Openstack User Tutorial

Based on Openstack Stein

Web frontend: Dashboard

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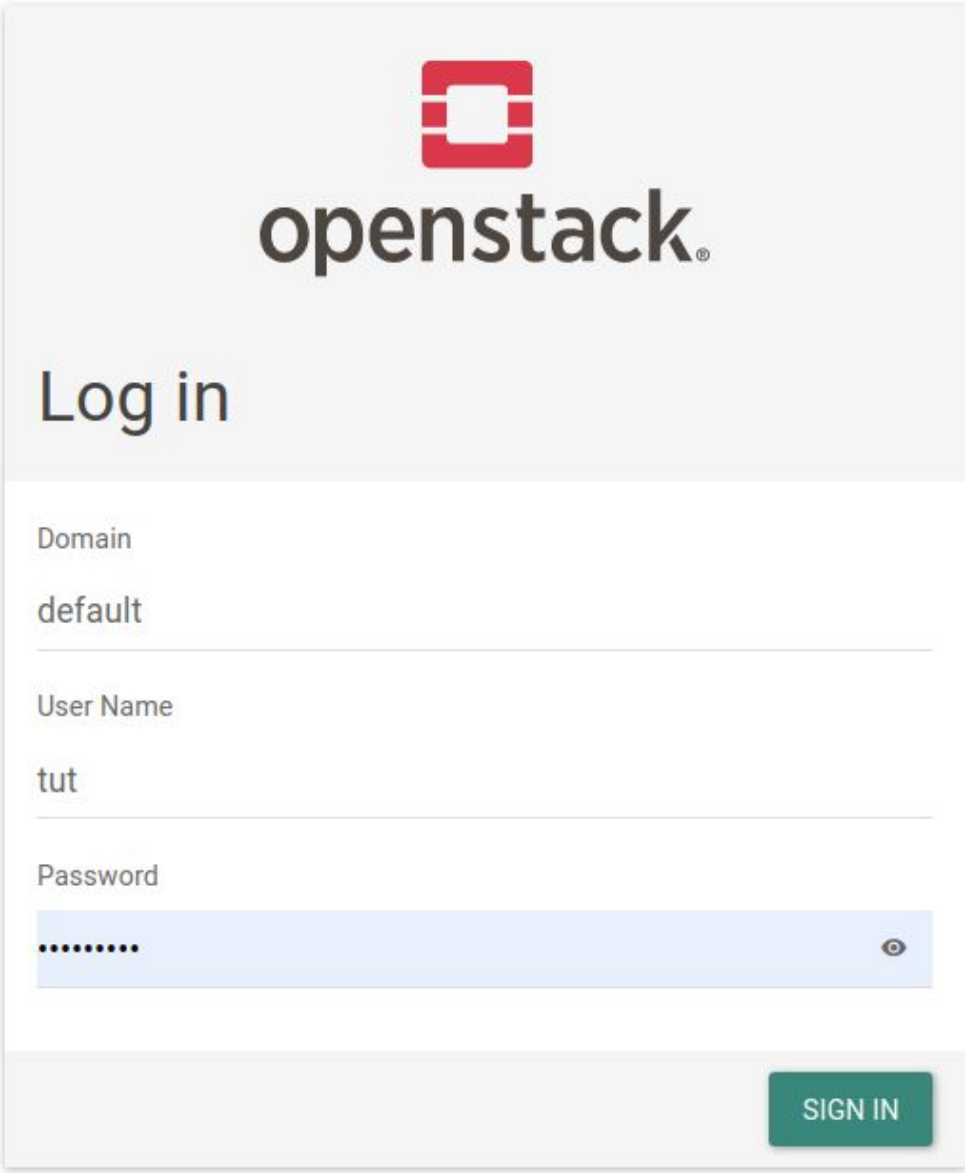
co-funded by:

