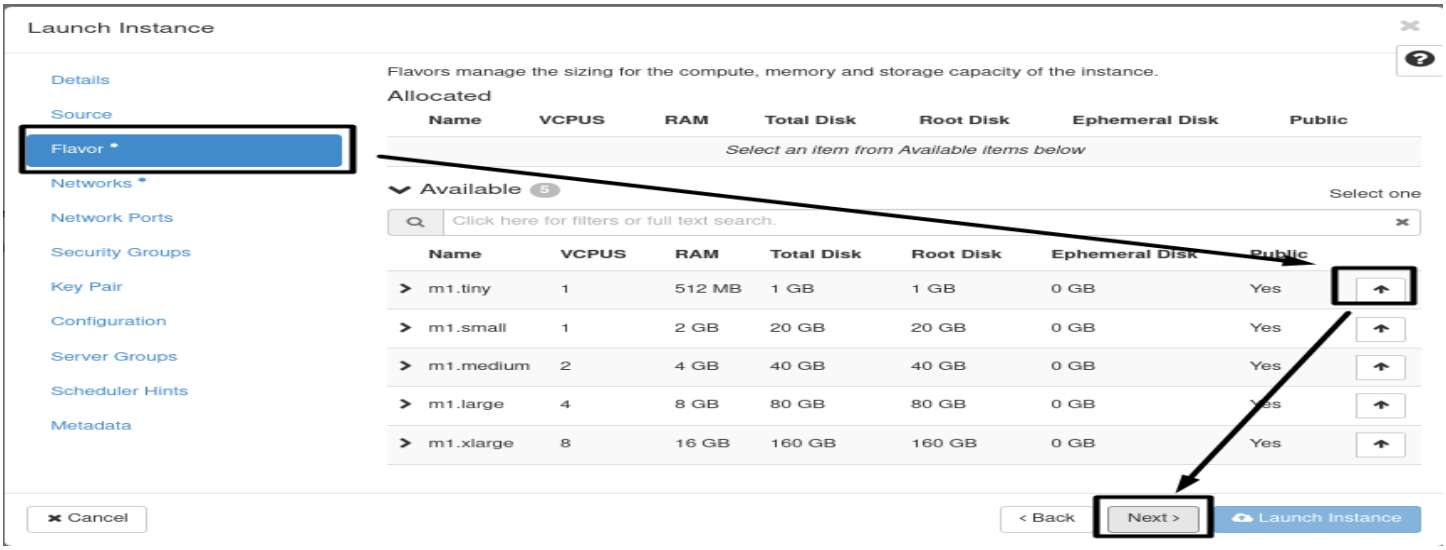
2.



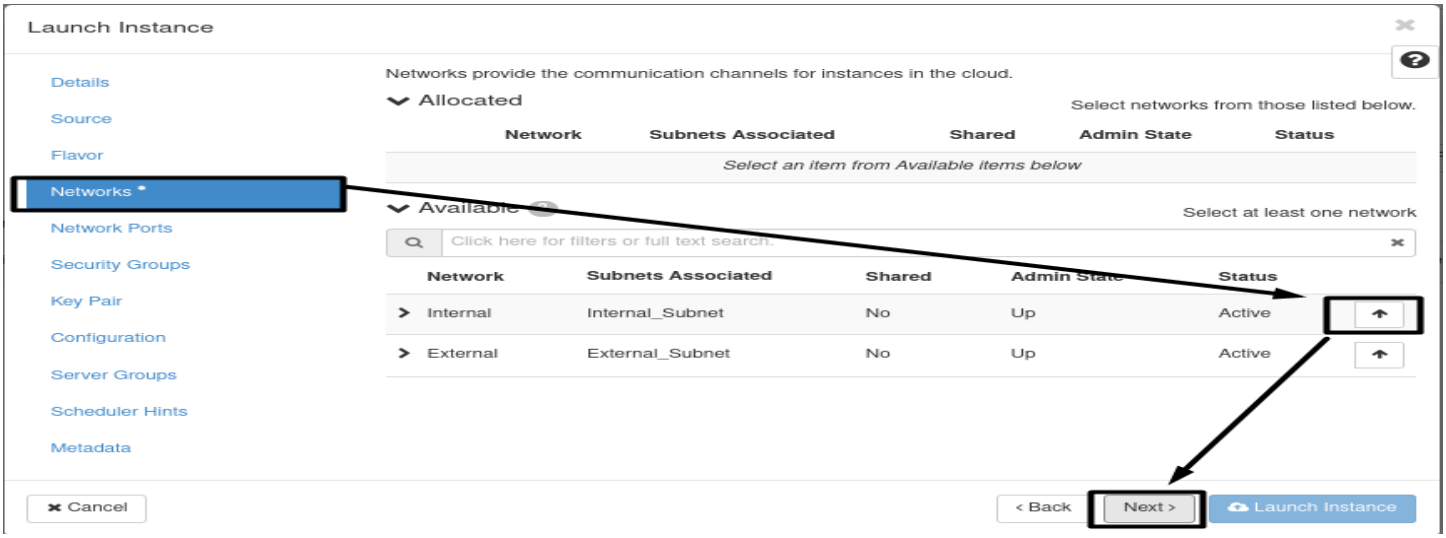
3.



