OpenStack Deployment

Software Used for Deployment:

VMware® Workstation 16 Pro 16.0.0 build-16894299

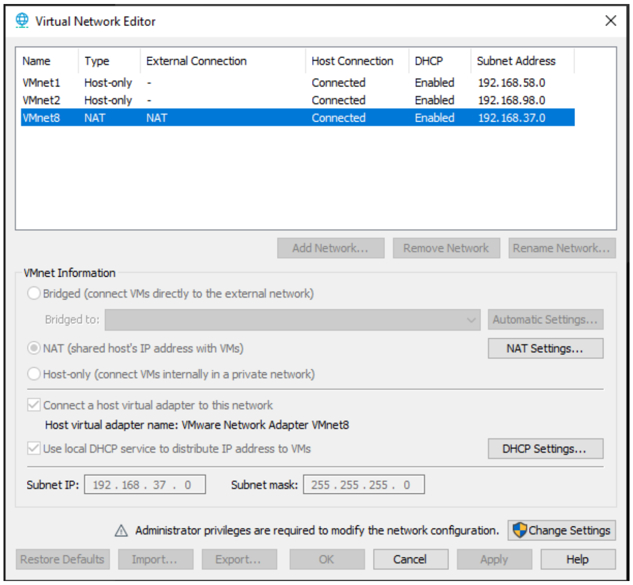
Ubuntu 20.04 LTS

DevStack

Ubuntu 20.04 Full Cloned after installing. So, we have 2 images: One will be controller node and one will be computing node.

Static IP Setup:

Since, IP was hard coded in certain scripts that were to be run in controller and compute node. Therefore, we have to assign static IP to both nodes.



Virtual Network Editor

Name	Type	External Connection	Host Connection	DHCP	Subnet Address
VMnet1	Host-only	-	Connected	Enabled	192.168.58.0
VMnet2	Host-only	-	Connected	Enabled	192.168.98.0
VMnet8	NAT	NAT	Connected	Enabled	192.168.37.0

VMnet Information

○ Bridged (connect VMs directly to the external network)

Bridged to:

● NAT (shared host's IP address with VMs)

○ Host-only (connect VMs internally in a private network)

☑ Connect a host virtual adapter to this network

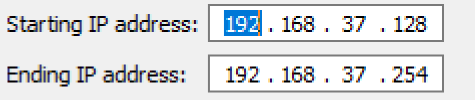
Host virtual adapter name: VMware Network Adapter VMnet8

☑ Use local DHCP service to distribute IP address to VMs

Subnet IP: 192 . 168 . 37 . 0   Subnet mask: 255 . 255 . 255 . 0

⚠ Administrator privileges are required to modify the network configuration.

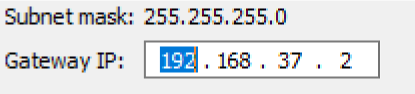
VMWare is using subnet address 192.168.37.0 and out static IP must lie in the following range:



Starting IP address: 192 . 168 . 37 . 128

Ending IP address: 192 . 168 . 37 . 254

Subnet mask and Gateway IP is:



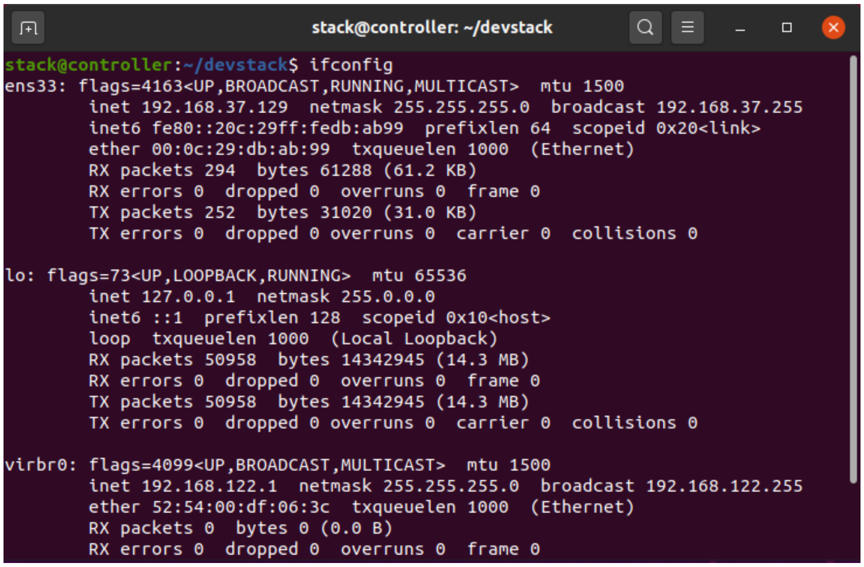
Subnet mask: 255.255.255.0

Gateway IP: 192 . 168 . 37 . 2

Now, since we have all the information to assign static IP to both the nodes.

Controller Node:

The static IP assigned to controller node is: 192.168.37.129.



```
stack@controller:~/devstack$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.37.129  netmask 255.255.255.0  broadcast 192.168.37.255
        inet6 fe80::20c:29ff:fedb:ab99  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:db:ab:99  txqueuelen 1000  (Ethernet)
        RX packets 294  bytes 61288 (61.2 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 252  bytes 31020 (31.0 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 50958  bytes 14342945 (14.3 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 50958  bytes 14342945 (14.3 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

virbr0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        inet 192.168.122.1  netmask 255.255.255.0  broadcast 192.168.122.255
        ether 52:54:00:df:06:3c  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
```

Compute Node:

The static IP assigned to compute node is: 192.168.37.130.

OpenStack Deployment (Using DevStack):

Work done in both nodes:

The first step is to setup a user with sudo privileges in both the nodes.

To setup user with sudo privileges, we create the user with name “stack” by running following command in the terminal:

$: useradd -s /bin/bash -d /opt/stack -m stack

Next, we grant the user “stack” sudo privileges using by adding the following command in /etc/sudoers file:

```
$: stack ALL=(ALL) NOPASSWD: ALL
```

Then, we give user “stack” password using the command:

```
$: sudo passwd stack
```

We sign-out of the machine and re-login as user “stack” and the password that we setup in the last step.

Setup ssh key for access for both nodes using the following commands:

```
$: mkdir ~/.ssh
```

```
$: chmod 700 ~/.ssh
```

```
$: echo "ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAABAQCyYjfgyPazTvGpd8OaAvtU2utL8W6gWC4
JdRS1J95GhNNfQd657yO6s1AH5KYQWktcE6FO/xNUC2reEXSGC7ezy+sGO1kj9Limv5
vrvNHvF1+wts0Cmyx61D2nQw35/Qz8BvpdJANL7VwP/cFI/p3yhvx2lsnjFE3hN8xRB2Lt
LUopUSVdBwACOVUmH2G+2BWMJDjVINd2DPqRIA4Zhy09KJ3O1Joabr0XpQL0yt/I
9x8BVHdAx6l9U0tMg9dj5+tAjZvMAFfye3PJcYwwsfJoFxC8w/SLtqlFX7Ehw++8Rtvomv
uipLdmWCy+T9hIkl+gHYE4cS3OIqXH7f49jdJf jesse@spacey.local" >
~/.ssh/authorized_keys
```

Now, get the latest version of Openstack by using the following commands:

```
$: git clone https://opendev.org/openstack/devstack
```

If git is not installed, then install git tool using the following command:

```
$: sudo apt-get update
```

```
$: sudo apt-get install git
```

Switch to the DevStack directory:

```
$: cd devstack
```

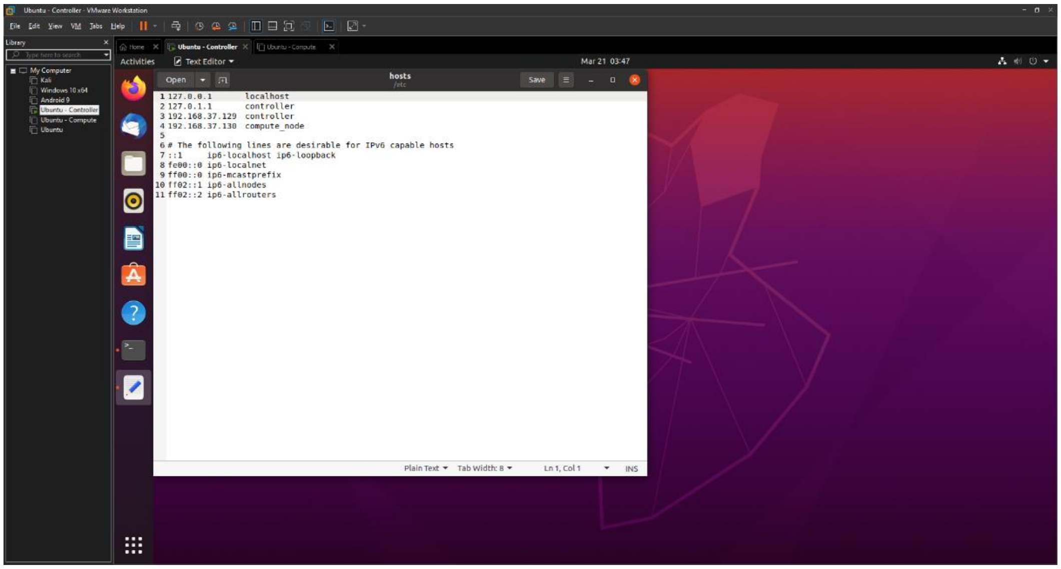
Run the following command:

```
$: sudo apt-get install python3-distutils
```

<u>From here onward, the steps are different for both controller and compute node.</u>