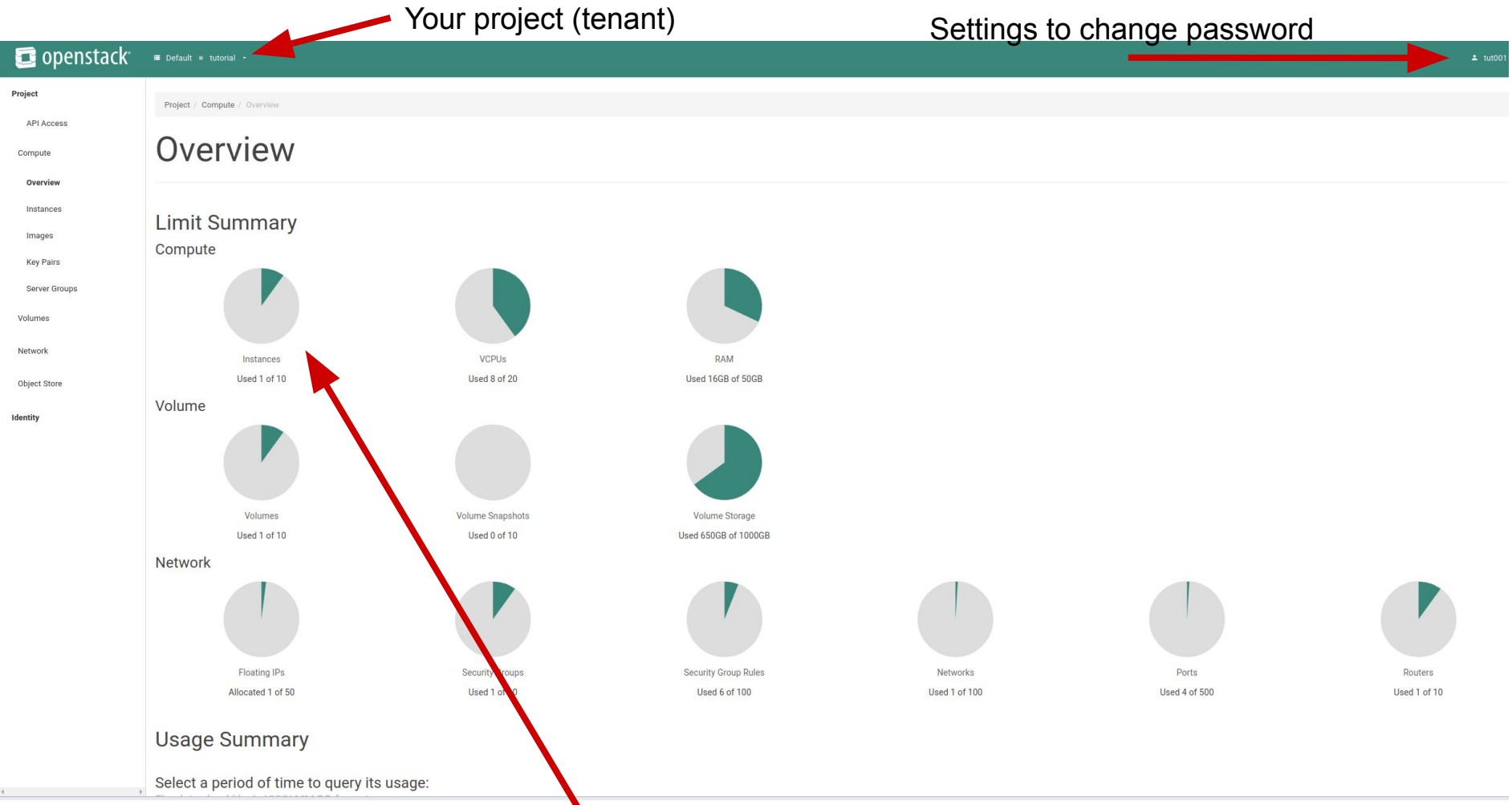
Dashboard - Login

Login: https://stratus.ncg.ingrid.pt

Domain: **default**
Username: **<your_username>**
Password: **<your_password>**

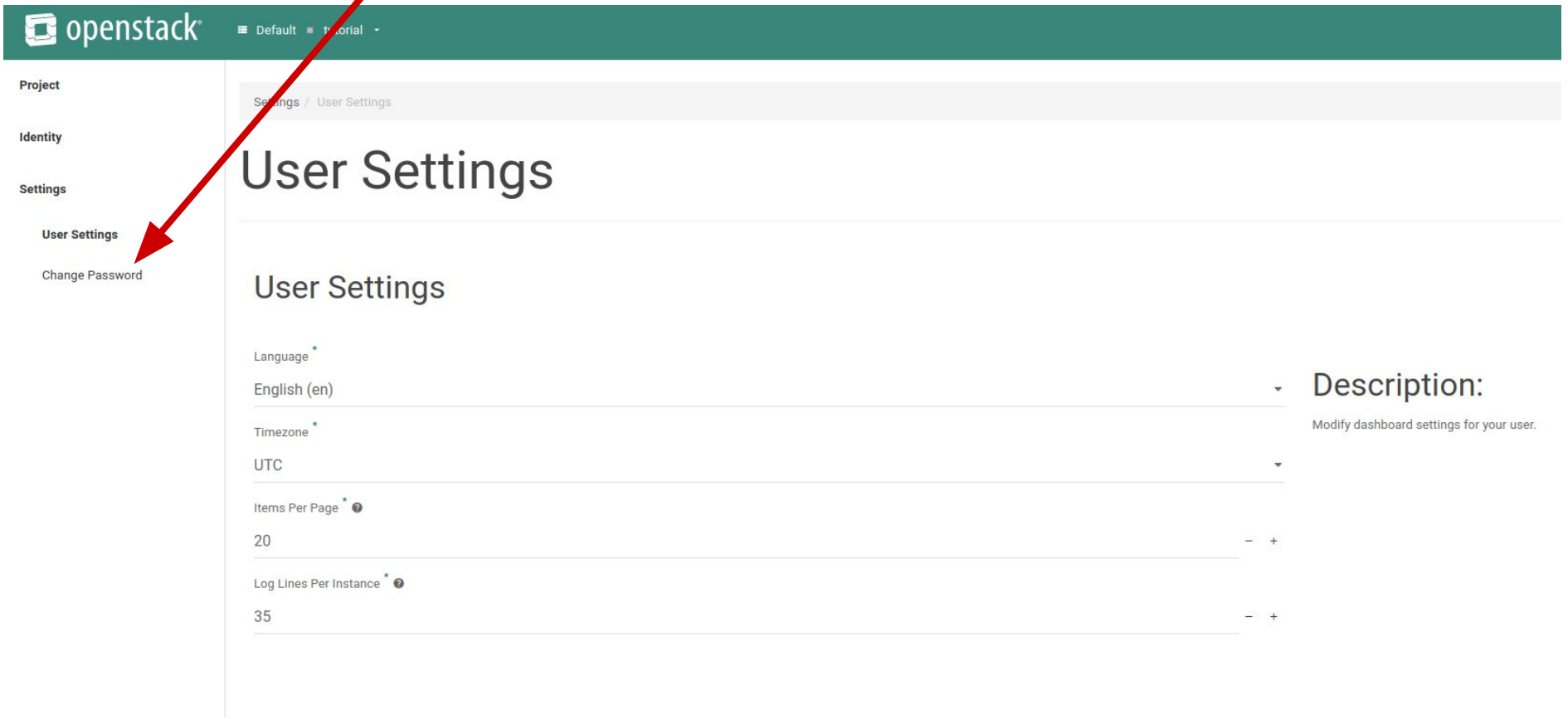


Dashboard - Overview



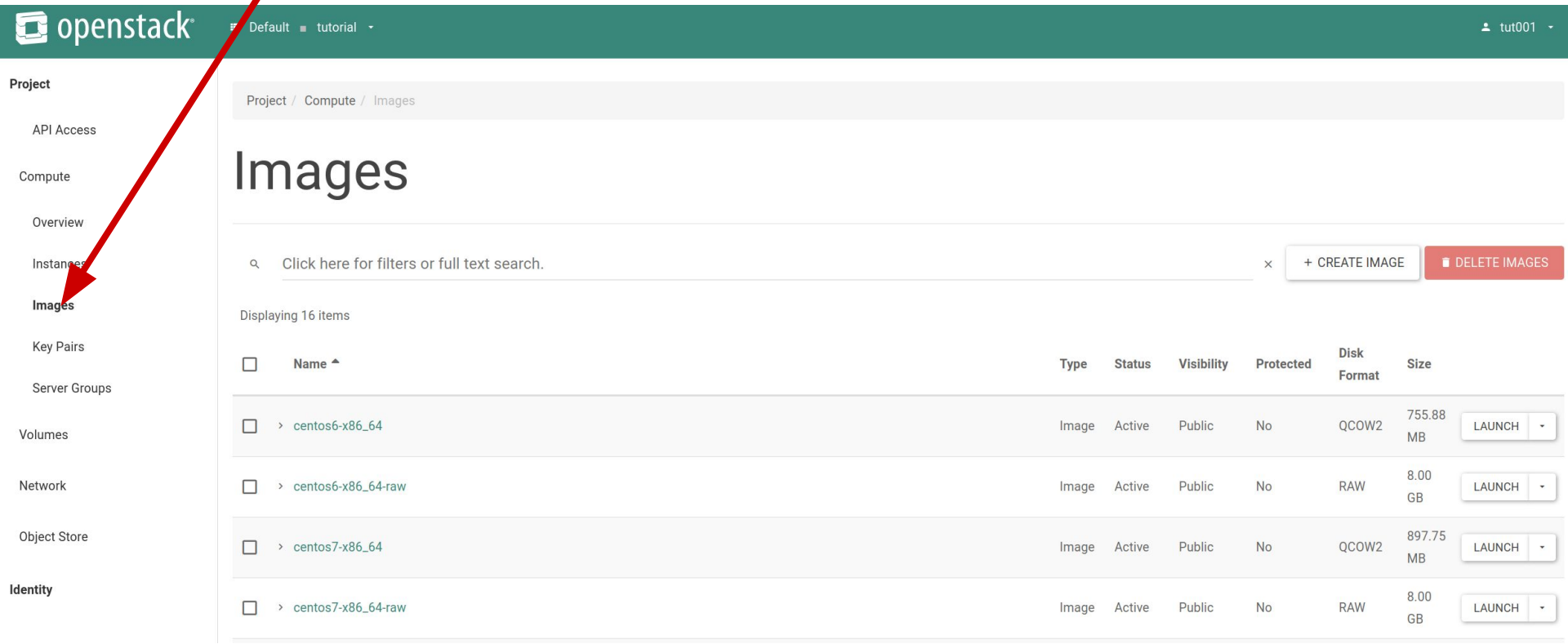
Dashboard – change password

To change the password



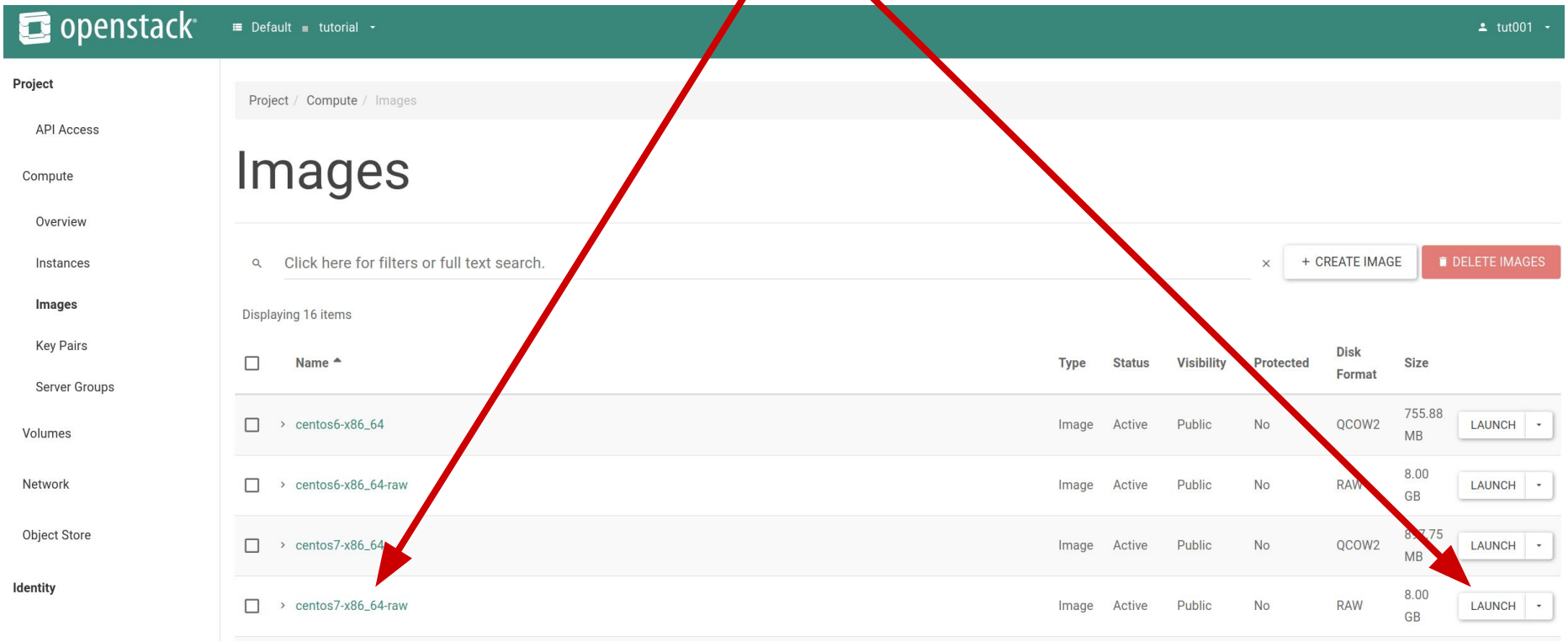
Dashboard – View images

Images and snapshots