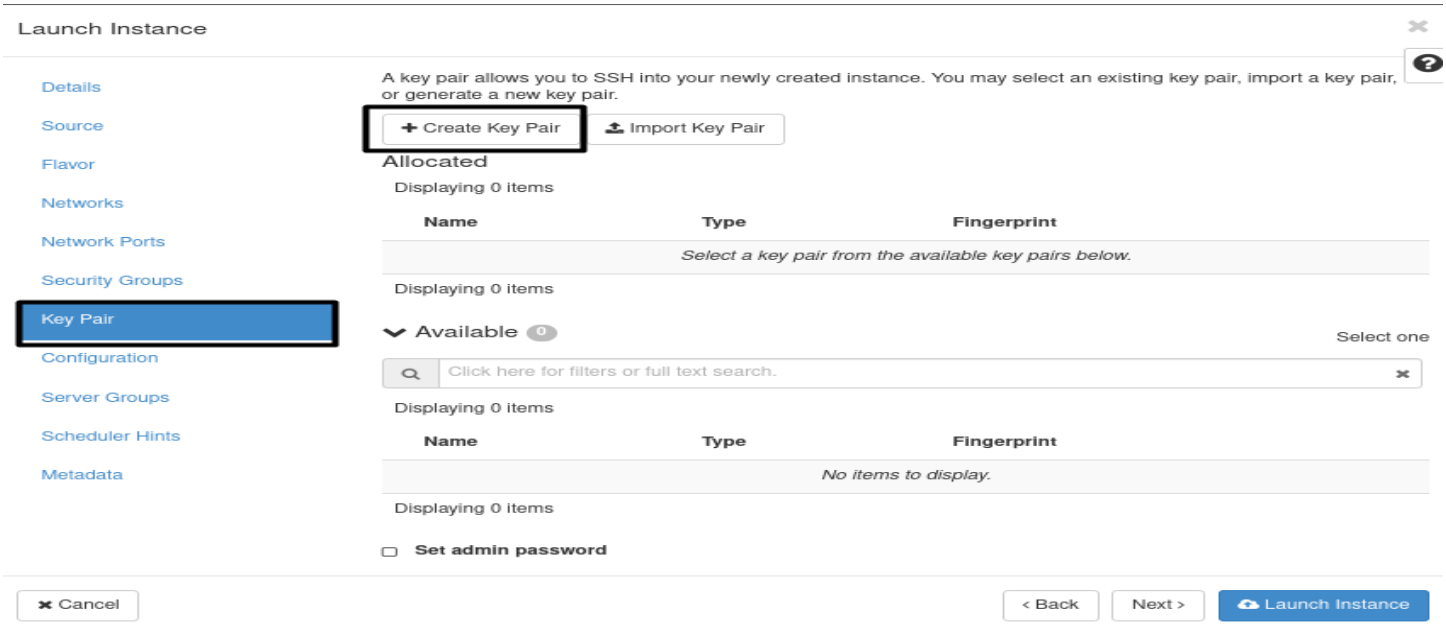
4.


Launch Instance
Details
Source
Flavor *
Networks *
Network Ports
Security Groups
Key Pair
Configuration
Server Groups
Scheduler Hints
Metadata
Flavors manage the sizing for the compute, memory and storage capacity of the instance.
Allocated
Name VCPUS RAM Total Disk Root Disk Ephemeral Disk Public
Select an item from Available items below
Available 5
Select one
Click here for filters or full text search.
Name VCPUS RAM Total Disk Root Disk Ephemeral Disk Public
m1.tiny 1 512 MB 1 GB 1 GB 0 GB Yes
m1.small 1 2 GB 20 GB 20 GB 0 GB Yes
m1.medium 2 4 GB 40 GB 40 GB 0 GB Yes
m1.large 4 8 GB 80 GB 80 GB 0 GB Yes
m1.xlarge 8 16 GB 160 GB 160 GB 0 GB Yes
Cancel
< Back
Next >
Launch Instance