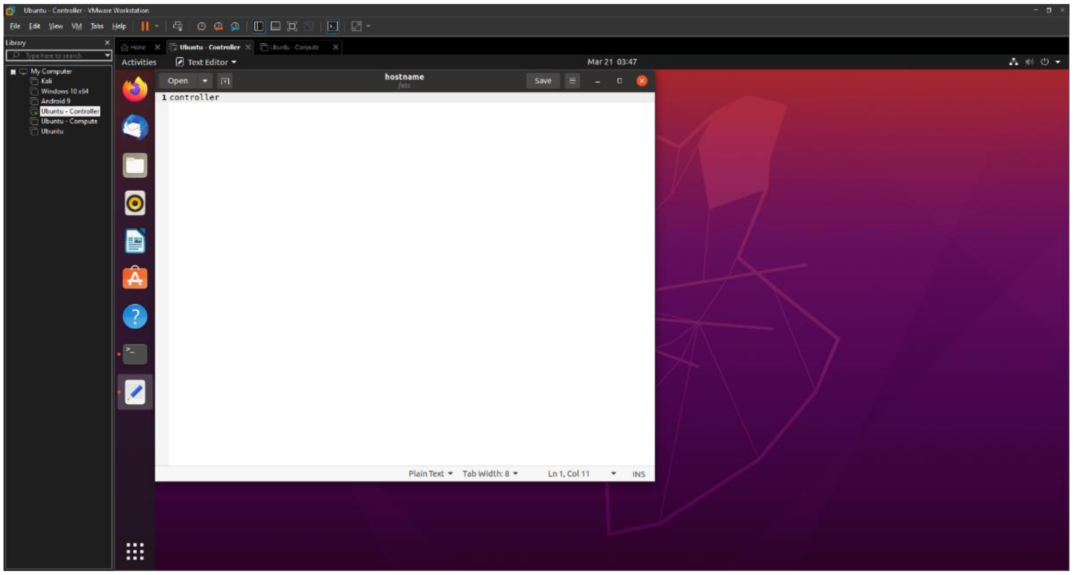
Controller Node:

Open the /etc/hosts file and add the compute node IP with named “compute_node” and IP of controller named “controller” as following:



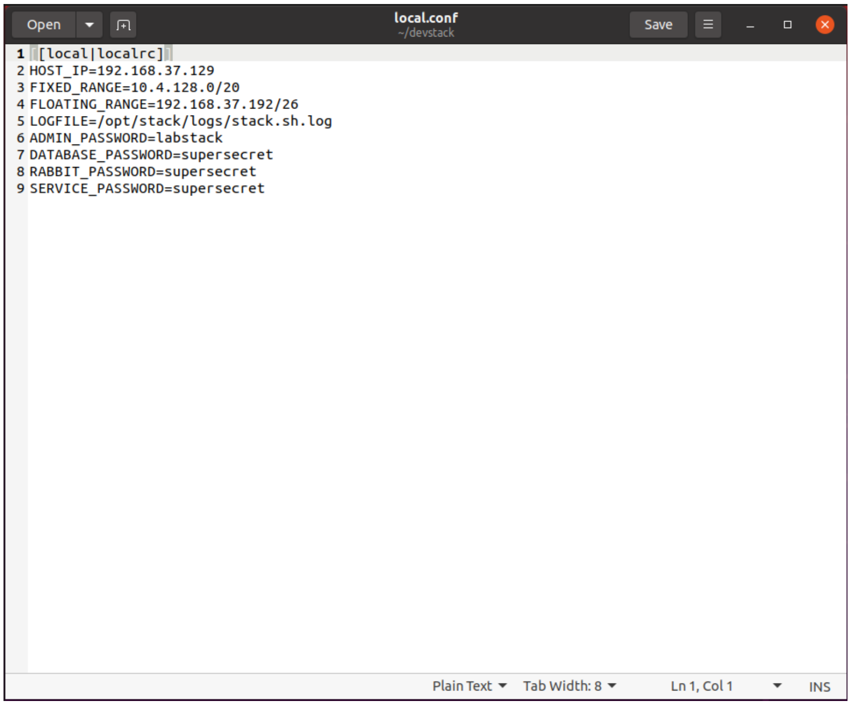
```
127.0.0.1       localhost
127.0.1.1       controller
192.168.37.129  controller
192.168.37.130  compute_node

# The following lines are desirable for IPv6 capable hosts
::1     ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
```

Open the /etc/hostname file and change the name to controller.



```
controller
```

Create a local.conf file and add the following lines to it.



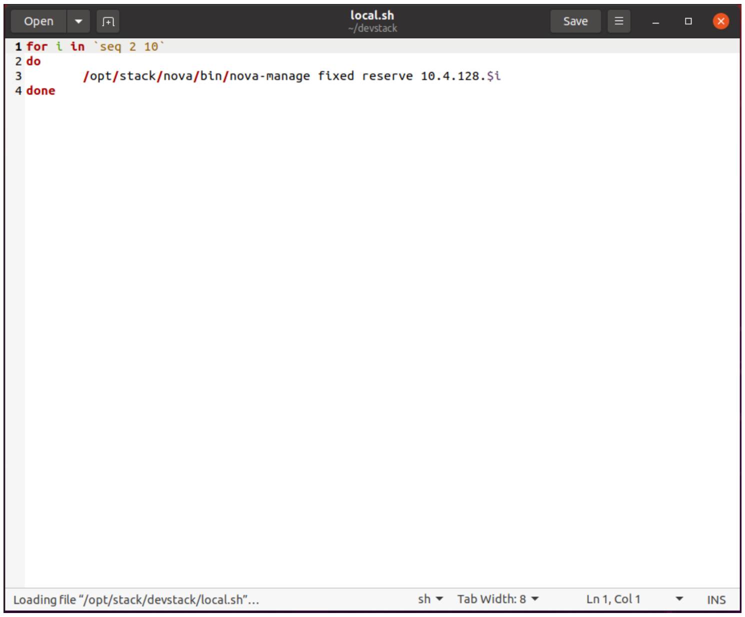
```
[[local|localrc]]
HOST_IP=192.168.37.129
FIXED_RANGE=10.4.128.0/20
FLOATING_RANGE=192.168.37.192/26
LOGFILE=/opt/stack/logs/stack.sh.log
ADMIN_PASSWORD=labstack
DATABASE_PASSWORD=supersecret
RABBIT_PASSWORD=supersecret
SERVICE_PASSWORD=supersecret
```

HOST_IP is the actual IP address of our machine

FLOATING_RANGE IPs are the set of IPs that will be assigned to instants running on the VMware. As seen in static IP setup section, we have range of IPs available from 192.168.37.129 – 192.168.37.254. We will reserve IPs from 192.168.37.129 to 192.168.37.191 for physical nodes and onwards for instants. We have also assigned password to different services in this configuration file.

LOGFILE define the files which will contain all the logs of Openstack.

Create another file named local.sh, which will reserve first 10 IP in the private subnet. This step is required in multi-node configuration.



```
for i in `seq 2 10`
do
        /opt/stack/nova/bin/nova-manage fixed reserve 10.4.128.$i
done
```

Now, we are ready to deploy OpenStack controller node.

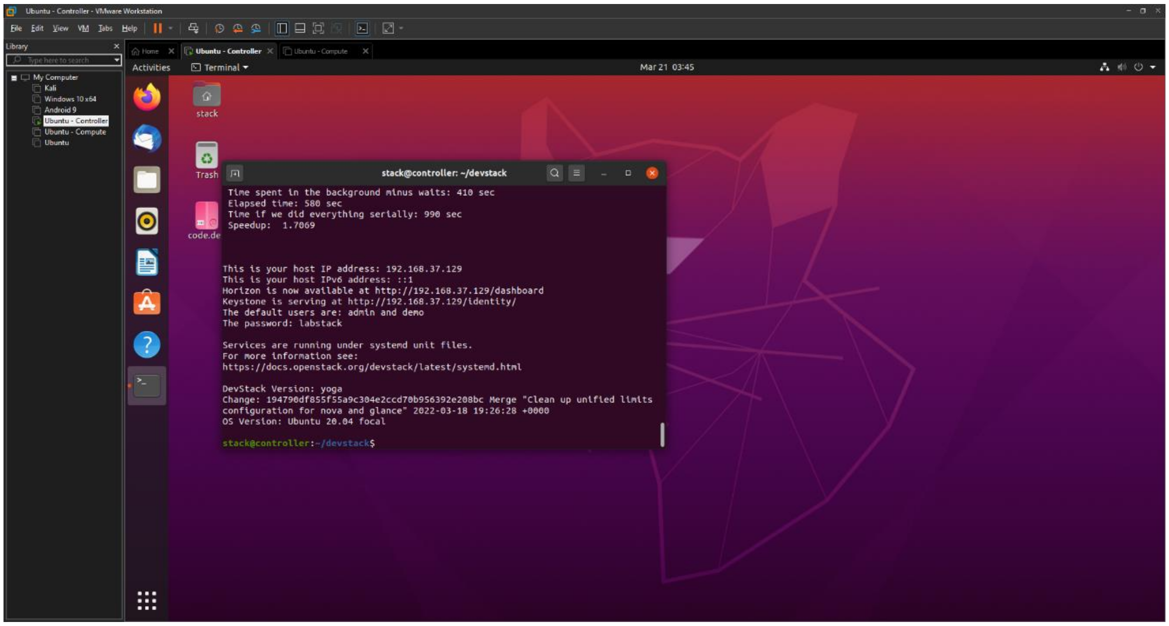
Run the following command:

$: ./stack.sh

For first time, it may take 30 min to 2 hours depending on the bandwidth.

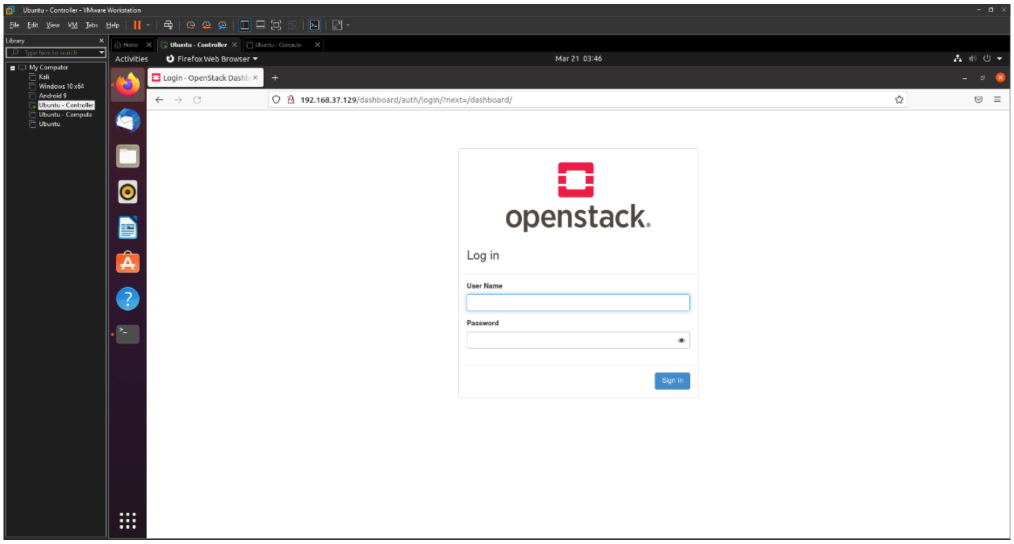
If it fails and the error is timeout while cloning from git. Just re-run the command.