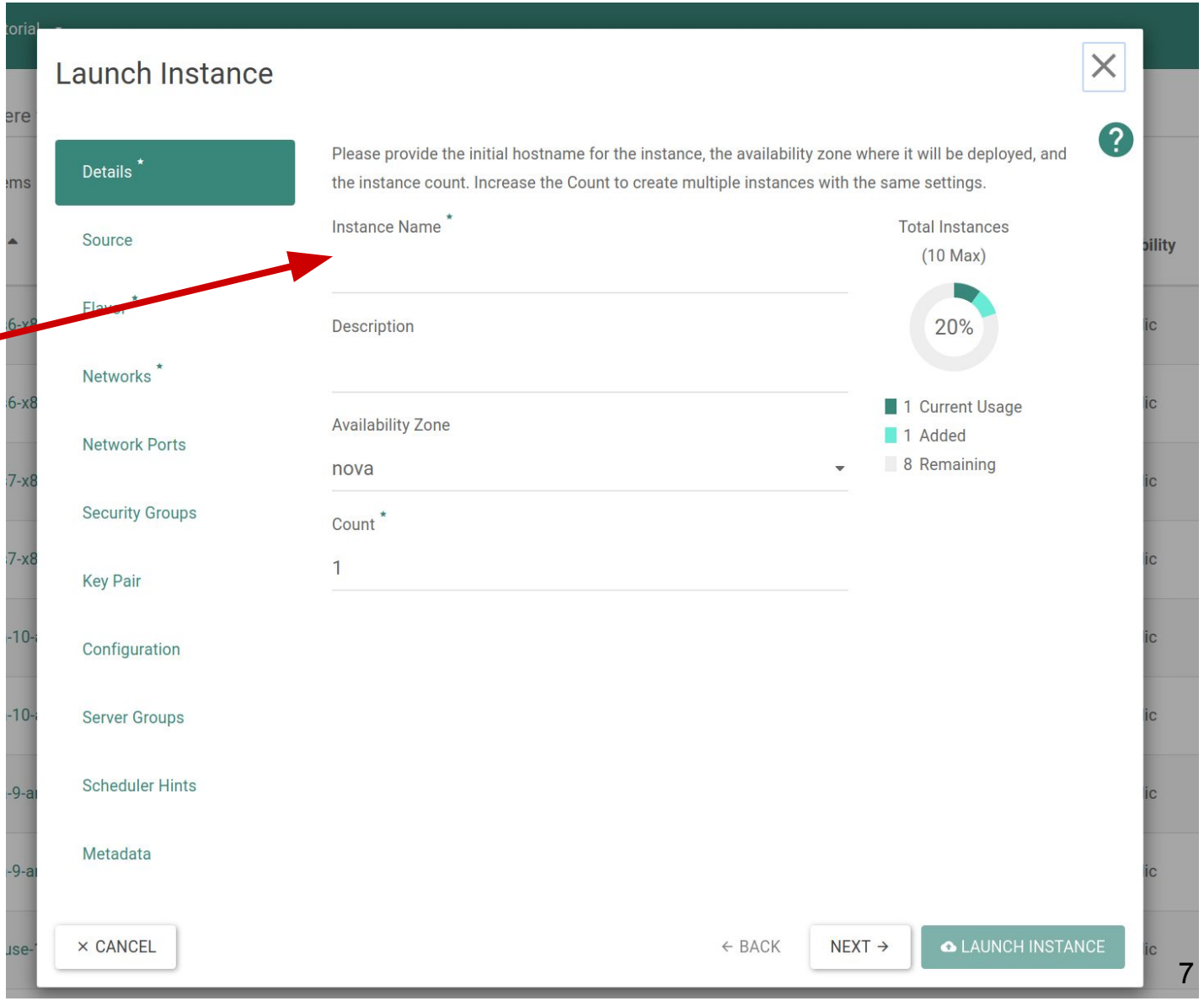
Dashboard – Launch images

Launch (instantiate) an image



Launch instance - Details

Insert instance name

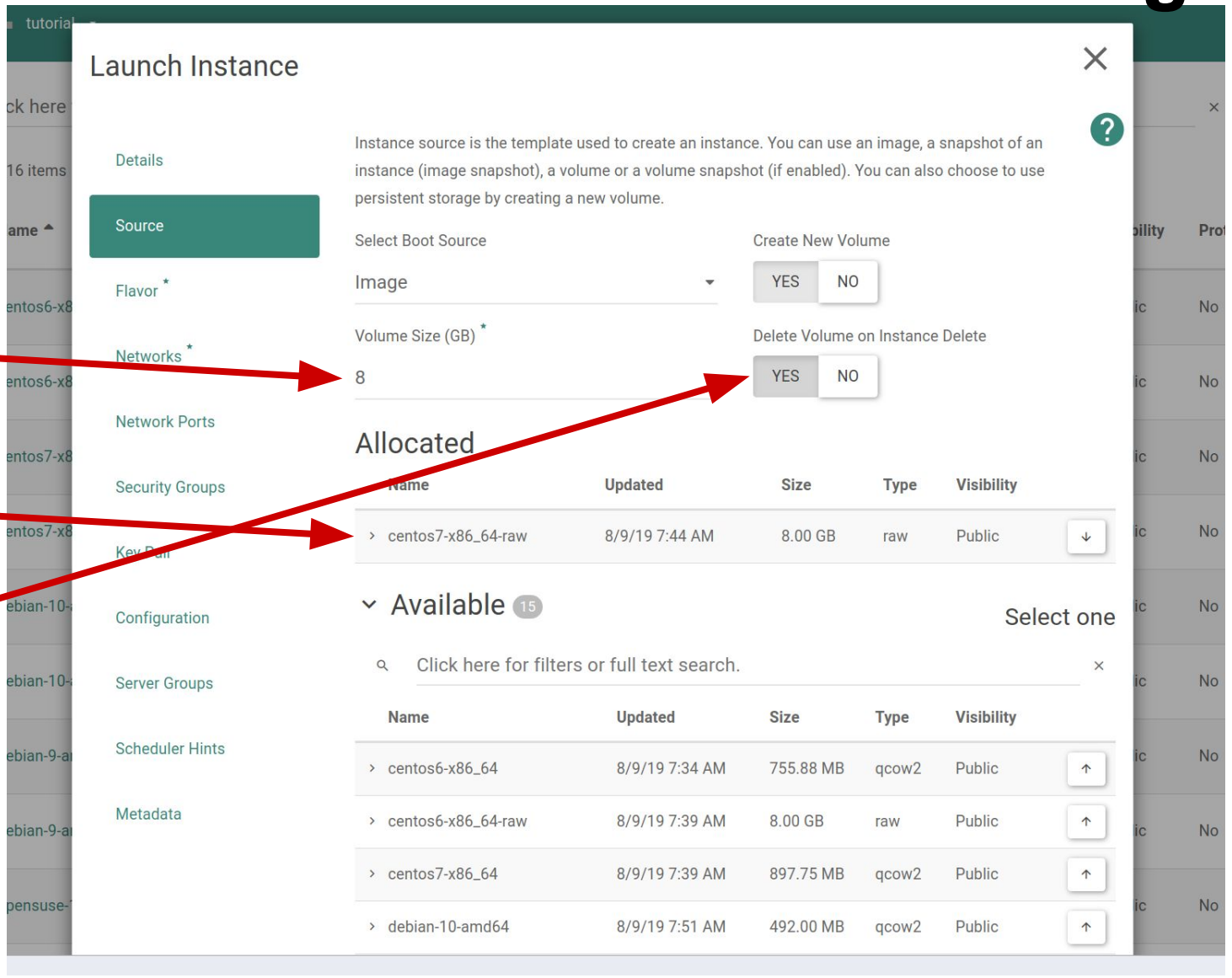


Launch instance - Image

Volume size >= flavor

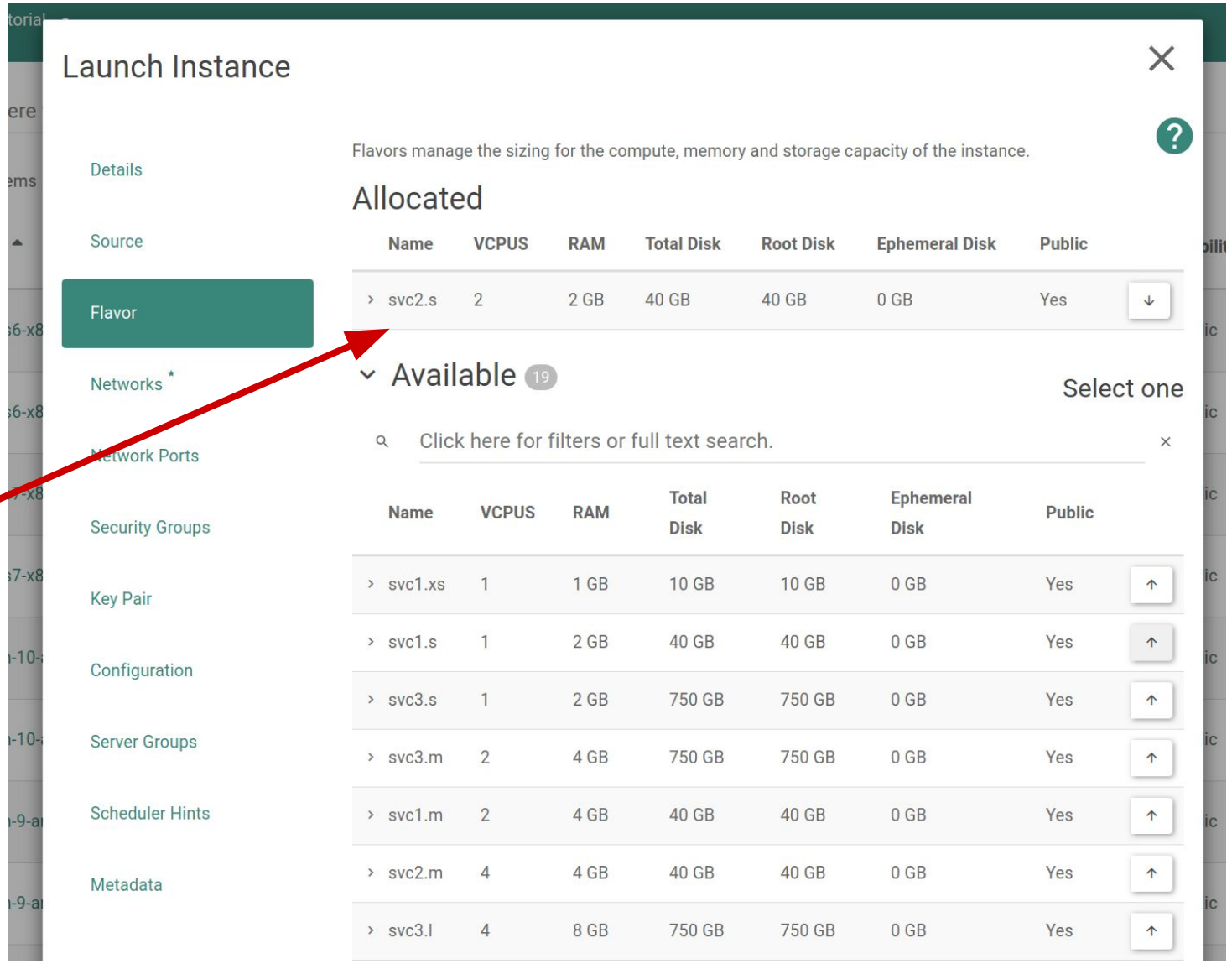
Choose image
With name ending
in "**_raw**"

Set delete volume if
you want the volume
to be deleted after the
instance is deleted