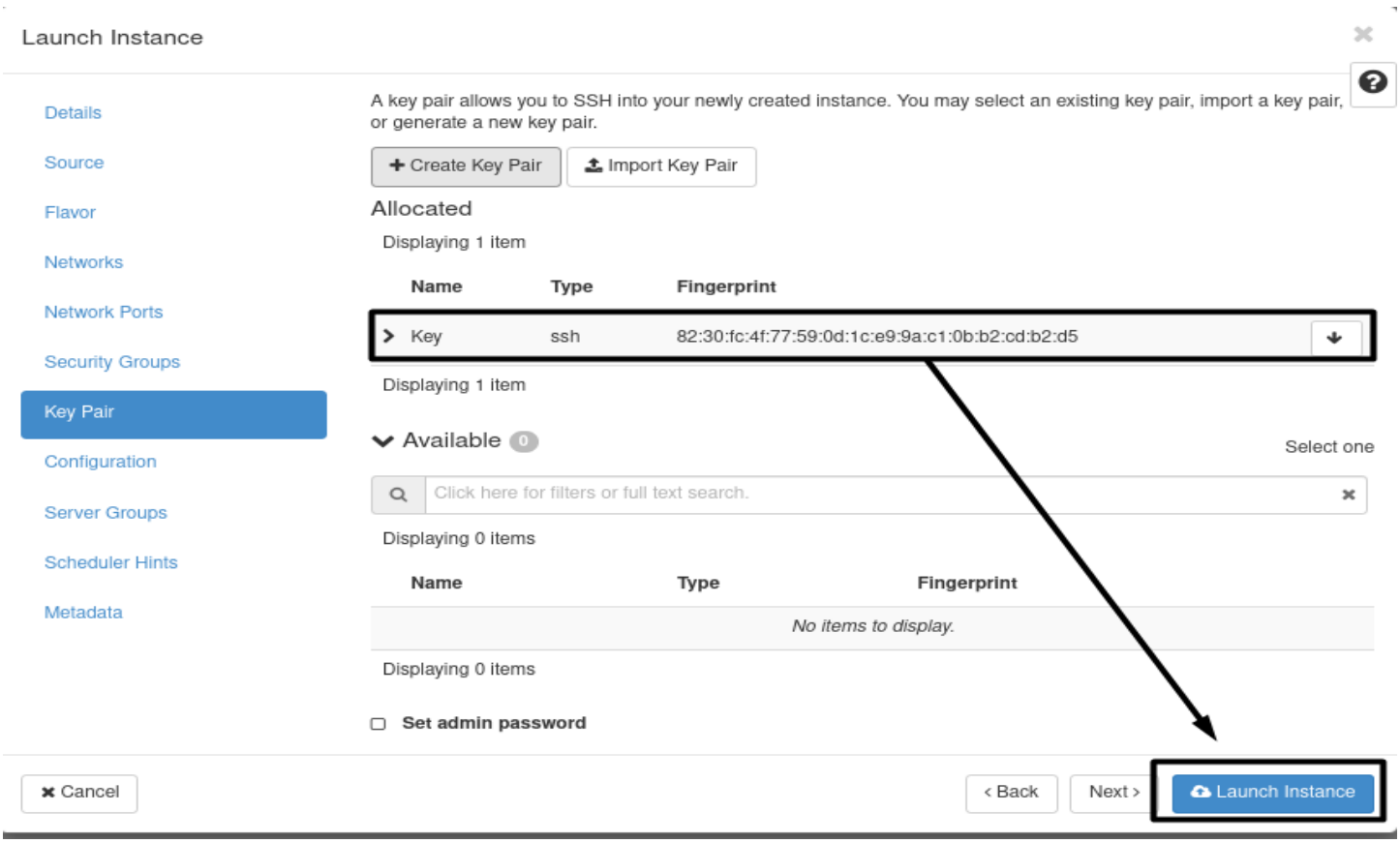
5.


Launch Instance
Details
Source
Flavor
Networks *
Network Ports
Security Groups
Key Pair
Configuration
Server Groups
Scheduler Hints
Metadata
Networks provide the communication channels for instances in the cloud.
Allocated
Select networks from those listed below.
Network Subnets Associated Shared Admin State Status
Select an item from Available items below
Available 2
Select at least one network
Click here for filters or full text search.
Network Subnets Associated Shared Admin State Status
Internal Internal_Subnet No Up Active
External External_Subnet No Up Active
Cancel
< Back
Next >
Launch Instance

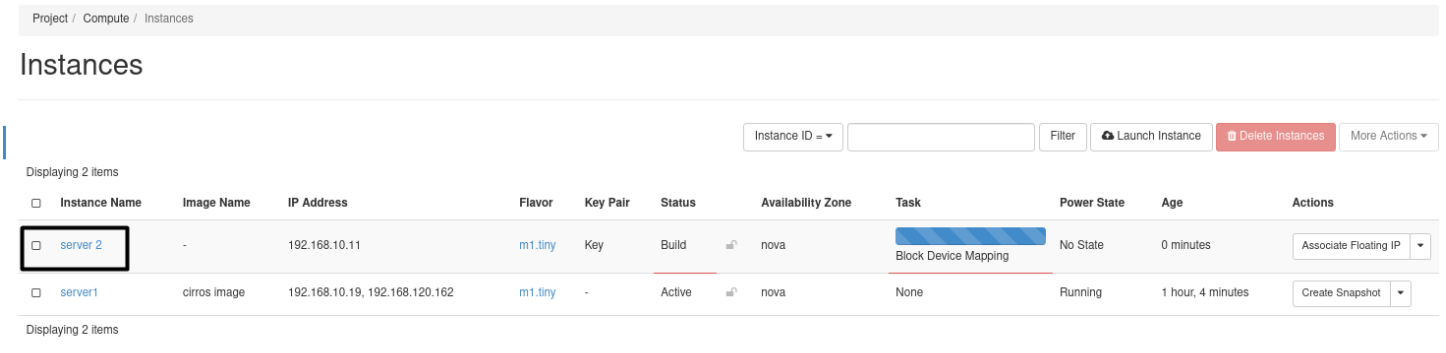
6.