After it is done, you will prompt with following screen.



```
 Time spent in the background minus waits: 410 sec
 Elapsed time: 580 sec
 Time if we did everything serially: 990 sec
 Speedup:  1.7069



This is your host IP address: 192.168.37.129
This is your host IPv6 address: ::1
Horizon is now available at http://192.168.37.129/dashboard
Keystone is serving at http://192.168.37.129/identity/
The default users are: admin and demo
The password: labstack

Services are running under systemd unit files.
For more information see:
https://docs.openstack.org/devstack/latest/systemd.html

DevStack Version: yoga
Change: 194790df855f55a9c304e2ccd70b956392e208bc Merge "Clean up unified limits
configuration for nova and glance" 2022-03-18 19:26:28 +0000
OS Version: Ubuntu 20.04 focal

stack@controller:~/devstack$
```

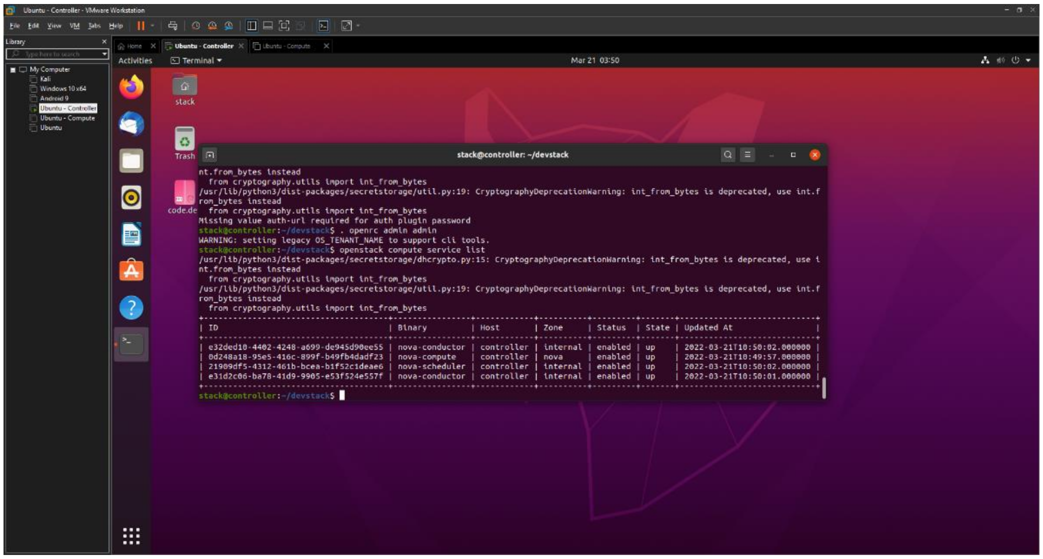
You can access the dashboard using the specified URL.



On terminal, we confirm the services are running by using the following commands:

$: . openrc admin admin

$: openstack compute service list

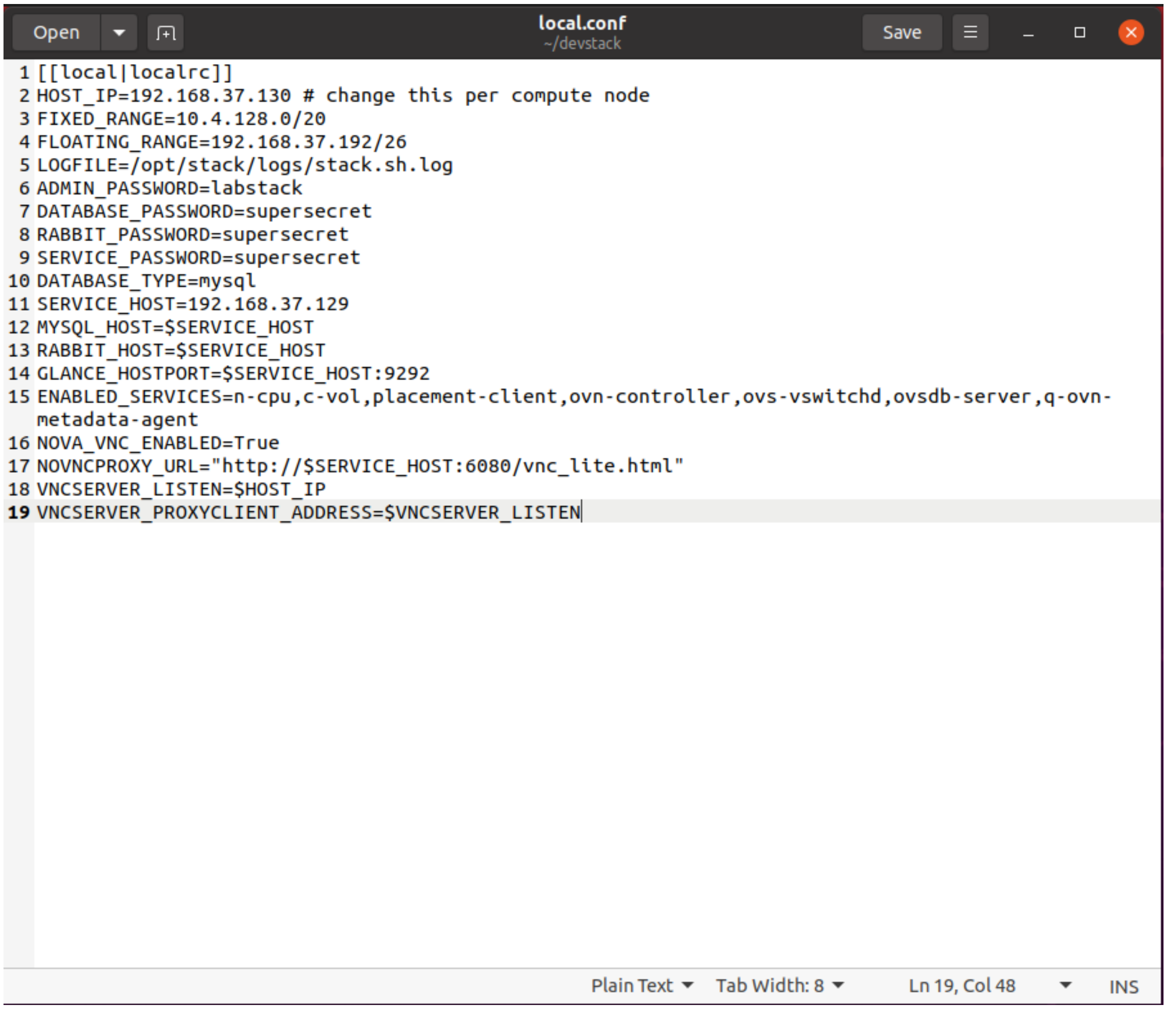

Ubuntu - Controller - VMware Workstation
Activities
Terminal
Mar 21 03:50
stack
Trash
code.de
stack@controller: ~/devstack

```
nt.from_bytes instead
  from cryptography.utils import int_from_bytes
/usr/lib/python3/dist-packages/secretstorage/util.py:19: CryptographyDeprecationWarning: int_from_bytes is deprecated, use int.f
rom_bytes instead
  from cryptography.utils import int_from_bytes
Missing value auth-url required for auth plugin password
stack@controller:~/devstack$ . openrc admin admin
WARNING: setting legacy OS_TENANT_NAME to support cli tools.
stack@controller:~/devstack$ openstack compute service list
/usr/lib/python3/dist-packages/secretstorage/dhcrypto.py:15: CryptographyDeprecationWarning: int_from_bytes is deprecated, use i
nt.from_bytes instead
  from cryptography.utils import int_from_bytes
/usr/lib/python3/dist-packages/secretstorage/util.py:19: CryptographyDeprecationWarning: int_from_bytes is deprecated, use int.f
rom_bytes instead
  from cryptography.utils import int_from_bytes
+--------------------------------------+----------------+------------+----------+---------+-------+----------------------------+
| ID                                   | Binary         | Host       | Zone     | Status  | State | Updated At                 |
+--------------------------------------+----------------+------------+----------+---------+-------+----------------------------+
| e32ded10-4402-4248-a699-de945d90ee55 | nova-conductor | controller | internal | enabled | up    | 2022-03-21T10:50:02.000000 |
| 0d248a18-95e5-416c-899f-b49fb4dadf23 | nova-compute   | controller | nova     | enabled | up    | 2022-03-21T10:49:57.000000 |
| 21909df5-4312-461b-bcea-b1f52c1deae6 | nova-scheduler | controller | internal | enabled | up    | 2022-03-21T10:50:02.000000 |
| e31d2c06-ba78-41d9-9905-e53f524e557f | nova-conductor | controller | internal | enabled | up    | 2022-03-21T10:50:01.000000 |
+--------------------------------------+----------------+------------+----------+---------+-------+----------------------------+
stack@controller:~/devstack$
```

We can see that services are running, although its controller node and we need to separately setup compute node. But we used devstack to deploy Openstack therefore all the services were installed, we can disable the compute service but we will let it run and we can combine the nova from compute node and nova from controller node for better performance.