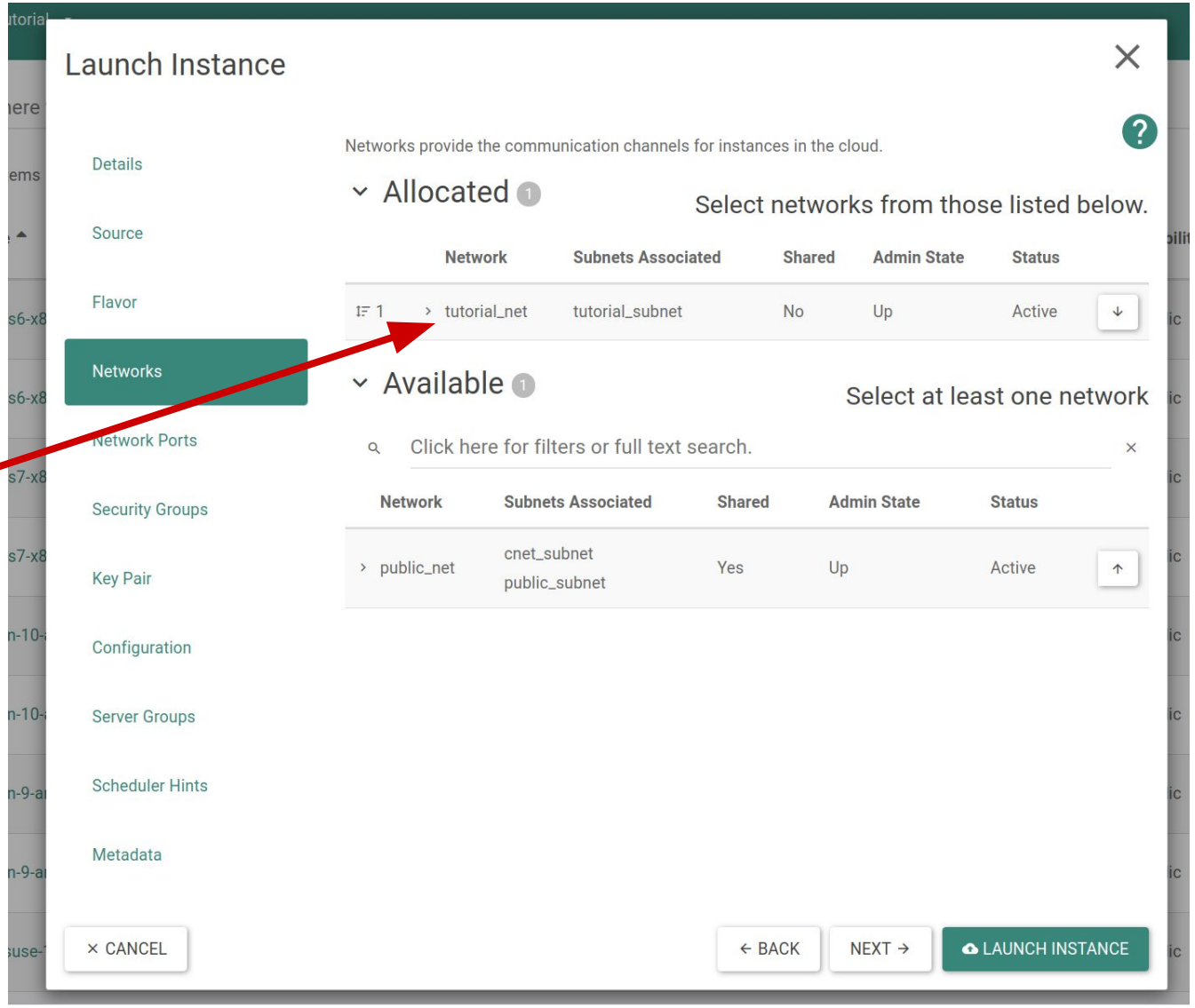


Launch instance - Flavor

Choose flavor



Launch instance - Network



Choose network

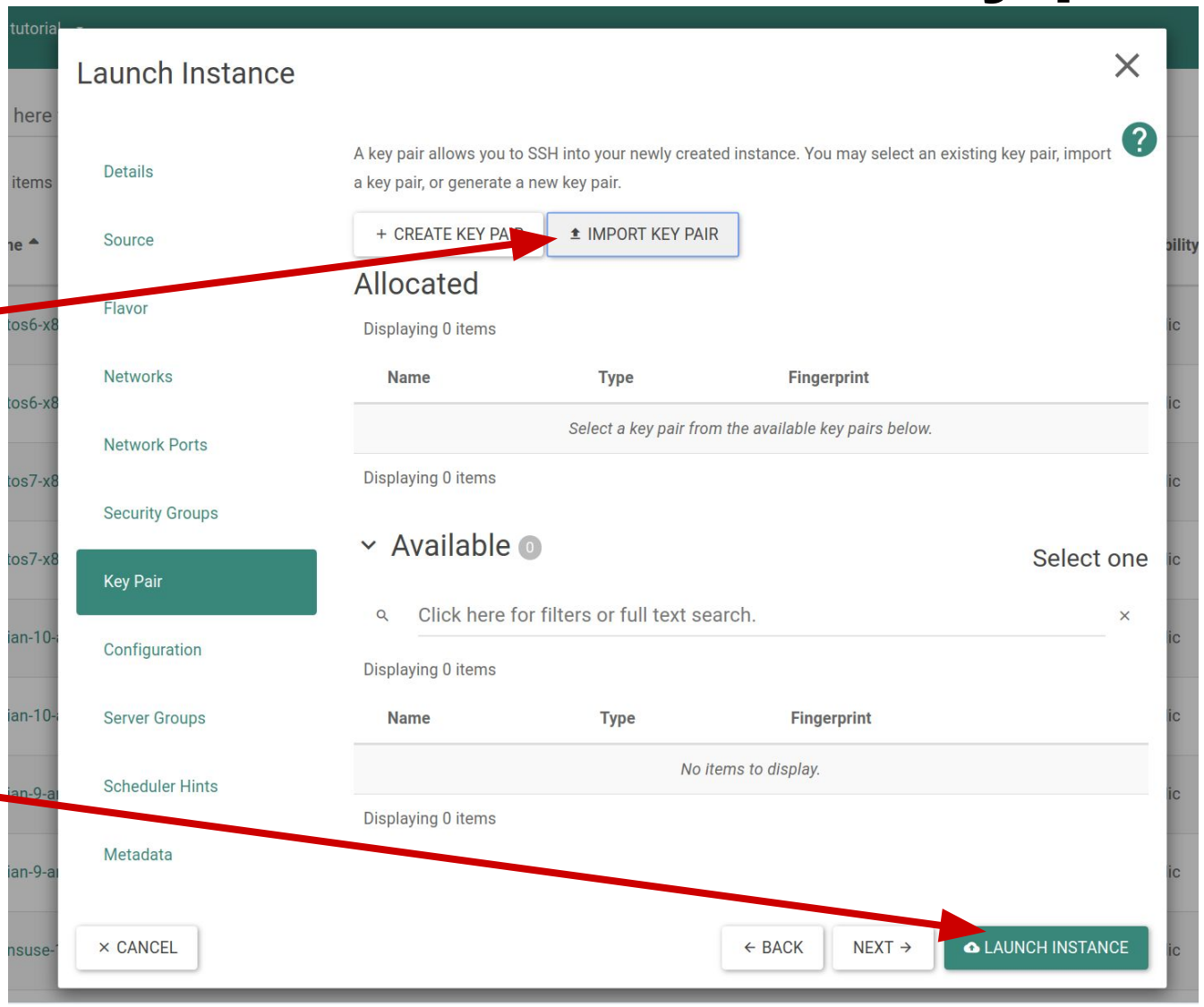
Should be the “project” private network.

Do not chose the public_net at this stage

Launch instance - Key pair

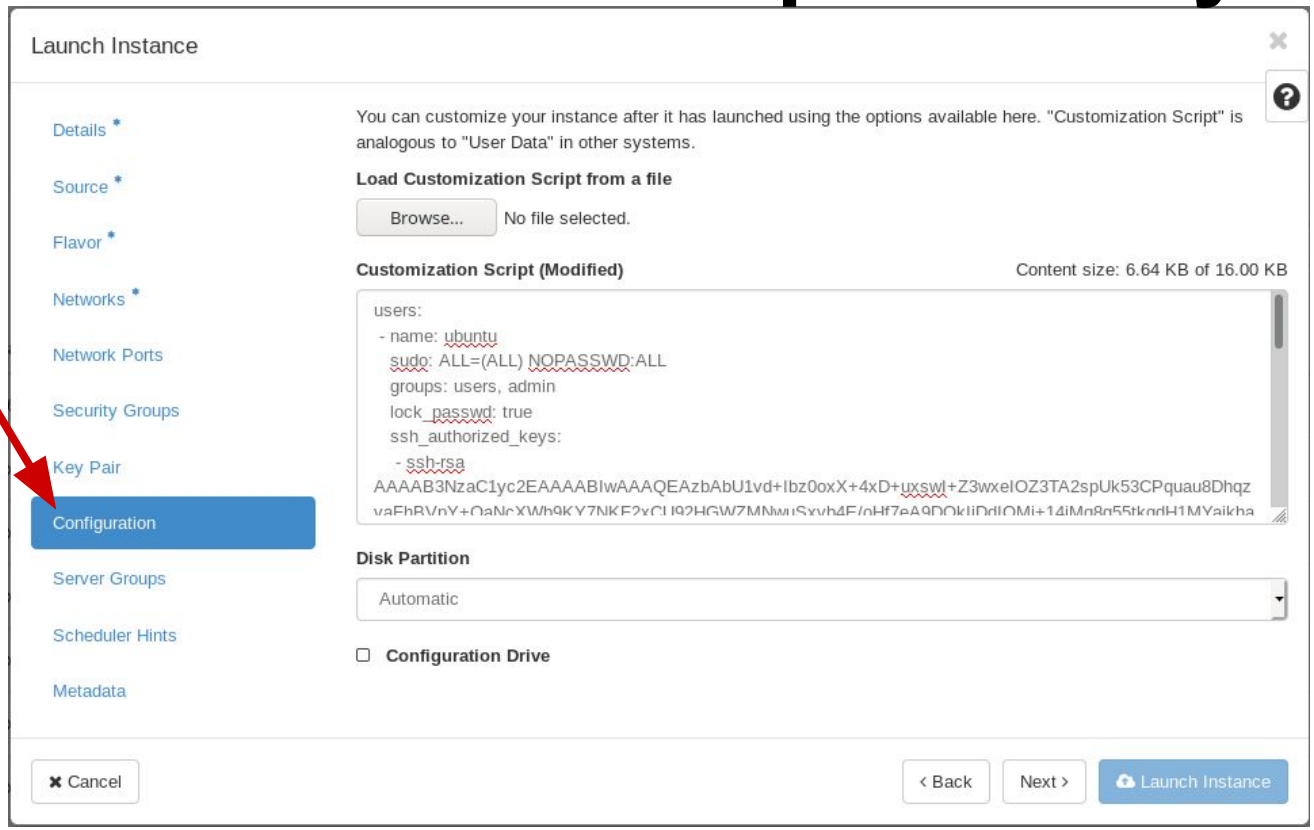
Add ssh public key
Cloud base images are configured to accept login through ssh key

Launch the instance



Add more ssh public keys

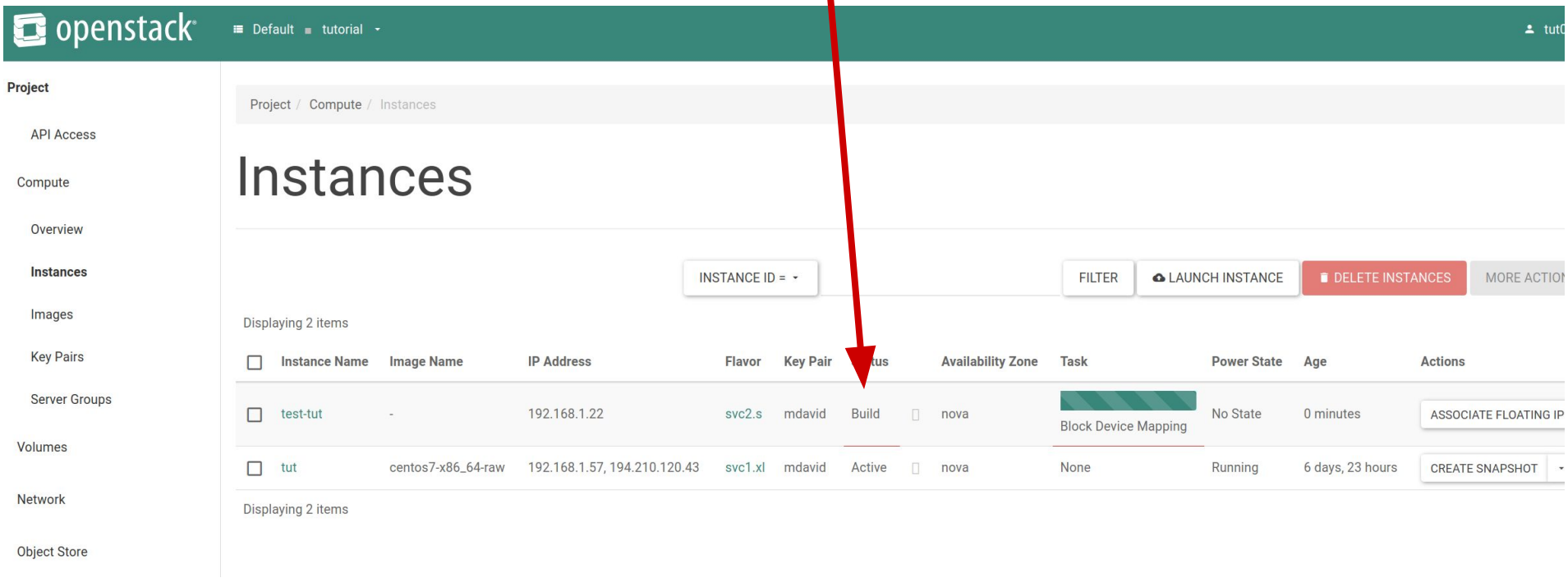
It is possible to add more ssh public keys.




```
users:
 - name: ubuntu
   ssh_authorized_keys:
    - ssh-rsa AAAA...
    - ssh-rsa AAAA....
```