Launch Instance
Details
Source
Flavor
Networks
Network Ports
Security Groups
Key Pair
Configuration
Server Groups
Scheduler Hints
Metadata
A key pair allows you to SSH into your newly created instance. You may select an existing key pair, import a key pair, or generate a new key pair.
+ Create Key Pair
Import Key Pair
Allocated
Displaying 0 items
Name Type Fingerprint
Select a key pair from the available key pairs below.
Displaying 0 items
Available 0
Select one
Click here for filters or full text search.
Displaying 0 items
Name Type Fingerprint
No items to display.
Displaying 0 items
Set admin password
Cancel
< Back
Next >
Launch Instance

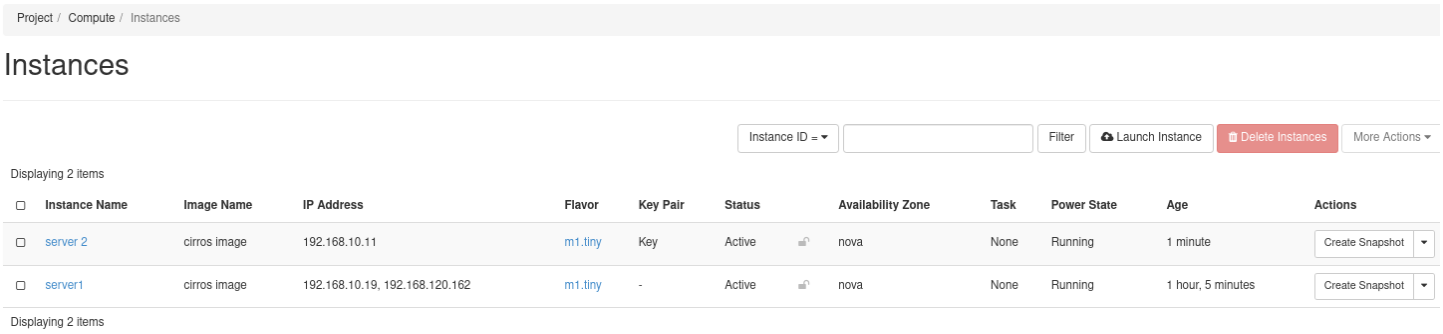

Create Key Pair
Key Pairs are how you login to your instance after it is launched. Choose a key pair name you will recognize. Names may only include alphanumeric characters, spaces, or dashes.
Key Pair Name *
Key
Key Type *
SSH Key
Private Key
-----END RSA PRIVATE KEY-----
Create Keypair
Copy Private Key to Clipboard
Done


Launch Instance
Details
Source
Flavor
Networks
Network Ports
Security Groups
Key Pair
Configuration
Server Groups
Scheduler Hints
Metadata
A key pair allows you to SSH into your newly created instance. You may select an existing key pair, import a key pair, or generate a new key pair.
+ Create Key Pair
Import Key Pair
Allocated
Displaying 1 item
Name
Type
Fingerprint
Key
ssh
82:30:fc:4f:77:59:0d:1c:e9:9a:c1:0b:b2:cd:b2:d5
Displaying 1 item
Available 0
Select one
Click here for filters or full text search.
Displaying 0 items
Name
Type
Fingerprint
No items to display.
Displaying 0 items
Set admin password
Cancel
Back
Next
Launch Instance