Compute Node:

Create a local.conf file and add the following lines to it:



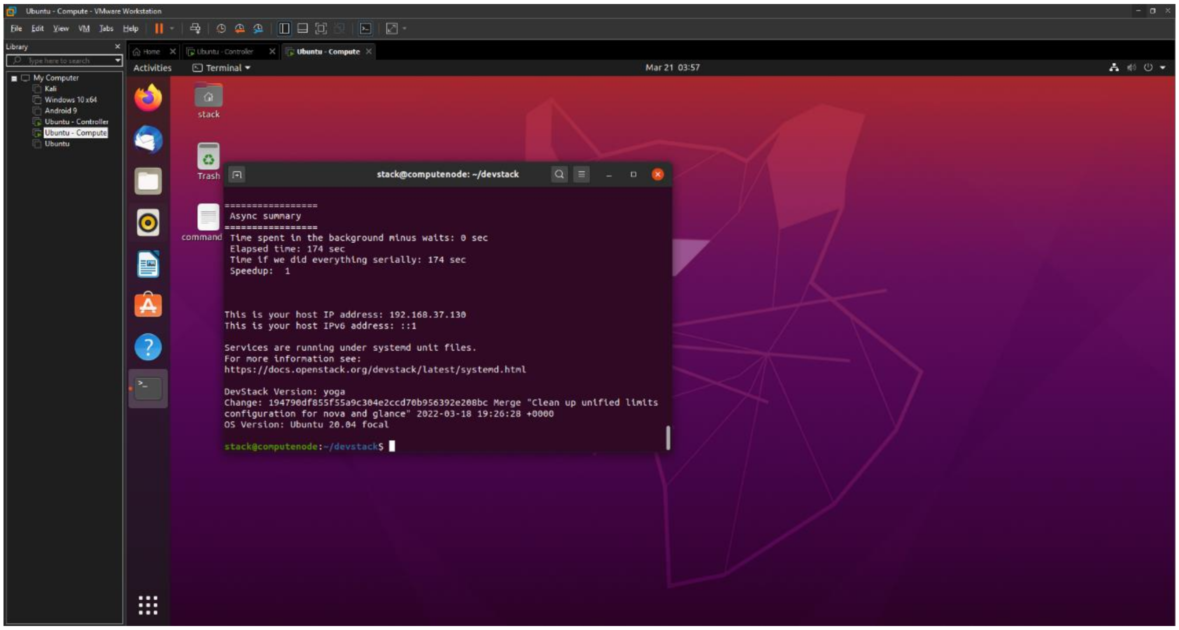
```
[[local|localrc]]
HOST_IP=192.168.37.130 # change this per compute node
FIXED_RANGE=10.4.128.0/20
FLOATING_RANGE=192.168.37.192/26
LOGFILE=/opt/stack/logs/stack.sh.log
ADMIN_PASSWORD=labstack
DATABASE_PASSWORD=supersecret
RABBIT_PASSWORD=supersecret
SERVICE_PASSWORD=supersecret
DATABASE_TYPE=mysql
SERVICE_HOST=192.168.37.129
MYSQL_HOST=$SERVICE_HOST
RABBIT_HOST=$SERVICE_HOST
GLANCE_HOSTPORT=$SERVICE_HOST:9292
ENABLED_SERVICES=n-cpu,c-vol,placement-client,ovn-controller,ovs-vswitchd,ovsdb-server,q-ovn-metadata-agent
NOVA_VNC_ENABLED=True
NOVNCPROXY_URL="http://$SERVICE_HOST:6080/vnc_lite.html"
VNCSERVER_LISTEN=$HOST_IP
VNCSERVER_PROXYCLIENT_ADDRESS=$VNCSERVER_LISTEN
```

Now, we are ready to deploy OpenStack compute node.

Run the following command:

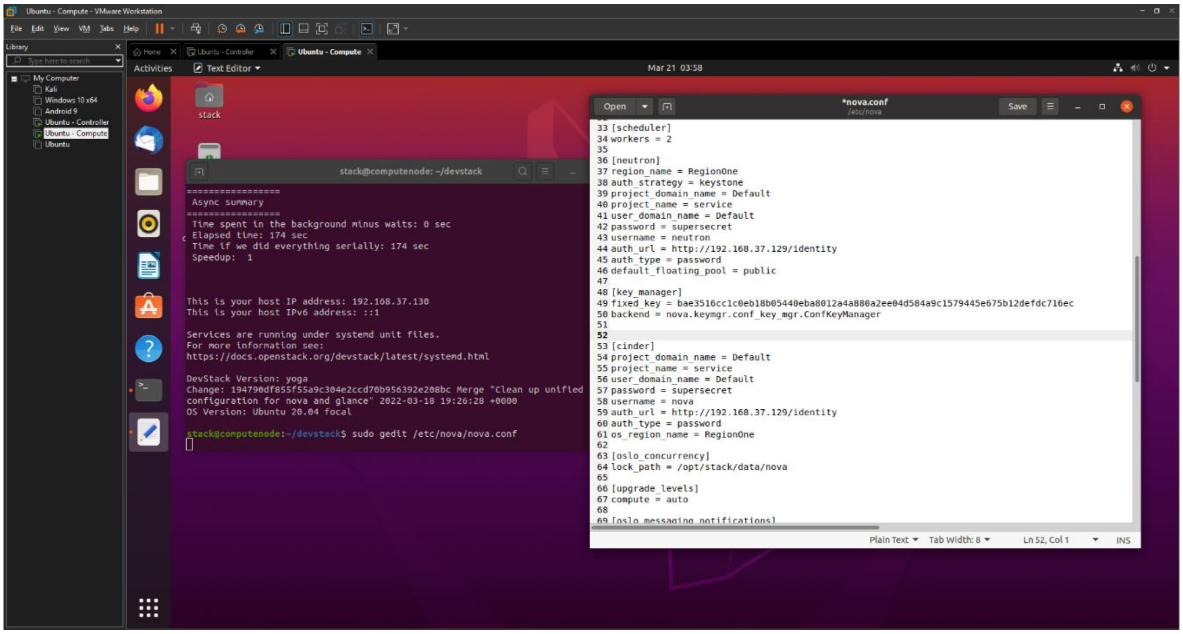
$: ./stack.sh

After it is done executing the script successfully, you will be prompt with the following screen:



```
=================
 Async summary
=================
 Time spent in the background minus waits: 0 sec
 Elapsed time: 174 sec
 Time if we did everything serially: 174 sec
 Speedup:  1



This is your host IP address: 192.168.37.130
This is your host IPv6 address: ::1

Services are running under systemd unit files.
For more information see:
https://docs.openstack.org/devstack/latest/systemd.html

DevStack Version: yoga
Change: 194790df855f55a9c304e2ccd70b956392e208bc Merge "Clean up unified limits
configuration for nova and glance" 2022-03-18 19:26:28 +0000
OS Version: Ubuntu 20.04 focal

stack@computenode:~/devstack$
```

Now, go to /etc/nova/nova.conf, the file will look like this:



```
stack@computenode:~/devstack$ sudo gedit /etc/nova/nova.conf
```

```
33 [scheduler]
34 workers = 2
35
36 [neutron]
37 region_name = RegionOne
38 auth_strategy = keystone
39 project_domain_name = Default
40 project_name = service
41 user_domain_name = Default
42 password = supersecret
43 username = neutron
44 auth_url = http://192.168.37.129/identity
45 auth_type = password
46 default_floating_pool = public
47
48 [key_manager]
49 fixed_key = bae3516cc1c0eb18b05440eba8012a4a880a2ee04d584a9c1579445e675b12defdc716ec
50 backend = nova.keymgr.conf_key_mgr.ConfKeyManager
51
52
53 [cinder]
54 project_domain_name = Default
55 project_name = service
56 user_domain_name = Default
57 password = supersecret
58 username = nova
59 auth_url = http://192.168.37.129/identity
60 auth_type = password
61 os_region_name = RegionOne
62
63 [oslo_concurrency]
64 lock_path = /opt/stack/data/nova
65
66 [upgrade_levels]
67 compute = auto
68
69 [oslo_messaging_notifications]
```

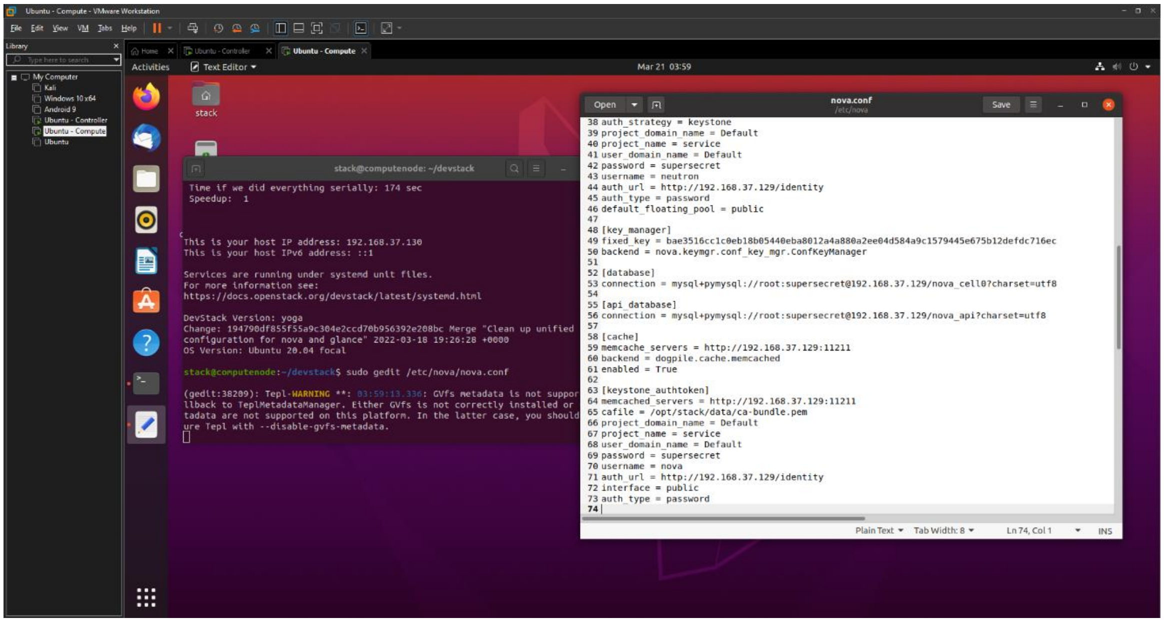
Add the following lines at line 52:

[database]

connection = mysql+pymysql://root:supersecret@192.168.37.129/nova_cell0?charset=utf8

```
[api_database]
connection = mysql+pymysql://root:supersecret@192.168.37.129/nova_api?charset=utf8


[cache]
memcache_servers = http://192.168.37.129:11211
backend = dogpile.cache.memcached
enabled = True


[keystone_authtoken]
memcached_servers = http://192.168.37.129:11211
cafile = /opt/stack/data/ca-bundle.pem
project_domain_name = Default
project_name = service
user_domain_name = Default
password = supersecret
username = nova
auth_url = http://192.168.37.129/identity
interface = public
auth_type = password
```