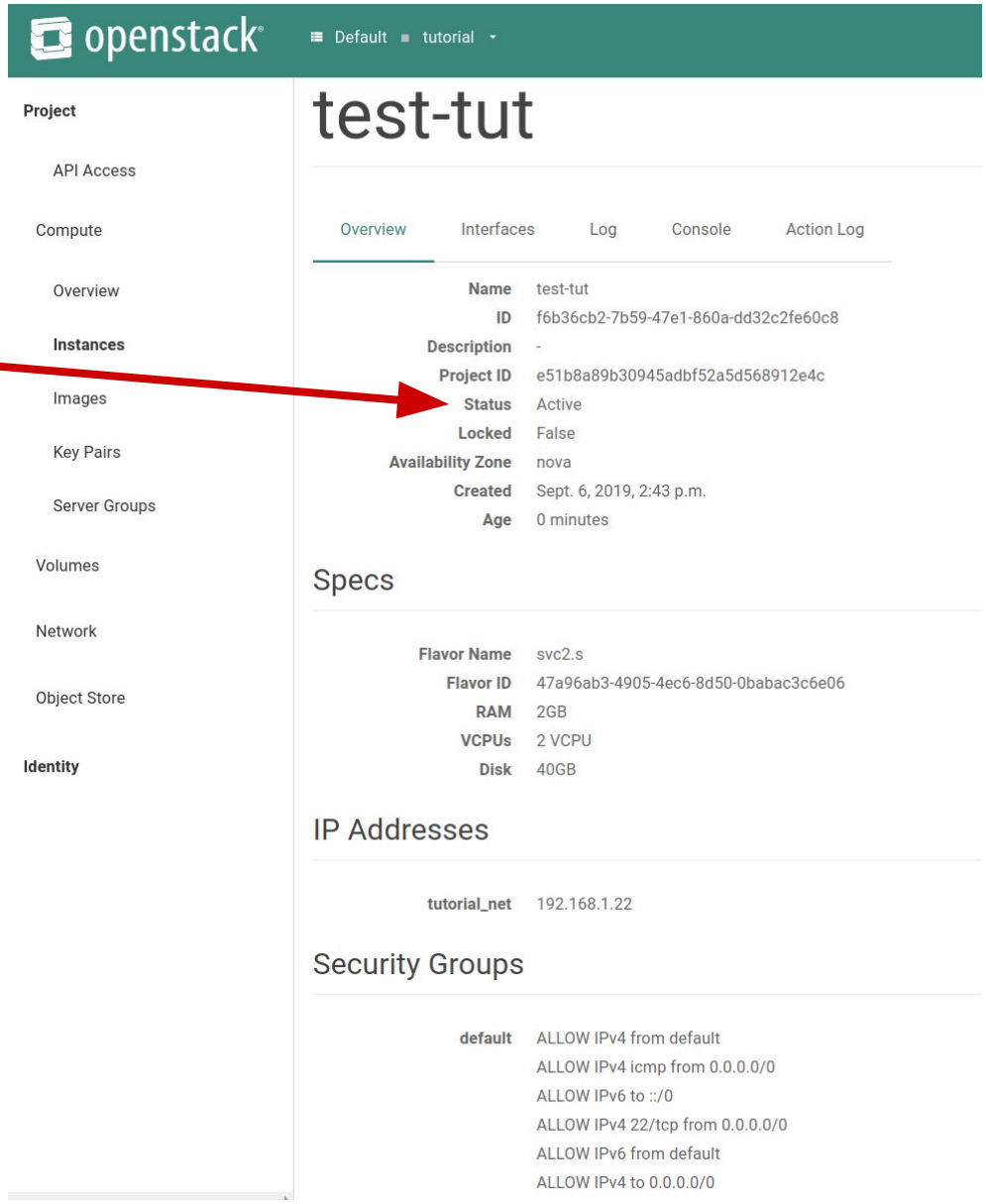
Dashboard - Instances

Building - spawning

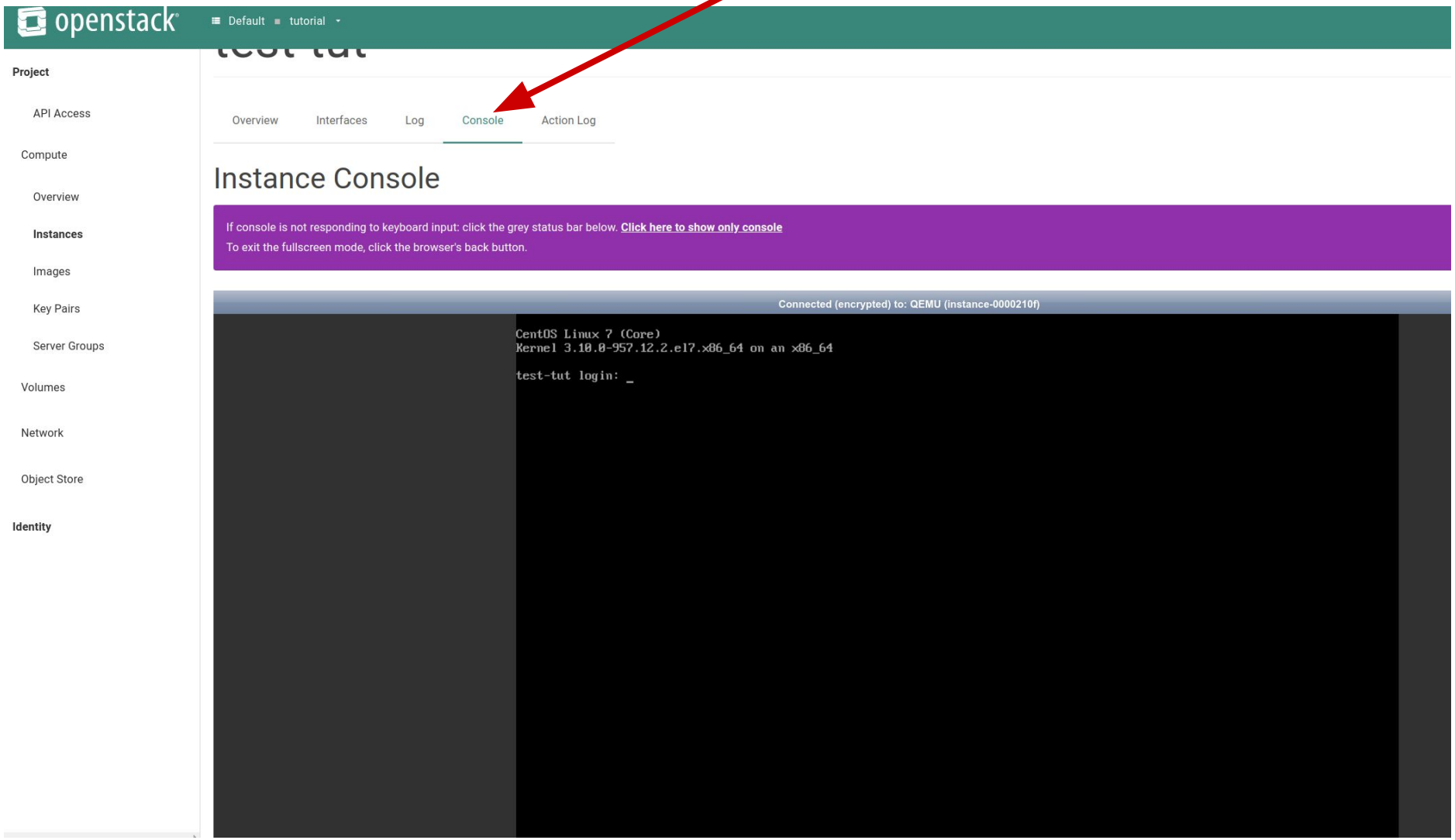


Instance - detailed information

Active - running

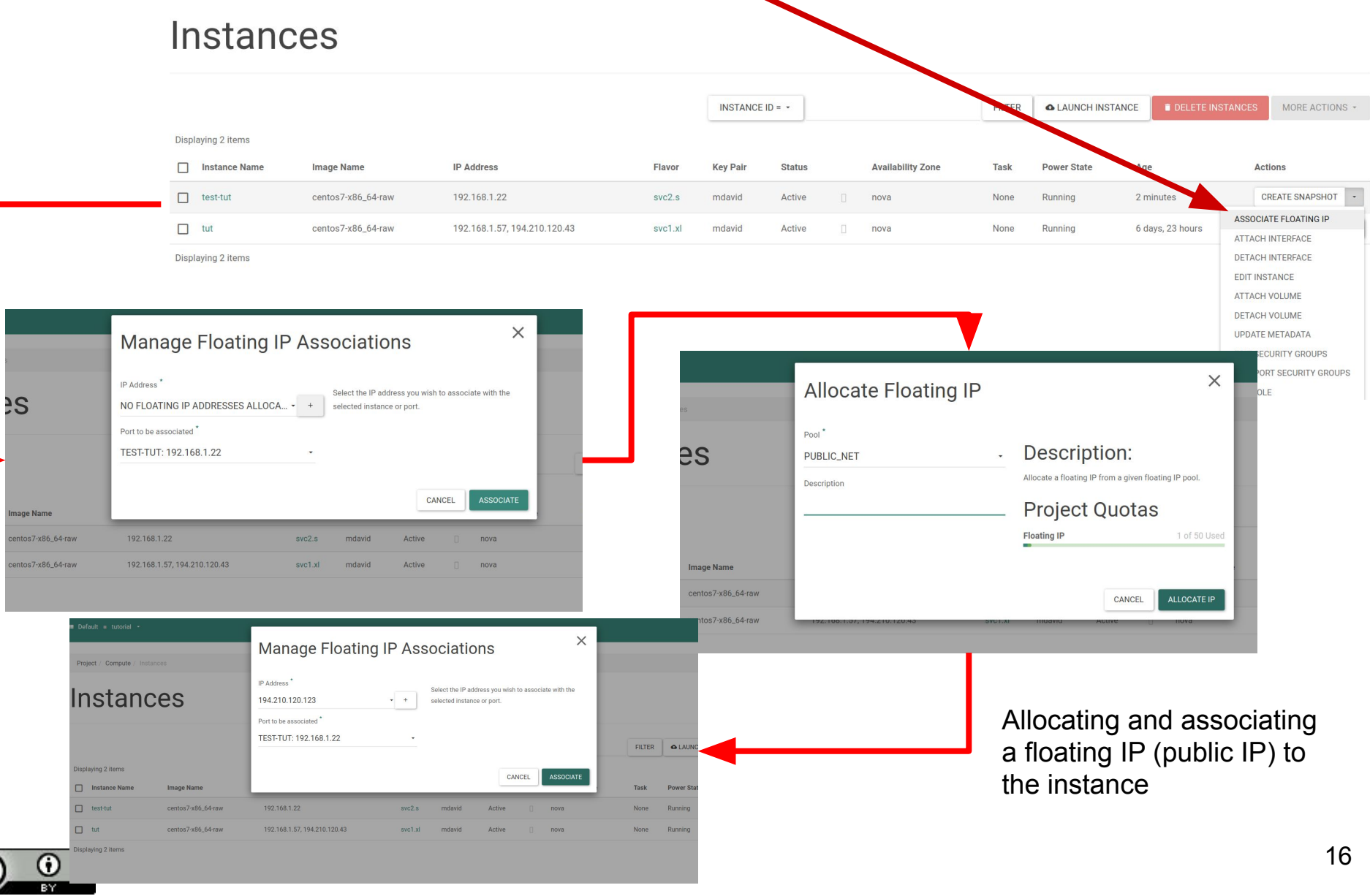


Instance console



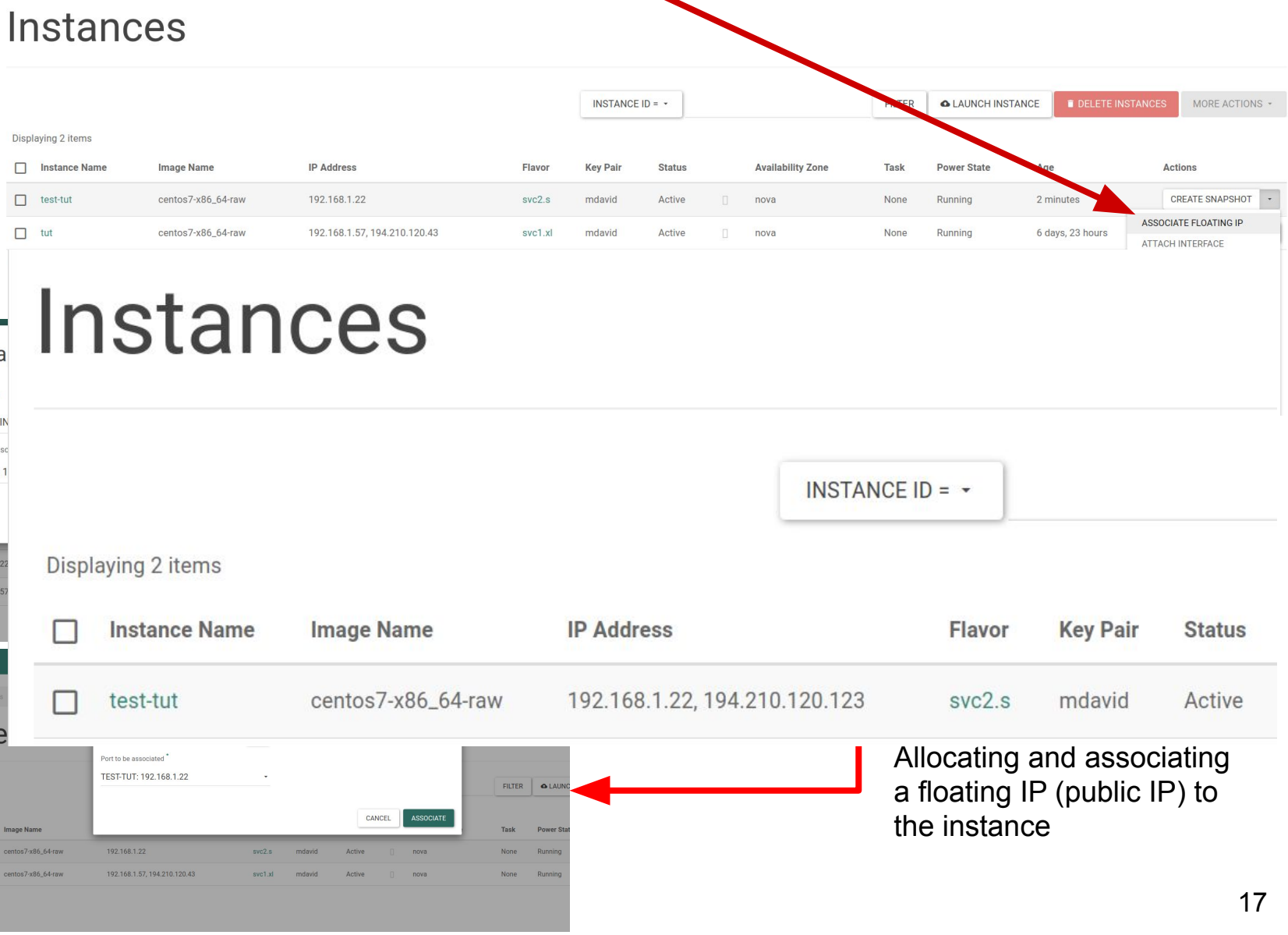
You can check that the VM is ready for you to login. ***Do not try to login in the console, since only ssh key pair access is allowed***.

Associate floating (Public) IP



Allocating and associating a floating IP (public IP) to the instance

Associate floating (Public) IP



