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TP2

Single-node OpenStack deployment

These instructions use [MicroStack](#) - OpenStack in a snap, MicroStack is a pure upstream OpenStack distribution designed for small scale and edge deployments, that can be installed and maintained with a minimal effort.

NOTE: MicroStack is in a beta state. We encourage you to test it, give us your [feedback](#) and [ask questions](#).

1- Installation

The installation step consists solely of installing the MicroStack [snap](#).

Requirements:
You will need a multi-core processor and at least 8 GiB of memory and 100 GiB of disk space. MicroStack has been tested on x86-based physical and virtual (KVM) machines running either Ubuntu 18.04 LTS or Ubuntu 20.04 LTS.

At this time use devmode and the beta channel:

```
sudo snap install microstack --devmode --beta
```

Information on the installed snap can be viewed like this:

```
snap list microstack
```

```
Name        Version  Rev  Tracking     Publisher   Notes
microstack  ussuri   222  latest/beta  canonical✓  devmode
```

Here we see that OpenStack Ussuri has been deployed!

2- Initialisation

The initialisation step automatically deploys, configures, and starts OpenStack services. In particular, it will create the database, networks, an image, several flavors, ICMP/SSH security groups, and an SSH keypair. This can all be done within 10 to 20 minutes depending on your machine:

```
sudo microstack init --auto --control
```

3- Verification

The purpose of the verification step is to confirm that the cloud is in working order and to discover some of the defaults used by MicroStack. Verification will consist of the following actions:

- perform various OpenStack queries
- create an instance
- connect to the instance over SSH
- access the cloud dashboard

Query OpenStack

The standard openstack client comes pre-installed and is invoked like so:

microstack.openstack <command>

To list the default keypair:

microstack.openstack keypair list

```
+------------+-------------------------------------------------+
| Name       | Fingerprint                                     |
+------------+-------------------------------------------------+
| microstack | 98:f4:89:0b:5f:71:0d:24:3d:64:62:1b:1c:08:88:a4 |
+------------+-------------------------------------------------+
```

To list the default image:

microstack.openstack image list

```
+--------------------------------------+--------+--------+
| ID                                   | Name   | Status |
+--------------------------------------+--------+--------+
| 7fefc80f-d745-4764-9389-00cc4a12585d | cirros | active |
+--------------------------------------+--------+--------+
```

To get the default list of flavors:

microstack.openstack flavor list

```
+----+-----------+-------+------+-----------+-------+-----------+
| ID | Name      |   RAM | Disk | Ephemeral | VCPUs | Is Public |
+----+-----------+-------+------+-----------+-------+-----------+
| 1  | m1.tiny   |   512 |    1 |         0 |     1 | True      |
| 2  | m1.small  |  2048 |   20 |         0 |     1 | True      |
| 3  | m1.medium |  4096 |   20 |         0 |     2 | True      |
| 4  | m1.large  |  8192 |   20 |         0 |     4 | True      |
| 5  | m1.xlarge | 16384 |   20 |         0 |     8 | True      |
+----+-----------+-------+------+-----------+-------+-----------+
```

3- Create an instance

MicroStack comes with a convenient instance creation command called microstack launch. It uses the following defaults for its instances:

- keypair 'microstack'

- flavor 'm1.tiny'
- floating IP address on subnet '10.20.20.0/24'

To create an instance named 'test' based on the 'cirros' image:

```
microstack launch cirros -n test
```

The microstack launch command also supports arguments --key, --flavor, --image, and --net-id, in which case you will need to create objects using the standard client if non-default values are desired.

Note:
The launch command can be replaced with the traditional microstack.openstack server create command.

Connect to the instance

Output from the microstack launch command includes all the information needed to connect to the instance over SSH:

```
Launching server ...
Allocating floating ip ...
Server test launched! (status is BUILD)

Access it with `ssh -i /home/ubuntu/snap/microstack/common/.ssh/id_microstack
cirros@10.20.20.199`
```

Access the instance using the private SSH key associated with the default keypair:

```
ssh -i /home/ubuntu/snap/microstack/common/.ssh/id_microstack
cirros@10.20.20.199
```

Access the cloud dashboard

You can log in to the web UI by pointing your browser to the following URL:

http://10.20.20.1

The username is 'admin' and the password is obtained in this way:

```
sudo snap get microstack config.credentials.keystone-password
```
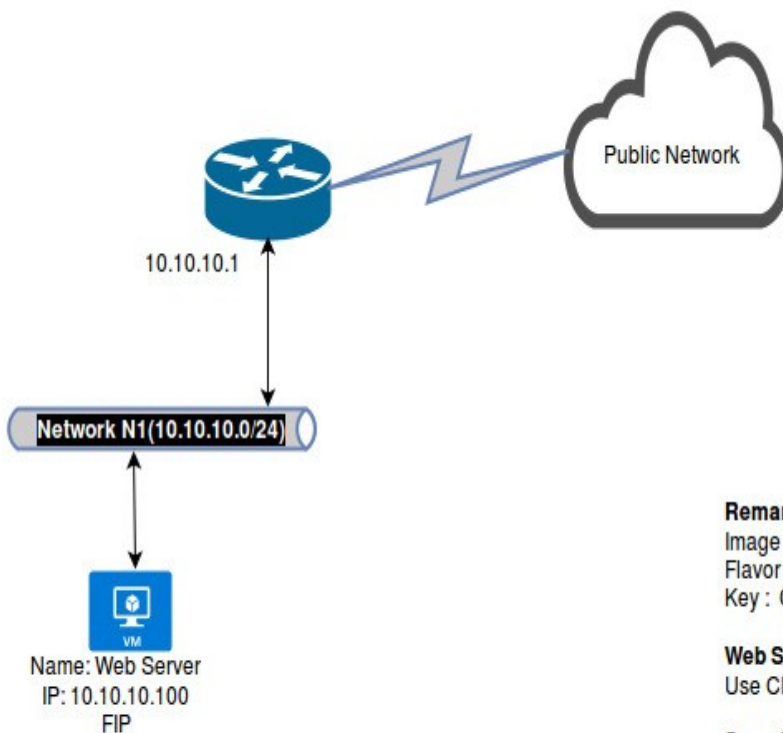
Sample password:

```
OAEHxLgCBz7Wz4usvolAAt61TrDUz6zz
```

Exercise 2

Create a Topology using Neutron CLI Commands as per the below diagram,

Remarks: This exercise demonstrates the Security Groups and VM Initialization Script.

Topology

Remarks:
Image : Ubuntu 14 image.
Flavor : 1GB Ram, 1 Core
Key : Create yourselves

Web Server:
Use Cloudint scripts to Install Apache2

Security Groups:
Web Server:
Allow Port 80 from all
Allow SSH from public Network
Deny remaining traffic

Keypoints :

1. Cloud init script to be used for installing the Webserver
2. Write the security groups, as per the conditions

Tests to be done:

1. From the public network, ping the WebServer - It should fail
2. From the public network, http request to the Webserver - it should pass
3. From the public network, SSH to the FIP of the webserver - it should pass