The configuration file will look like this now:



```
Time if we did everything serially: 174 sec
Speedup:  1


This is your host IP address: 192.168.37.130
This is your host IPv6 address: ::1

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DevStack Version: yoga
Change: 194790df855f55a9c304e2ccd70b956392e208bc Merge "Clean up unified
configuration for nova and glance" 2022-03-18 19:26:28 +0000
OS Version: Ubuntu 20.04 focal

stack@computenode:~/devstack$ sudo gedit /etc/nova/nova.conf

(gedit:38209): Tepl-WARNING **: 03:59:13.336: GVfs metadata is not suppor
llback to TeplMetadataManager. Either GVfs is not correctly installed or
tadata are not supported on this platform. In the latter case, you should
ure Tepl with --disable-gvfs-metadata.
```

```
auth_strategy = keystone
project_domain_name = Default
project_name = service
user_domain_name = Default
password = supersecret
username = neutron
auth_url = http://192.168.37.129/identity
auth_type = password
default_floating_pool = public

[key_manager]
fixed_key = bae3516cc1c0eb18b05440eba8012a4a880a2ee04d584a9c1579445e675b12defdc716ec
backend = nova.keymgr.conf_key_mgr.ConfKeyManager

[database]
connection = mysql+pymysql://root:supersecret@192.168.37.129/nova_cell0?charset=utf8

[api_database]
connection = mysql+pymysql://root:supersecret@192.168.37.129/nova_api?charset=utf8

[cache]
memcache_servers = http://192.168.37.129:11211
backend = dogpile.cache.memcached
enabled = True

[keystone_authtoken]
memcached_servers = http://192.168.37.129:11211
cafile = /opt/stack/data/ca-bundle.pem
project_domain_name = Default
project_name = service
user_domain_name = Default
password = supersecret
username = nova
auth_url = http://192.168.37.129/identity
interface = public
auth_type = password

```

After this step, run the following command on both controller and compute node:

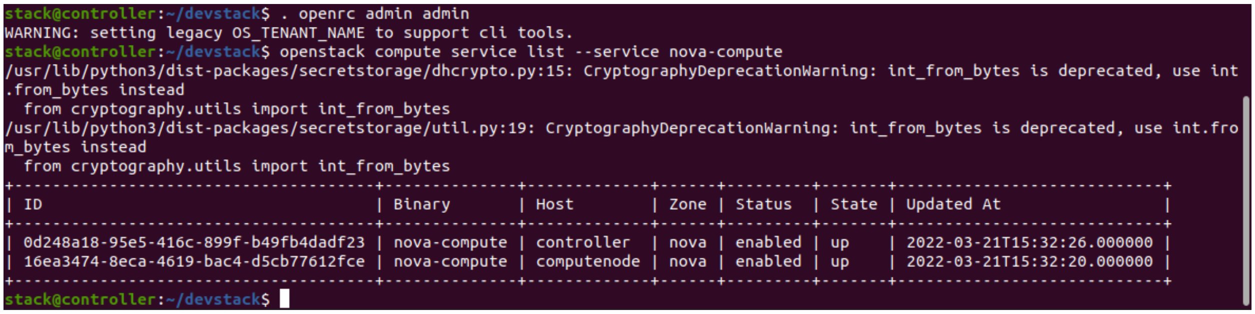
nova-manage db sync --database_connection mysql+pymysql://root:supersecret@192.168.37.129/nova_cell0?charset=utf8

Run the following command in controller node:

$: ./tools/discover_hosts.sh

(There’s also an alternative to this command in node manager)

After performing this step, the compute node will be visible in nova-manager of controller node. Run the following commands specified in the attached image in controller node:



```
stack@controller:~/devstack$ . openrc admin admin
WARNING: setting legacy OS_TENANT_NAME to support cli tools.
stack@controller:~/devstack$ openstack compute service list --service nova-compute
/usr/lib/python3/dist-packages/secretstorage/dhcrypto.py:15: CryptographyDeprecationWarning: int_from_bytes is deprecated, use int
.from_bytes instead
  from cryptography.utils import int_from_bytes
/usr/lib/python3/dist-packages/secretstorage/util.py:19: CryptographyDeprecationWarning: int_from_bytes is deprecated, use int.fro
m_bytes instead
  from cryptography.utils import int_from_bytes
+--------------------------------------+--------------+-------------+------+---------+-------+----------------------------+
| ID                                   | Binary       | Host        | Zone | Status  | State | Updated At                 |
+--------------------------------------+--------------+-------------+------+---------+-------+----------------------------+
| 0d248a18-95e5-416c-899f-b49fb4dadf23 | nova-compute | controller  | nova | enabled | up    | 2022-03-21T15:32:26.000000 |
| 16ea3474-8eca-4619-bac4-d5cb77612fce | nova-compute | computenode | nova | enabled | up    | 2022-03-21T15:32:20.000000 |
+--------------------------------------+--------------+-------------+------+---------+-------+----------------------------+
stack@controller:~/devstack$ 
```

We can see that compute node is visible in controller node.

The remaining is to map compute node on the cell. If we don’t map compute node on to the controller node, **any instant created will fail to launch giving the error compute node is not mapped**.

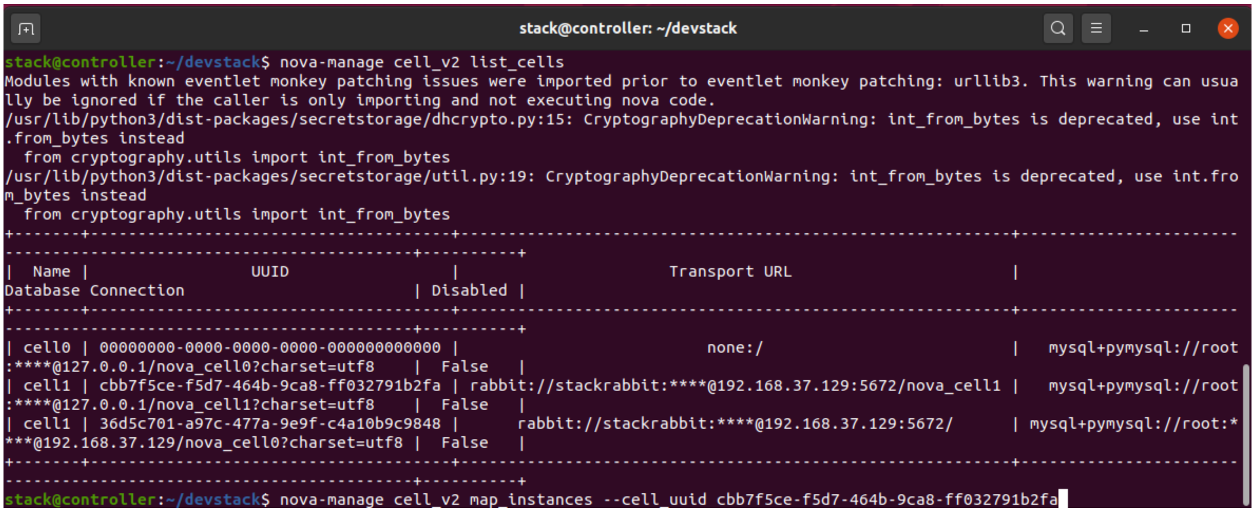
Mapping Compute Node on Controller Node:

First, we create a cell named “cell1” using the following command on controller node:

$: nova-manage cell_v2 create_cell --name cell1

Then, we use following command to list cells uuid, we will be mapping our compute node on cell1.

$: nova-manage cell_v2 list_cells



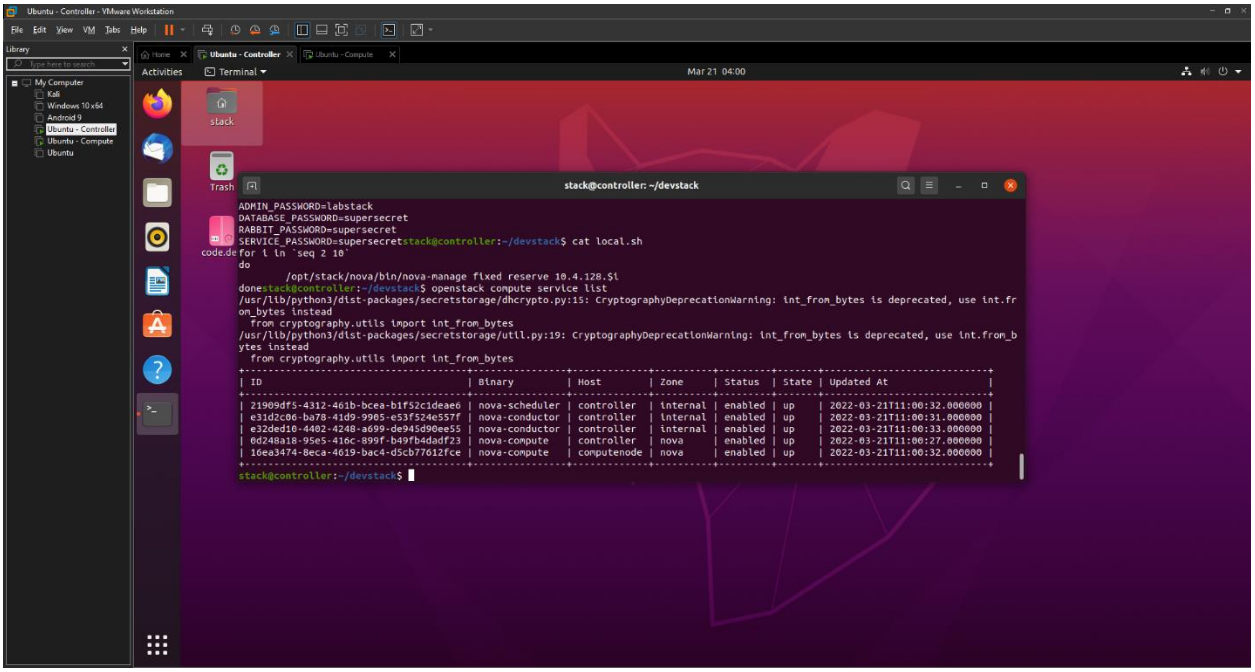
```
stack@controller:~/devstack$ nova-manage cell_v2 list_cells
Modules with known eventlet monkey patching issues were imported prior to eventlet monkey patching: urllib3. This warning can usua
lly be ignored if the caller is only importing and not executing nova code.
/usr/lib/python3/dist-packages/secretstorage/dhcrypto.py:15: CryptographyDeprecationWarning: int_from_bytes is deprecated, use int
.from_bytes instead
  from cryptography.utils import int_from_bytes
/usr/lib/python3/dist-packages/secretstorage/util.py:19: CryptographyDeprecationWarning: int_from_bytes is deprecated, use int.fro
m_bytes instead
  from cryptography.utils import int_from_bytes
+-------+--------------------------------------+----------------------------------------------------------+----------------------
-------------------------------------------+----------+
|  Name |                 UUID                 |                       Transport URL                      |
Database Connection                        | Disabled |
+-------+--------------------------------------+----------------------------------------------------------+----------------------
-------------------------------------------+----------+
| cell0 | 00000000-0000-0000-0000-000000000000 |                          none:/                          |   mysql+pymysql://root
:****@127.0.0.1/nova_cell0?charset=utf8    |  False   |
| cell1 | cbb7f5ce-f5d7-464b-9ca8-ff032791b2fa | rabbit://stackrabbit:****@192.168.37.129:5672/nova_cell1 |   mysql+pymysql://root
:****@127.0.0.1/nova_cell1?charset=utf8    |  False   |
| cell1 | 36d5c701-a97c-477a-9e9f-c4a10b9c9848 |      rabbit://stackrabbit:****@192.168.37.129:5672/      | mysql+pymysql://root:*
***@192.168.37.129/nova_cell0?charset=utf8 |  False   |
+-------+--------------------------------------+----------------------------------------------------------+----------------------
-------------------------------------------+----------+
stack@controller:~/devstack$ nova-manage cell_v2 map_instances --cell_uuid cbb7f5ce-f5d7-464b-9ca8-ff032791b2fa
```

A garbage cell was created during deployment process, the third is a garbage cell. We are concerned with second cell named “cell1”.