Allocating and associating a floating IP (public IP) to the instance

ssh to VM

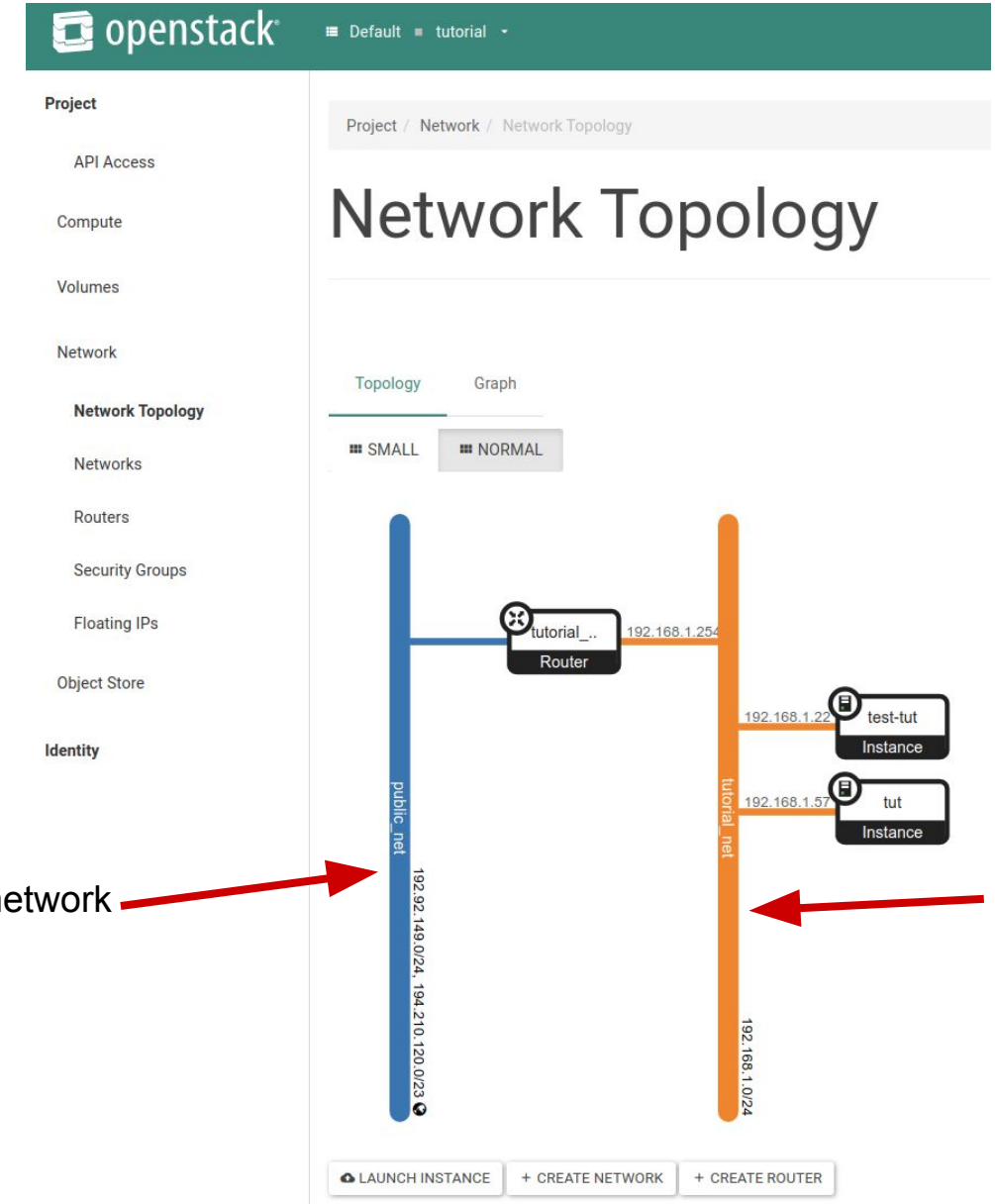
```
david@pcdavid:~$ ll .ssh/id*
-rw------- 1 david david 1743 ago 22  2018 .ssh/id_rsa
-rw-r--r-- 1 david david  630 ago 22  2018 .ssh/id_rsa.keystore
-rw-r--r-- 1 david david  402 ago 22  2018 .ssh/id_rsa.pub
```

ssh private key
check permissions

ssh public key

```
david@pcdavid:~$
david@pcdavid:~$ ssh centos@194.210.120.123
Warning: Permanently added '194.210.120.123' (ECDSA) to the list of known hosts.
X11 forwarding request failed on channel 0
[centos@test-tut ~]$
```