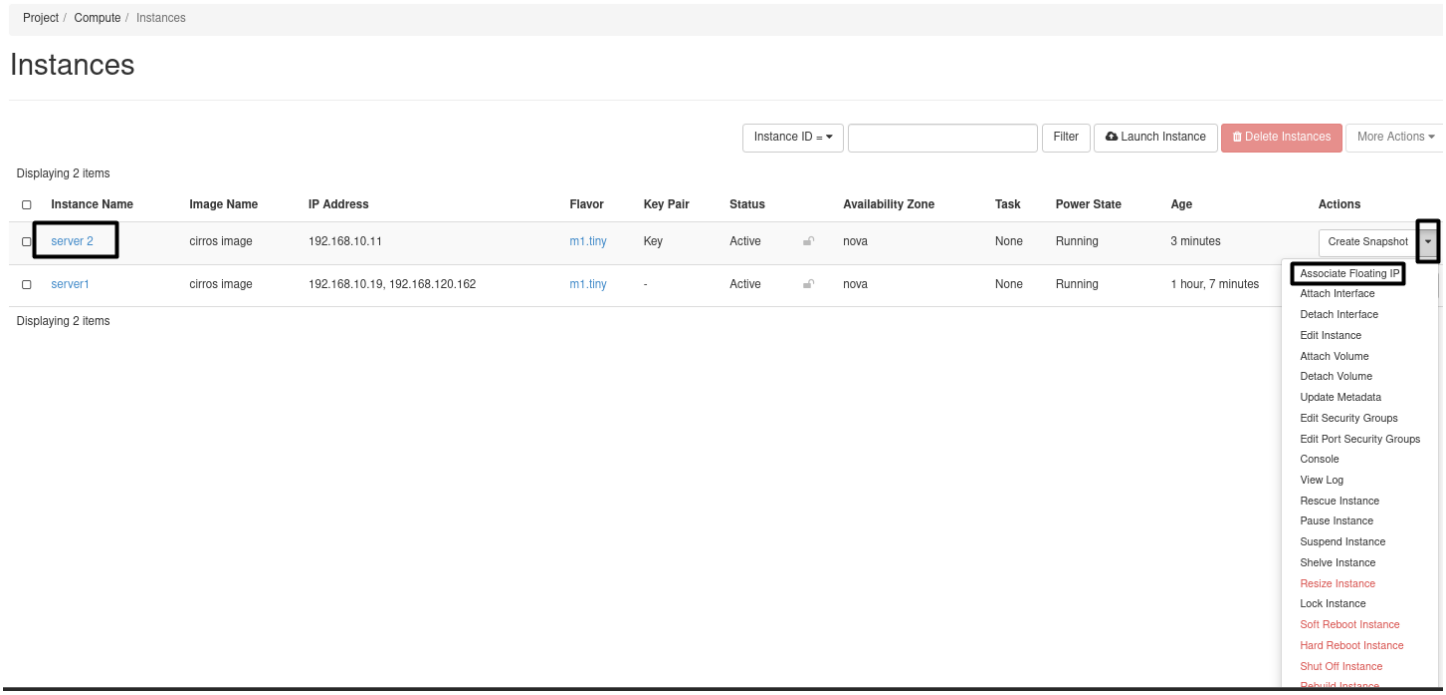
Validate from GUI and please waiting to be running,