Next, we simply map our compute node on cell1 using the following command (Run this command on both nodes):

$: nova-manage cell_v2 map_instances --cell_uuid cbb7f5ce-f5d7-464b-9ca8-ff032791b2fa

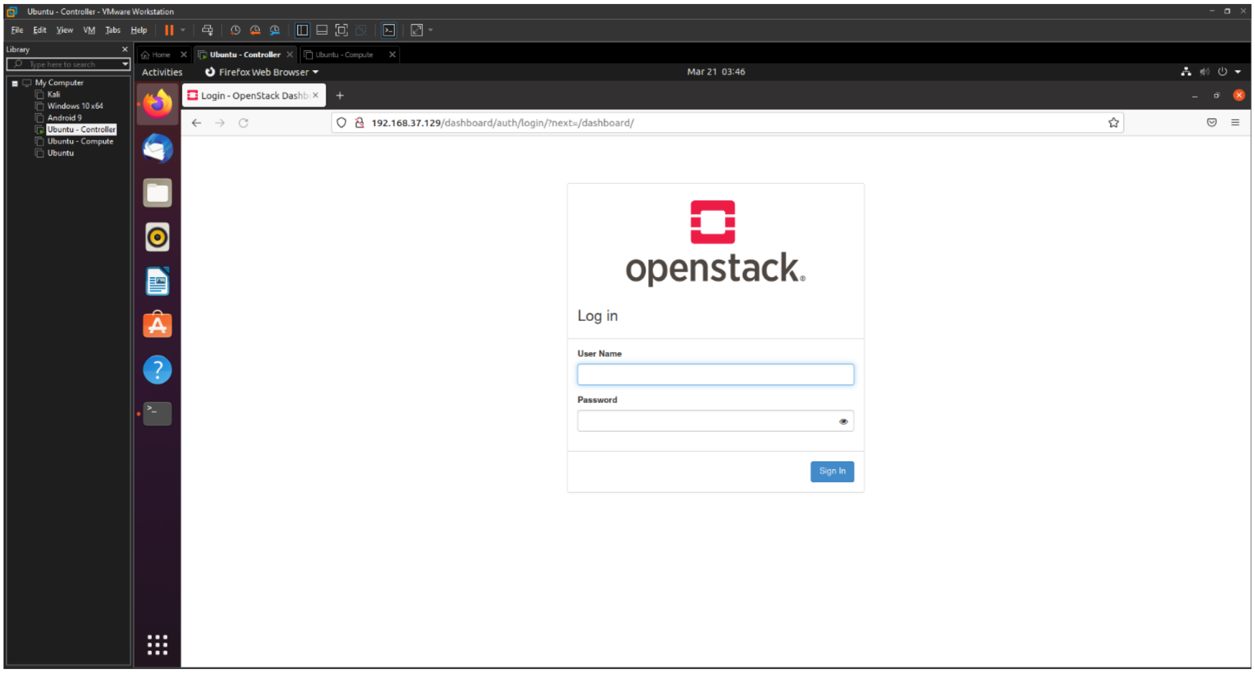
We are done with setup. By listing services again, we can see that our compute node is up in controller node.



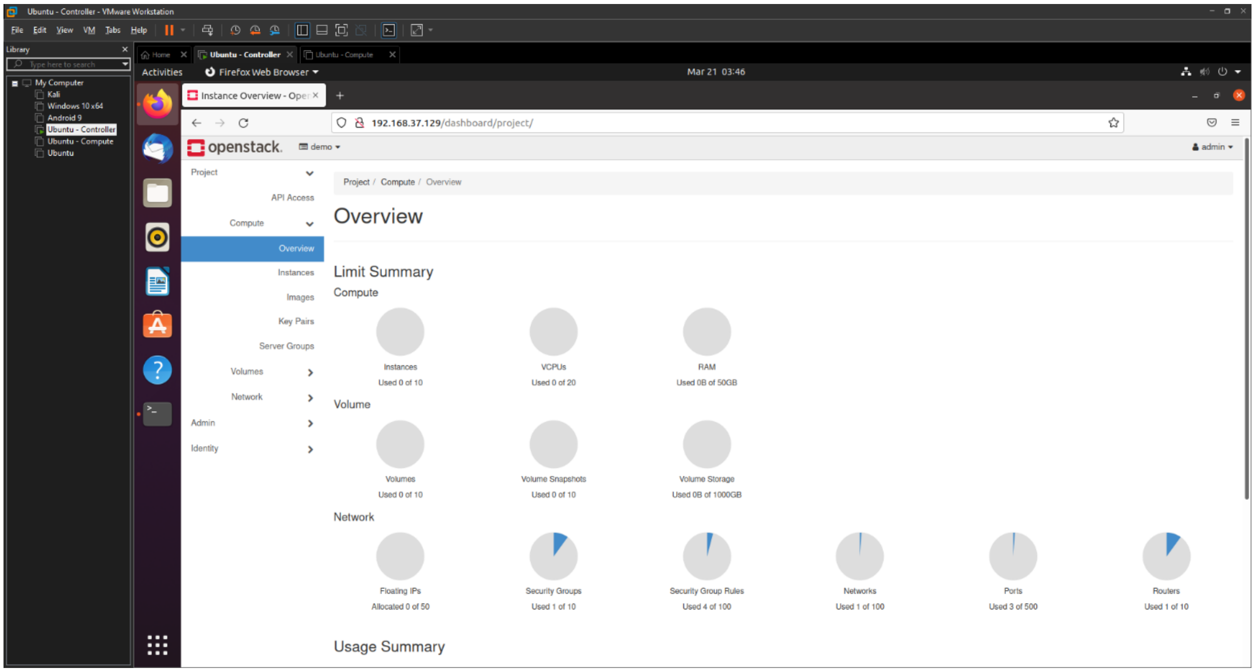
```
ADMIN_PASSWORD=labstack
DATABASE_PASSWORD=supersecret
RABBIT_PASSWORD=supersecret
SERVICE_PASSWORD=supersecretstack@controller:~/devstack$ cat local.sh
for i in `seq 2 10`
do
        /opt/stack/nova/bin/nova-manage fixed reserve 10.4.128.$i
donestack@controller:~/devstack$ openstack compute service list
/usr/lib/python3/dist-packages/secretstorage/dhcrypto.py:15: CryptographyDeprecationWarning: int_from_bytes is deprecated, use int.fr
om_bytes instead
  from cryptography.utils import int_from_bytes
/usr/lib/python3/dist-packages/secretstorage/util.py:19: CryptographyDeprecationWarning: int_from_bytes is deprecated, use int.from_b
ytes instead
  from cryptography.utils import int_from_bytes
+--------------------------------------+----------------+-------------+----------+---------+-------+----------------------------+
| ID                                   | Binary         | Host        | Zone     | Status  | State | Updated At                 |
+--------------------------------------+----------------+-------------+----------+---------+-------+----------------------------+
| 21909df5-4312-461b-bcea-b1f52c1deae6 | nova-scheduler | controller  | internal | enabled | up    | 2022-03-21T11:00:32.000000 |
| e31d2c06-ba78-41d9-9905-e53f524e557f | nova-conductor | controller  | internal | enabled | up    | 2022-03-21T11:00:31.000000 |
| e32ded10-4402-4248-a699-de945d90ee55 | nova-conductor | controller  | internal | enabled | up    | 2022-03-21T11:00:33.000000 |
| 0d248a18-95e5-416c-899f-b49fb4dadf23 | nova-compute   | controller  | nova     | enabled | up    | 2022-03-21T11:00:27.000000 |
| 16ea3474-8eca-4619-bac4-d5cb77612fce | nova-compute   | computenode | nova     | enabled | up    | 2022-03-21T11:00:32.000000 |
+--------------------------------------+----------------+-------------+----------+---------+-------+----------------------------+
stack@controller:~/devstack$
```

Instantiating Machine on OpenStack:

Now, we simple instantiate a machine on Openstack.


