1. 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   241  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, and ICMP/SSH security groups. 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

3.1 Query OpenStack

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

```
microstack.openstack <command>
```

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      |
+----+-----------+-------+------+-----------+-------+-----------+
```

3.2 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.

3.3 Connect to the instance

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

```
Creating local "microstack" ssh key at
/home/ubuntu/snap/microstack/common/.ssh/id_microstack
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`
```
Note:
The launch command, upon its initial invocation, will set up a default OpenStack keypair.

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
```

3.4 Access the cloud dashboard

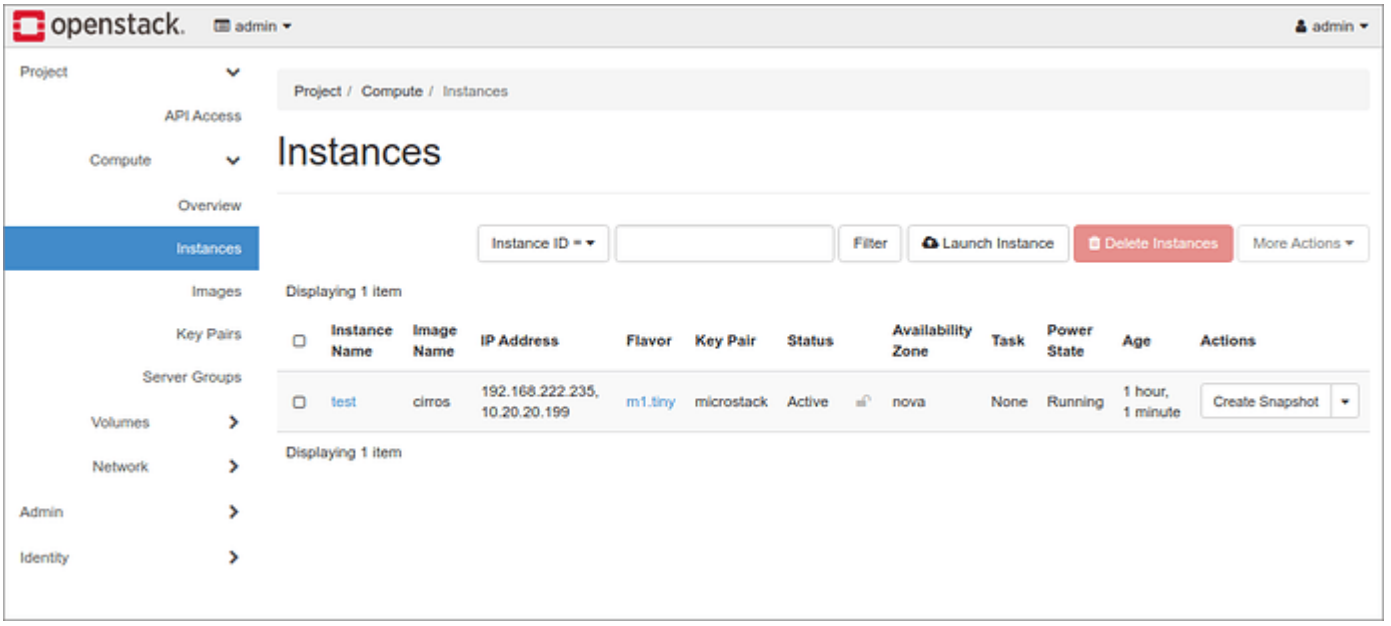
You can log in to the web UI by pointing your browser to the following URL:

```
https://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
```
Upon logging in you should see the created instance:



Explore Openstack using the URL
https://ubuntu.com/tutorials/explore-openstack-components-and-set-up-an-openstack-client#1-overview