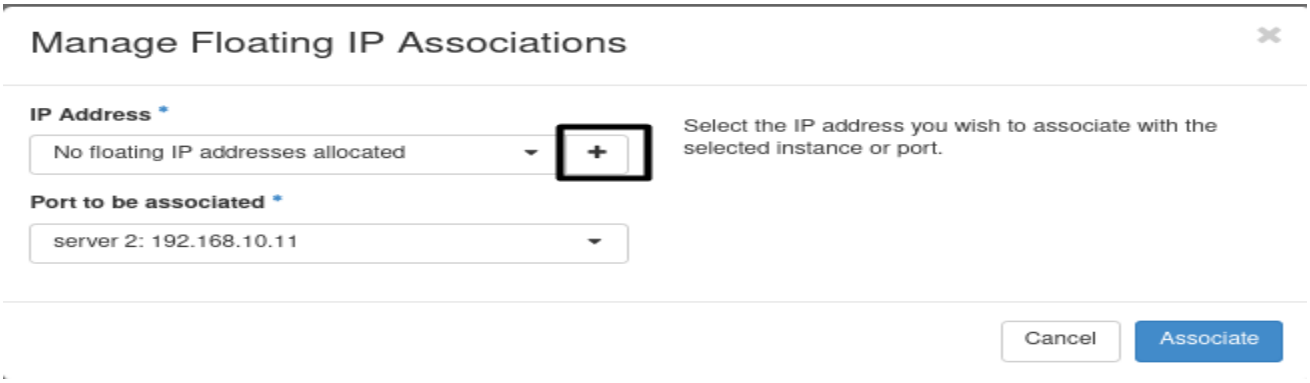
Running Now,



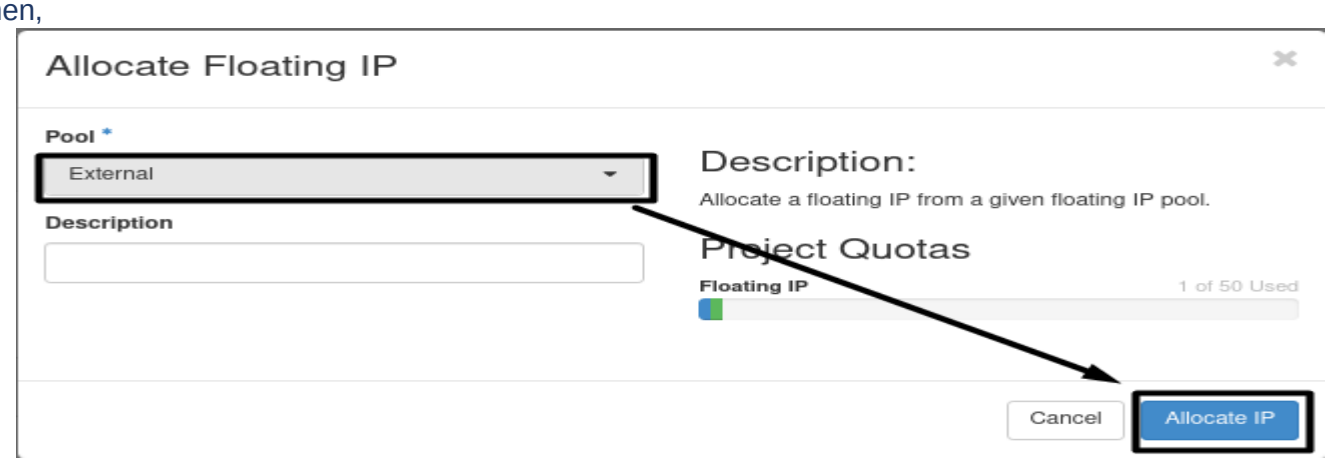
Let’s Associate Floating IP for this instance,