Ubuntu - Controller - VMware Workstation
Firefox Web Browser
Login - OpenStack Dashb
192.168.37.129/dashboard/auth/login/?next=/dashboard/
openstack
Log in
User Name
Password
Sign In

Use the login credentials when ./stack.sh ran successfully. **Ours is username: admin and password: labstack.**



192.168.37.129/dashboard/project/

Project / Compute / Overview

Overview

Limit Summary

Compute

Instances	VCPUs	RAM
Used 0 of 10	Used 0 of 20	Used 0B of 50GB

Volume

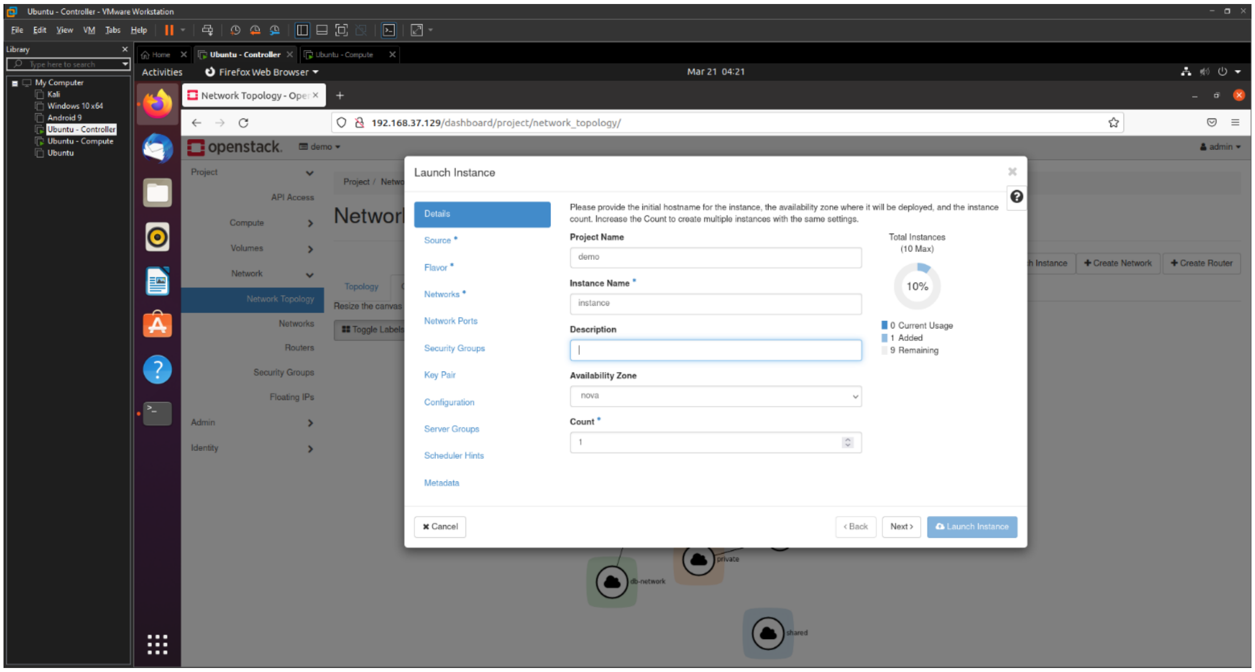
Volumes	Volume Snapshots	Volume Storage
Used 0 of 10	Used 0 of 10	Used 0B of 1000GB

Network

Floating IPs	Security Groups	Security Group Rules	Networks	Ports	Routers
Allocated 0 of 50	Used 1 of 10	Used 4 of 100	Used 1 of 100	Used 3 of 500	Used 1 of 10

Usage Summary

Click on instances on left side and then click on launch instance.



192.168.37.129/dashboard/project/network_topology/

Launch Instance

Please provide the initial hostname for the instance, the availability zone where it will be deployed, and the instance count. Increase the Count to create multiple instances with the same settings.

Project Name: demo

Instance Name *: instance

Description:

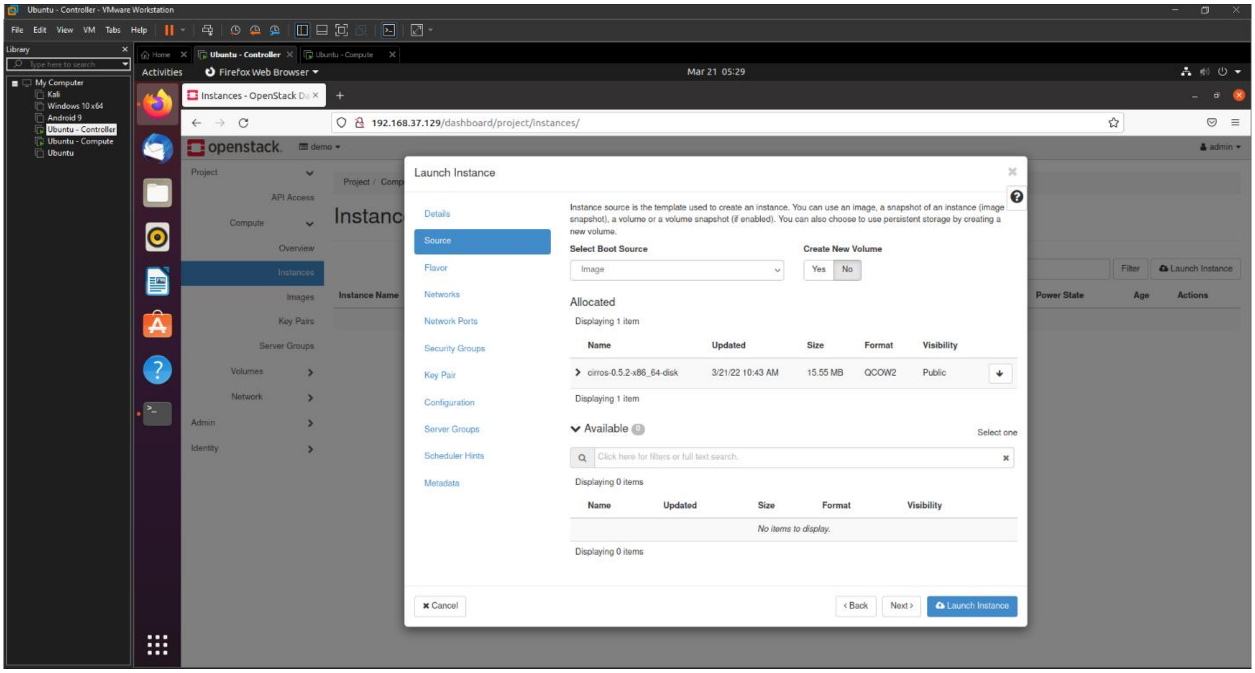
Availability Zone: nova

Count *: 1

Total Instances (10 Max)

10%

0 Current Usage
1 Added
9 Remaining



192.168.37.129/dashboard/project/instances/

Launch Instance

Instance source is the template used to create an instance. You can use an image, a snapshot of an instance (image snapshot), a volume or a volume snapshot (if enabled). You can also choose to use persistent storage by creating a new volume.

Select Boot Source: Image

Create New Volume: Yes [✓ No]

Allocated

Displaying 1 item

Name	Updated	Size	Format	Visibility
cirros-0.5.2-x86_64-disk	3/21/22 10:43 AM	15.55 MB	QCOW2	Public

Displaying 1 item

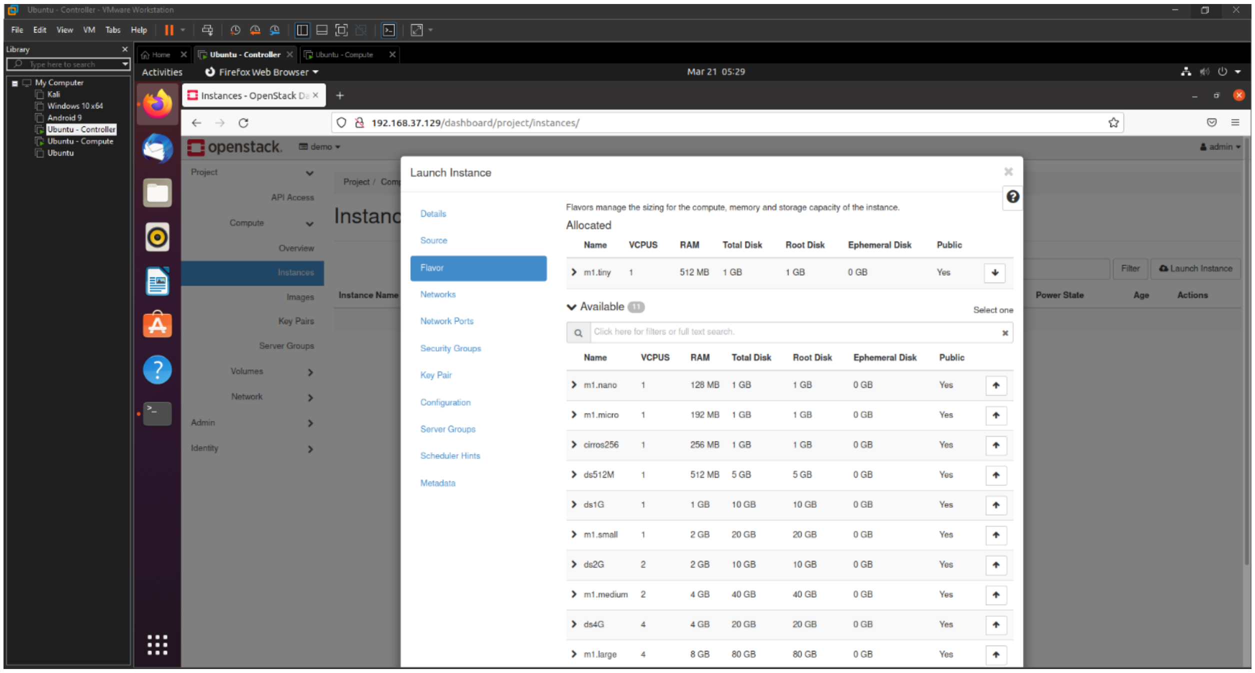
Available 0 — Select one

Click here for filters or full text search.

Displaying 0 items

Name	Updated	Size	Format	Visibility
No items to display.				

Displaying 0 items



192.168.37.129/dashboard/project/instances/

Launch Instance

Flavors manage the sizing for the compute, memory and storage capacity of the instance.