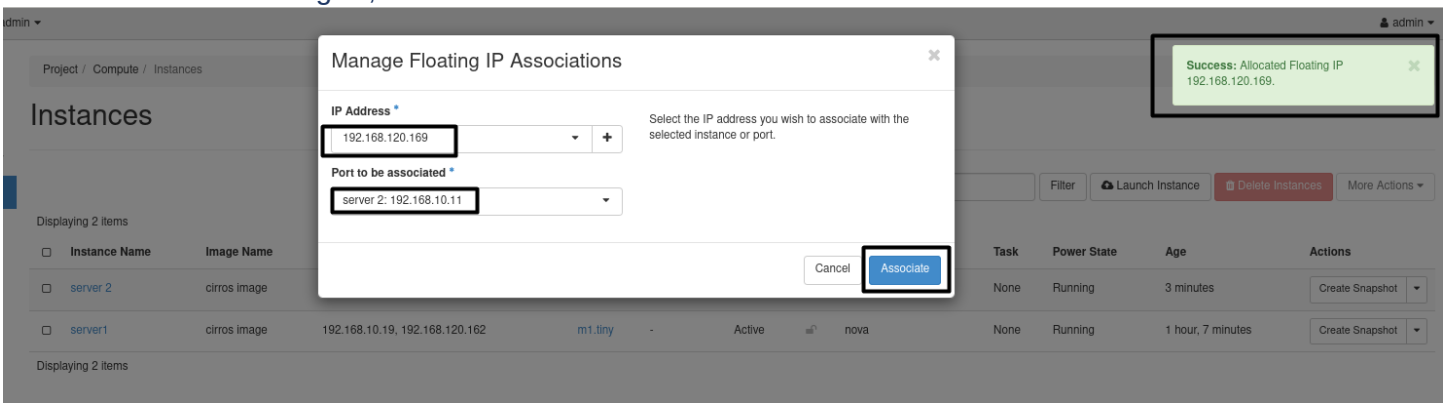
Then Allocate new floating IP,



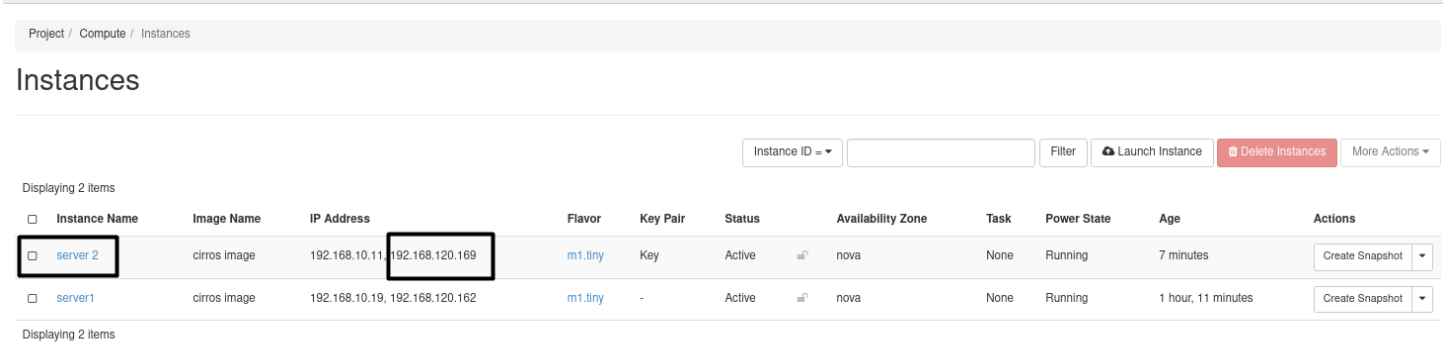
Then,



Now we can add Floating IP,



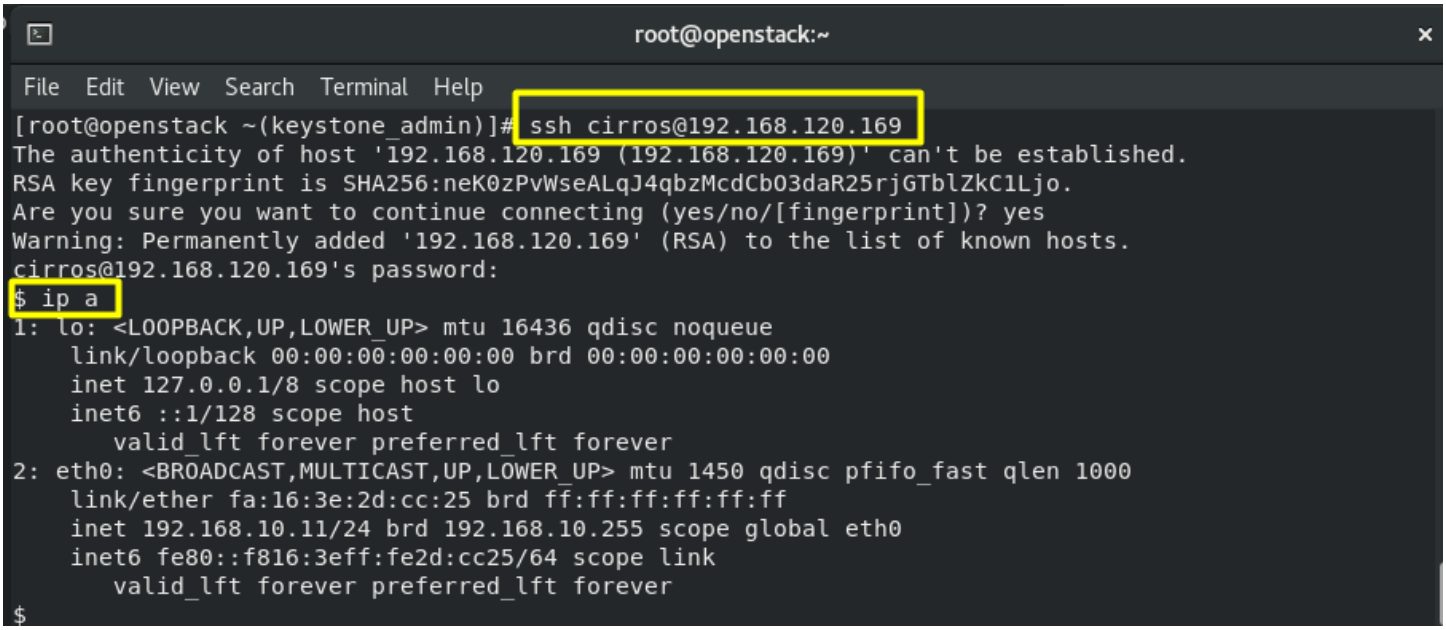
Validate from GUI,



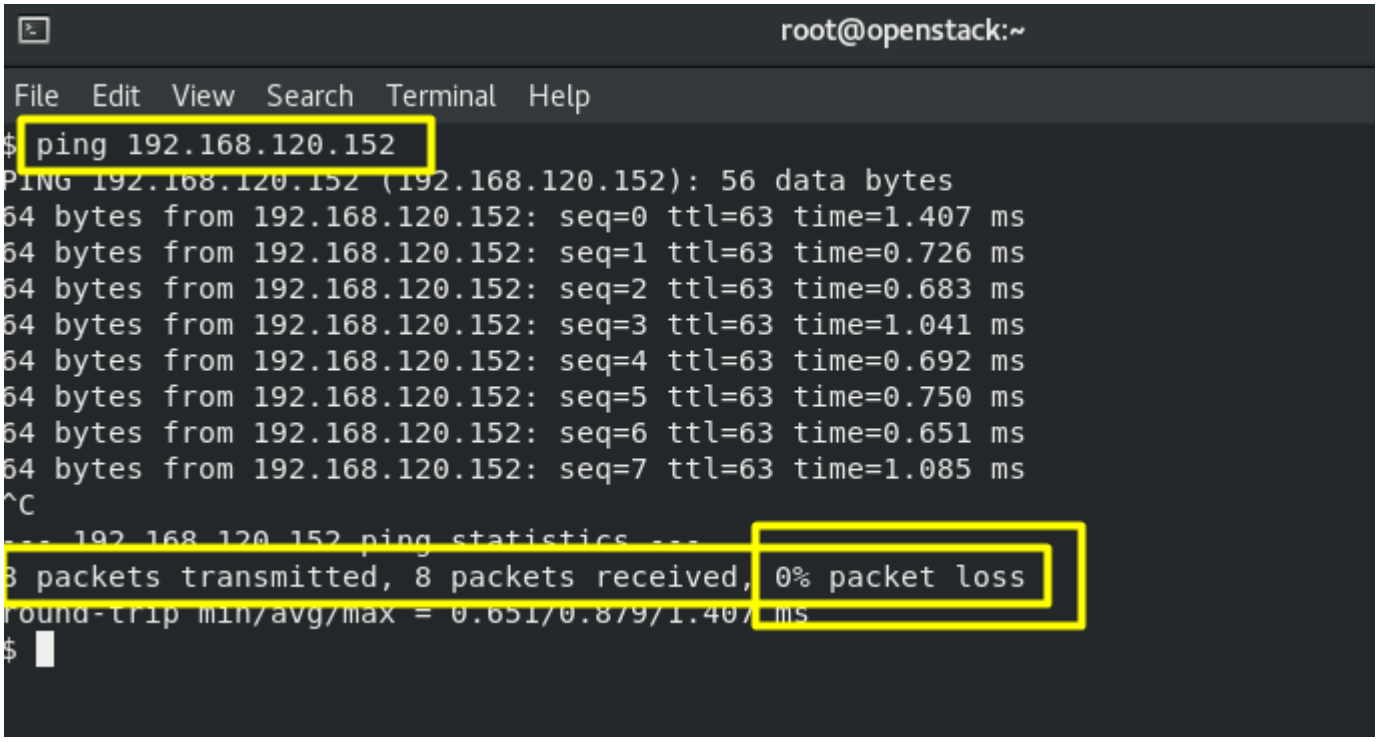
Let’s try to connect to it and ping,

User Name: cirros
Password: cubswin:)

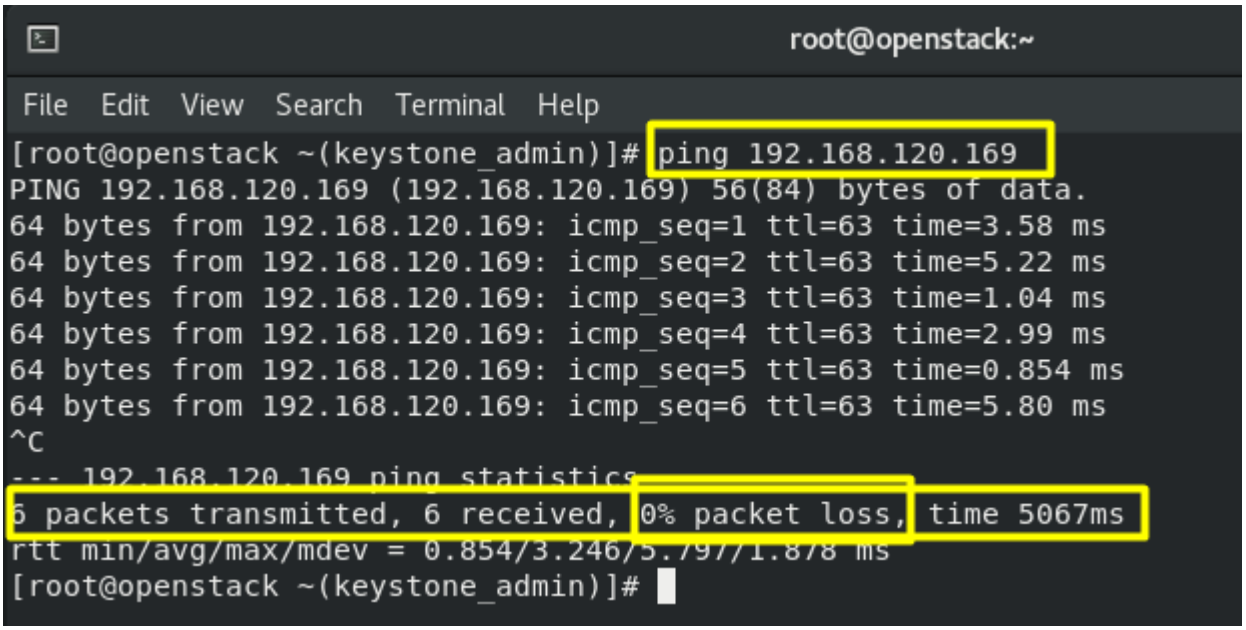
```
ssh cirros@192.168.120.169
```



Ping from the instance to the host,



Ping from the host to the instance,



Now Delete This VM and Go Home 😂