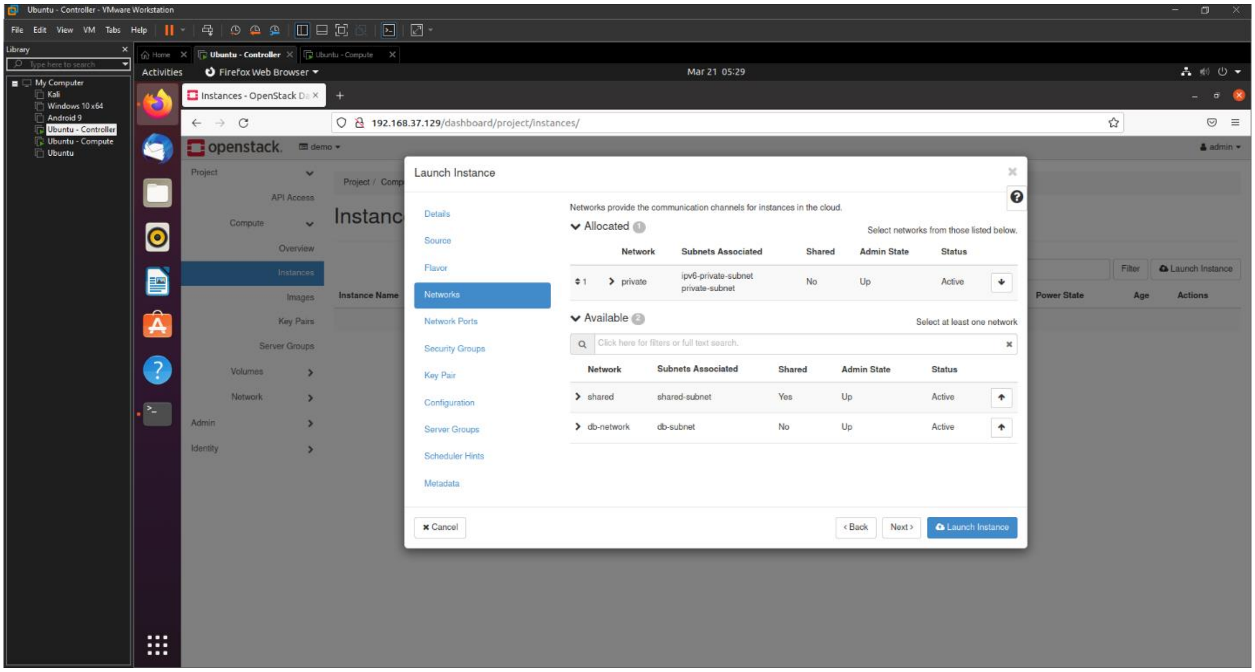
Allocated

Name	VCPUS	RAM	Total Disk	Root Disk	Ephemeral Disk	Public
m1.tiny	1	512 MB	1 GB	1 GB	0 GB	Yes

Available 11 — Select one

Click here for filters or full text search.

Name	VCPUS	RAM	Total Disk	Root Disk	Ephemeral Disk	Public
m1.nano	1	128 MB	1 GB	1 GB	0 GB	Yes
m1.micro	1	192 MB	1 GB	1 GB	0 GB	Yes
cirros256	1	256 MB	1 GB	1 GB	0 GB	Yes
ds512M	1	512 MB	5 GB	5 GB	0 GB	Yes
ds1G	1	1 GB	10 GB	10 GB	0 GB	Yes
m1.small	1	2 GB	20 GB	20 GB	0 GB	Yes
ds2G	2	2 GB	10 GB	10 GB	0 GB	Yes
m1.medium	2	4 GB	40 GB	40 GB	0 GB	Yes
ds4G	4	4 GB	20 GB	20 GB	0 GB	Yes
m1.large	4	8 GB	80 GB	80 GB	0 GB	Yes



192.168.37.129/dashboard/project/instances/

Launch Instance

Networks provide the communication channels for instances in the cloud.

Allocated 1

Select networks from those listed below.

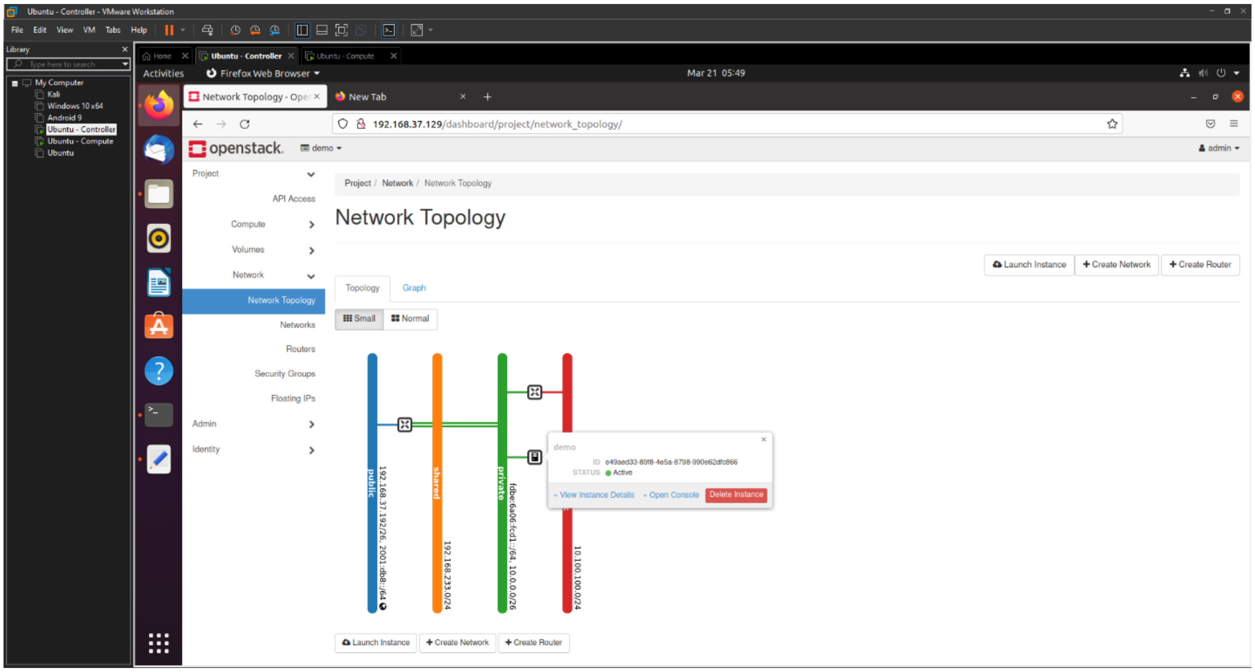
	Network	Subnets Associated	Shared	Admin State	Status	
⇕1	private	ipv6-private-subnet private-subnet	No	Up	Active	↓

Available 2

Select at least one network

Click here for filters or full text search.

Network	Subnets Associated	Shared	Admin State	Status	
shared	shared-subnet	Yes	Up	Active	↑
db-network	db-subnet	No	Up	Active	↑



192.168.37.129/dashboard/project/network_topology/

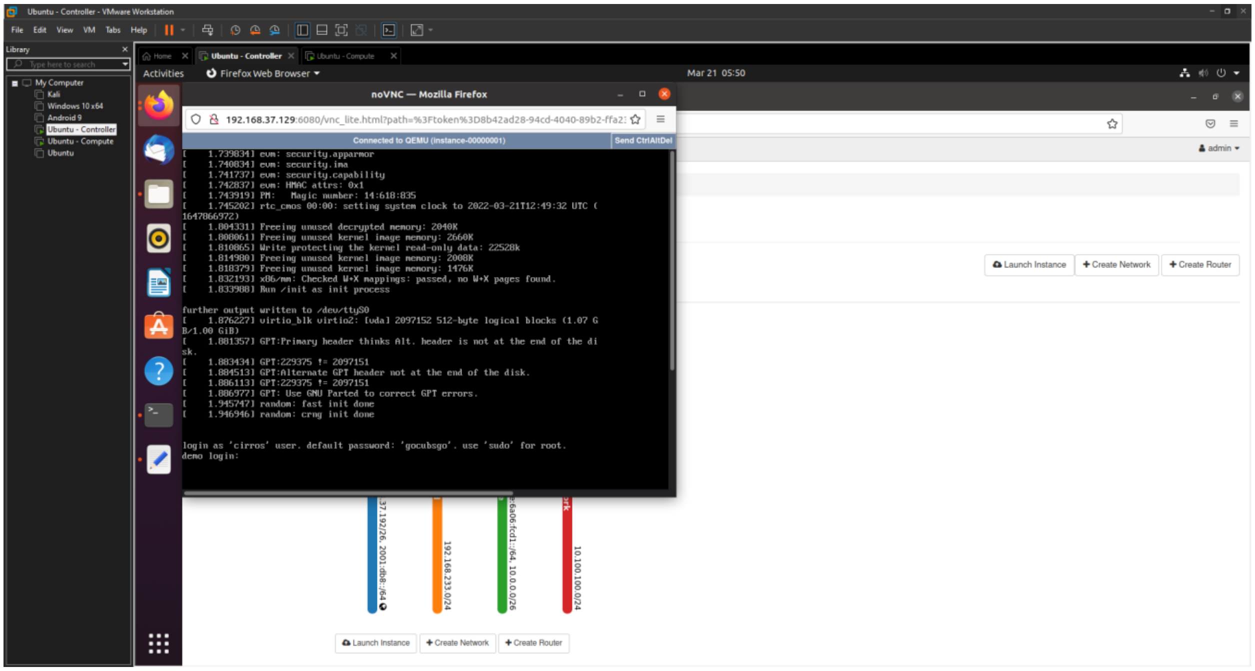
Project / Network / Network Topology

Network Topology

demo

ID e49aed33-89f8-4e5a-8798-990e62dfc866

STATUS ● Active



```
[    1.739834] evm: security.apparmor
[    1.740834] evm: security.ima
[    1.741737] evm: security.capability
[    1.742837] evm: HMAC attrs: 0x1
[    1.743919] PM:   Magic number: 14:618:835
[    1.745202] rtc_cmos 00:00: setting system clock to 2022-03-21T12:49:32 UTC (
1647866972)
[    1.804331] Freeing unused decrypted memory: 2040K
[    1.808061] Freeing unused kernel image memory: 2660K
[    1.810865] Write protecting the kernel read-only data: 22528k
[    1.814980] Freeing unused kernel image memory: 2008K
[    1.818379] Freeing unused kernel image memory: 1476K
[    1.832193] x86/mm: Checked W+X mappings: passed, no W+X pages found.
[    1.833988] Run /init as init process

further output written to /dev/ttyS0
[    1.876227] virtio_blk virtio2: [vda] 2097152 512-byte logical blocks (1.07 G
B/1.00 GiB)
[    1.881357] GPT:Primary header thinks Alt. header is not at the end of the di
sk.
[    1.883434] GPT:229375 != 2097151
[    1.884513] GPT:Alternate GPT header not at the end of the disk.
[    1.886113] GPT:229375 != 2097151
[    1.886977] GPT: Use GNU Parted to correct GPT errors.
[    1.945747] random: fast init done
[    1.946946] random: crng init done


login as 'cirros' user. default password: 'gocubsgo'. use 'sudo' for root.
demo login:
```

And we are done!!!! Further elaboration can be given in demo.