Dashboard – Network topology

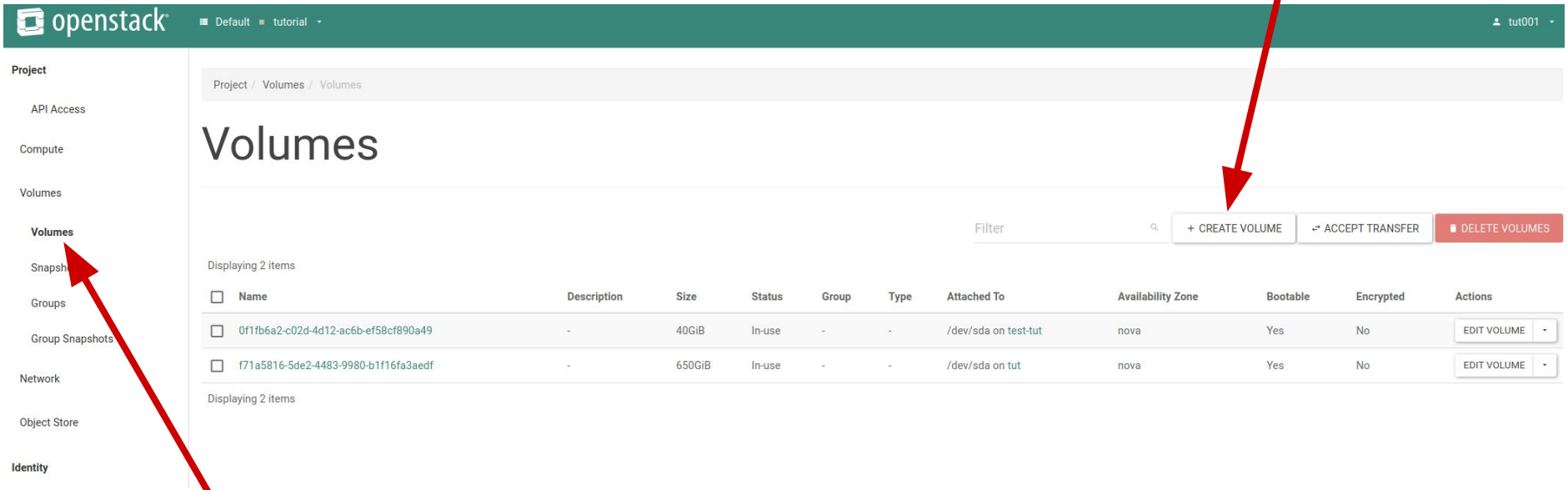


Public network

Project private network

Dashboard – Volumes

Create a volume

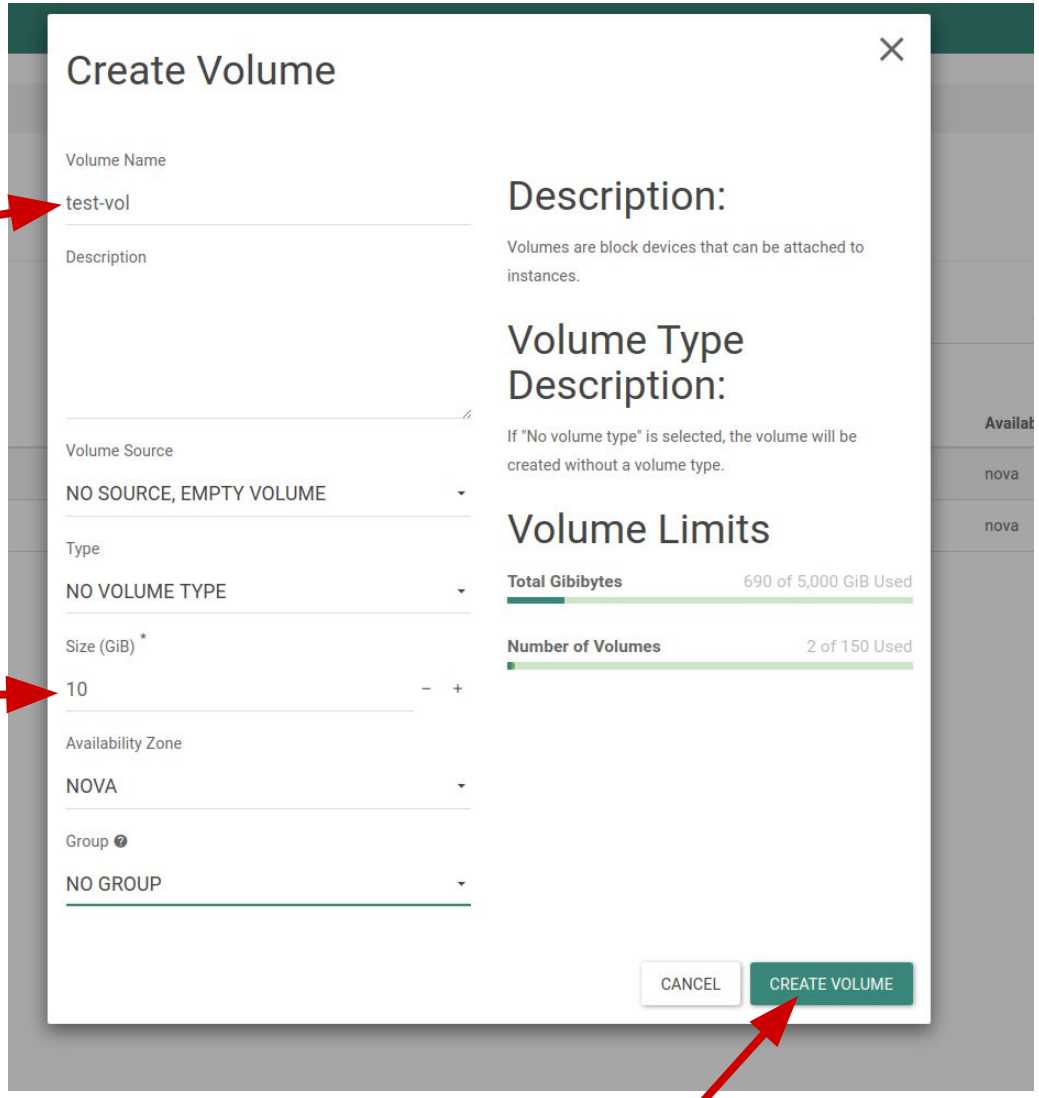


Volumes

Dashboard – Create a Volume

Volume name

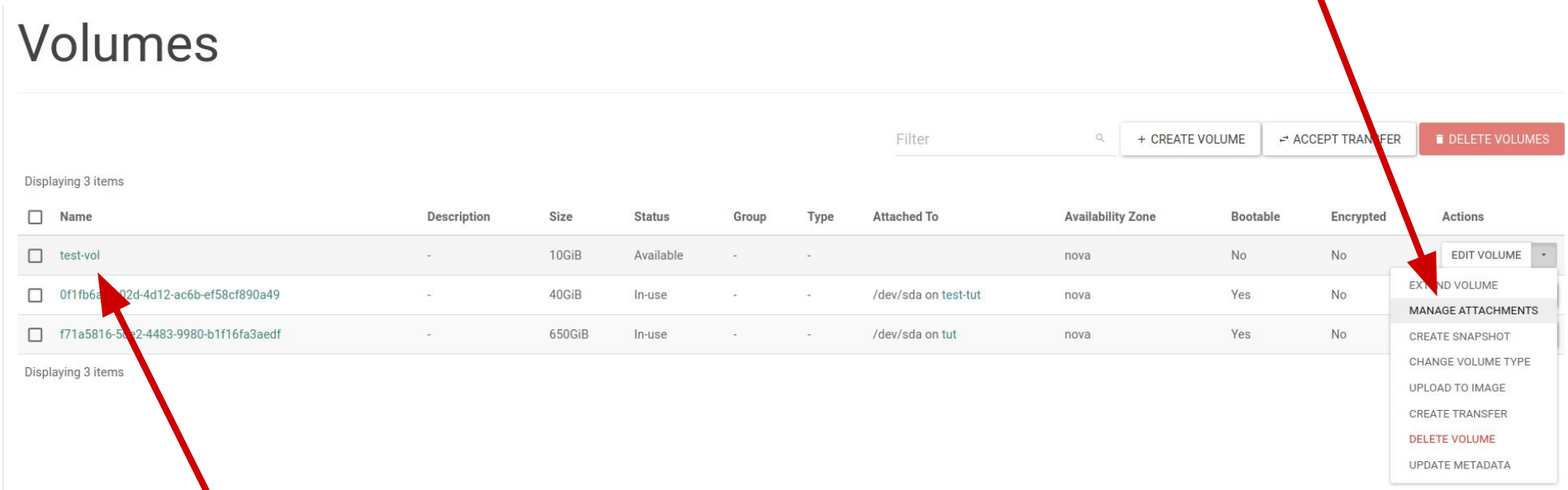
Volume size



Create volume

Dashboard – Volumes

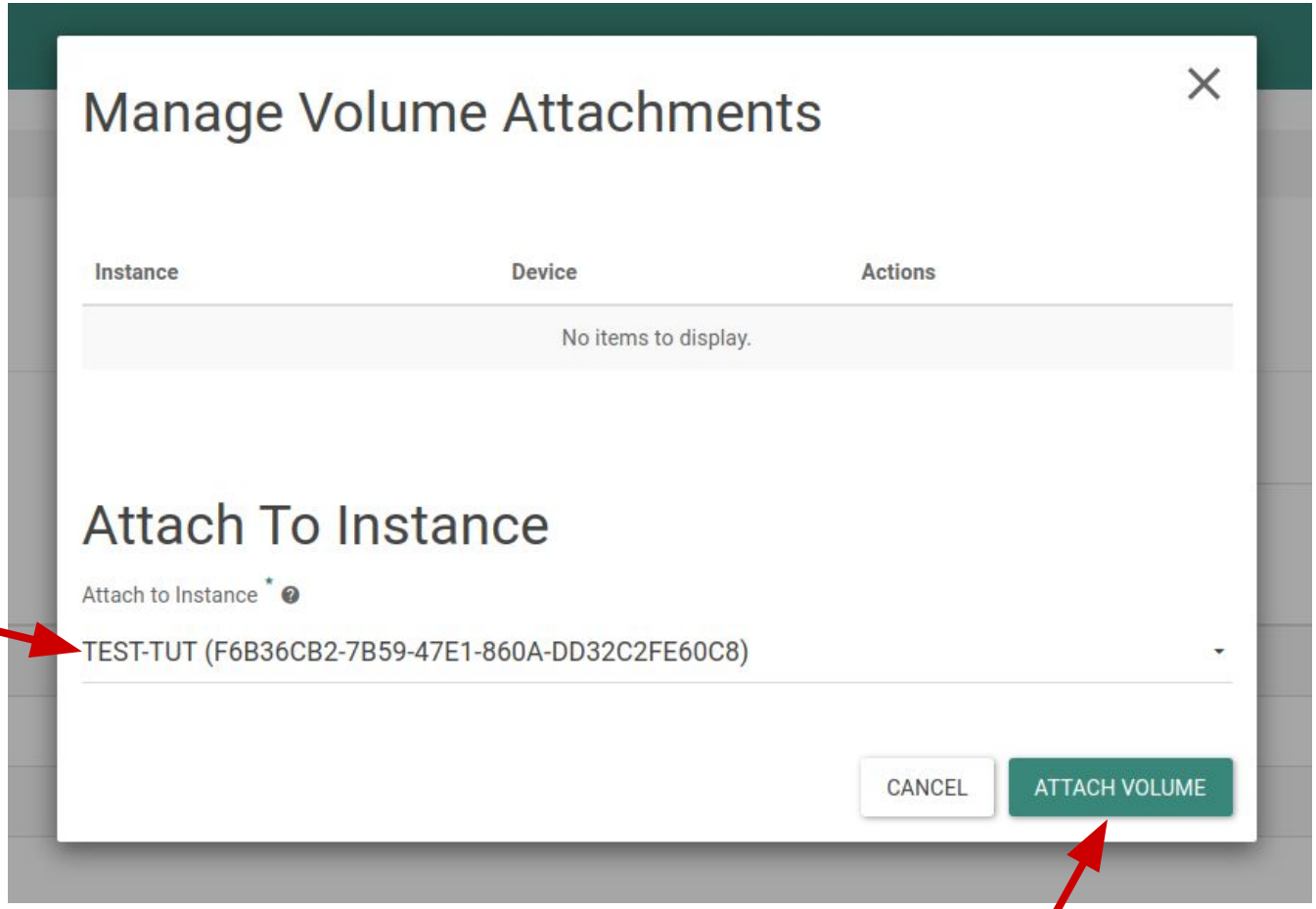
Attach to instance



Newly created Volume

Dashboard – Attach Volume

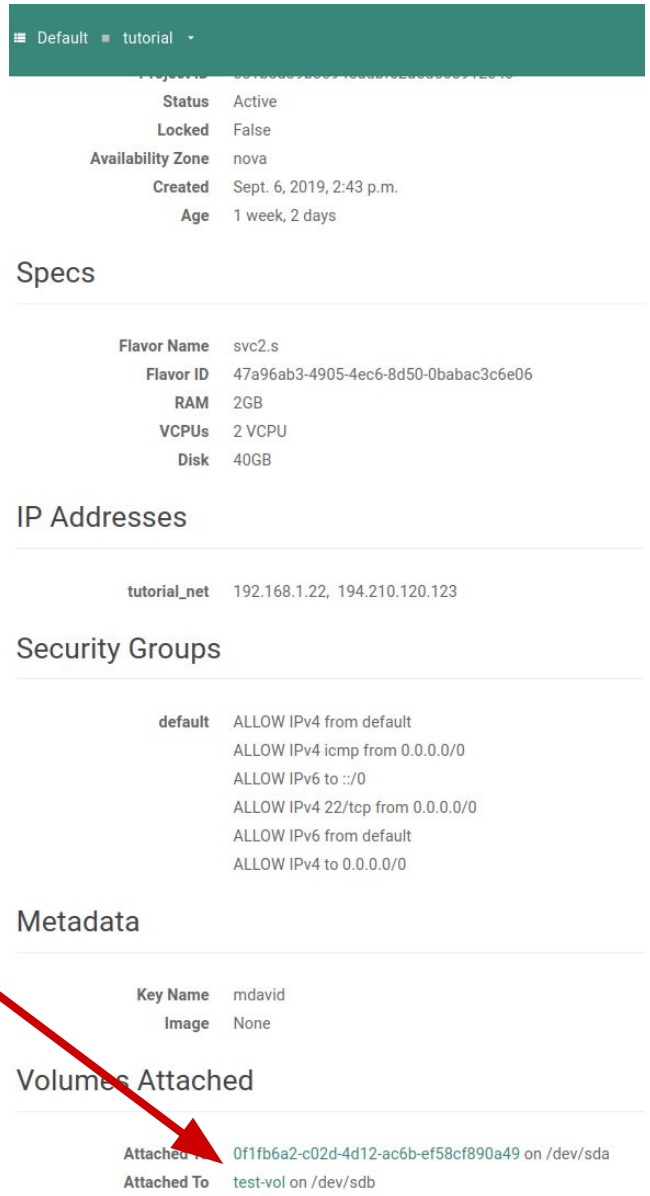
Select which instance to attach volume



Attach to instance

Dashboard – Attach Volume

Volume device in VM



Console - Partitions

Check partition table

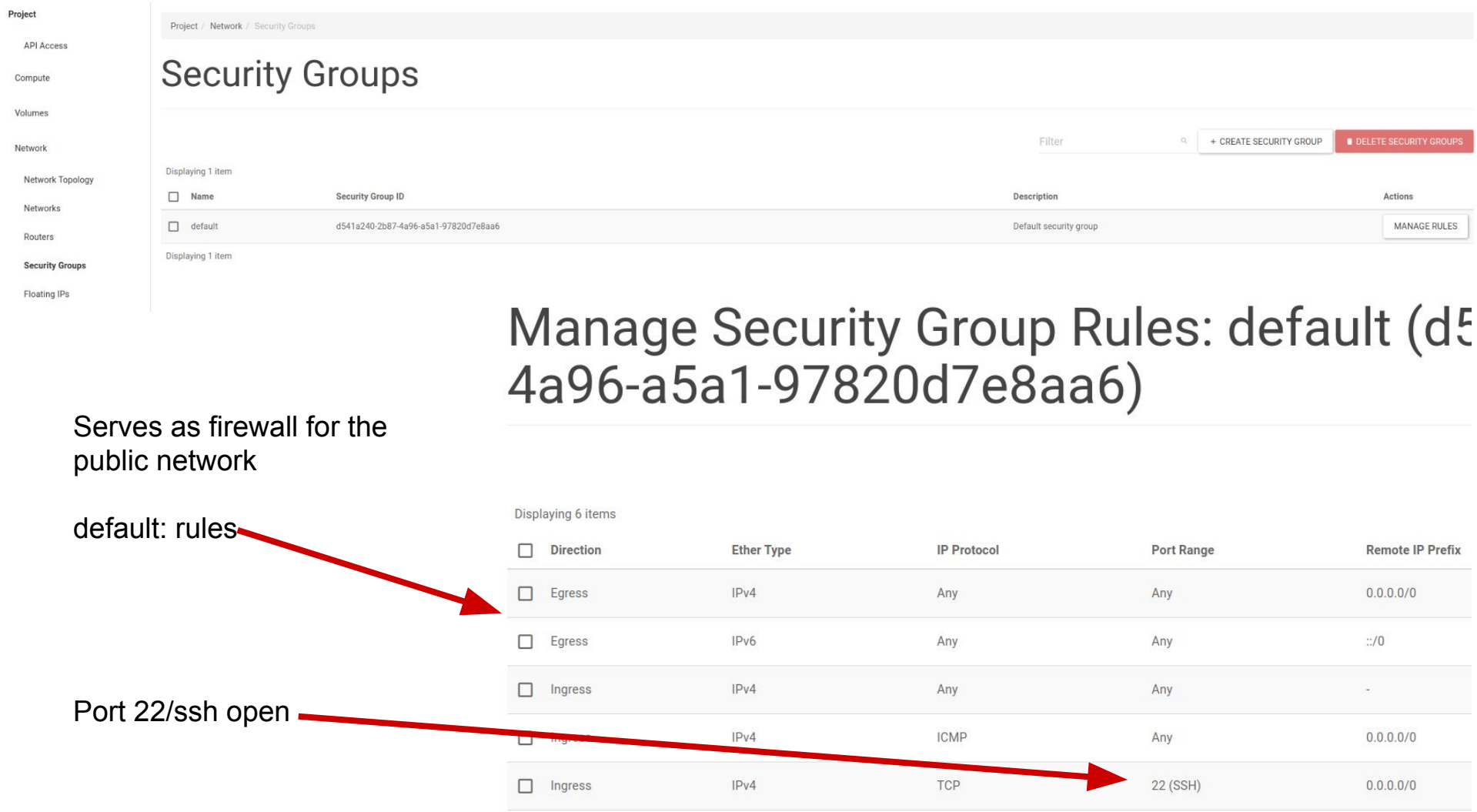
Format device

```
[centos@test-tut ~]$ cat /proc/partitions
major minor  #blocks  name

   8        0   41943040 sda
   8        1   41941999 sda1
   8       16   10485760 sdb
[centos@test-tut ~]$ sudo mkfs.xfs /dev/sdb
meta-data=/dev/sdb               isize=512    agcount=4, agsize=655360 blks
         =                       sectsz=512   attr=2, projid32bit=1
         =                       crc=1        finobt=0, sparse=0
data     =                       bsize=4096   blocks=2621440, imaxpct=25
         =                       sunit=0      swidth=0 blks
naming   =version 2              bsize=4096   ascii-ci=0 ftype=1
log      =internal log           bsize=4096   blocks=2560, version=2
         =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime =none                   extsz=4096   blocks=0, rtextents=0
```

Formatted device

```
[centos@test-tut ~]$ sudo parted /dev/sdb
GNU Parted 3.1
Using /dev/sdb
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) print
Model: QEMU QEMU HARDDISK (scsi)
Disk /dev/sdb: 10,7GB
Sector size (logical/physical): 512B/512B
Partition Table: loop
Disk Flags:

Number  Start  End     Size    File system  Flags
 1      0,00B  10,7GB  10,7GB  xfs

(parted)
```

Security groups



Serves as firewall for the public network

default: rules

Port 22/ssh open

Security groups

Name	test-tut
ID	17d80dc2-daac-4bd8-8269-09f4d39da2d7
Description	-
Project ID	e51b8a89b30945adbf52a5d568912e4c
Status	Active
Locked	False
Availability Zone	nova
Created	May 10, 2021, 9:32 a.m.
Age	2 minutes

```
david@pcdavid:~$ nmap 194.210.120.241 -p 22 -Pn

Starting Nmap 7.60 ( https://nmap.org ) at 2021-05-10 10:50 WEST
Nmap scan report for 194.210.120.241
Host is up (0.0020s latency).

PORT   STATE SERVICE
22/tcp open  ssh

Nmap done: 1 IP address (1 host up) scanned in 0.10 seconds
```

Port 22/ssh open

Specs

Flavor Name	svc1.s
Flavor ID	693832dd-b6b1-41d5-a67a-06de3df4a67f
RAM	2GB
VCPUs	1 VCPU
Disk	40GB

IP Addresses

tutorial_net	192.168.1.26, 194.210.120.241

Security Groups

default	ALLOW IPv4 from default
	ALLOW IPv4 icmp from 0.0.0.0/0
	ALLOW IPv6 to ::/0
	ALLOW IPv4 22/tcp from 0.0.0.0/0
	ALLOW IPv6 from default
	ALLOW IPv4 to 0.0.0.0/0

Security groups

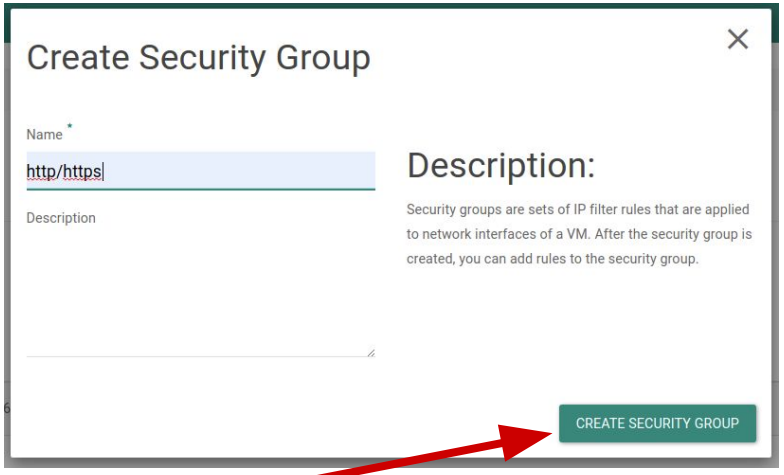
Example: nginx - port TCP/80

```
root@test-tut:/home/ubuntu# systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
     Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
     Active: active (running) since Mon 2021-05-10 09:55:08 UTC; 4min 57s ago
       Docs: man:nginx(8)
   Main PID: 1329 (nginx)
      Tasks: 2 (limit: 2344)
     Memory: 5.8M
     CGroup: /system.slice/nginx.service
             ├─1329 nginx: master process /usr/sbin/nginx -g daemon on; master_process on;
             └─1330 nginx: worker process

May 10 09:55:08 test-tut systemd[1]: Starting A high performance web server and a reverse proxy server...
May 10 09:55:08 test-tut systemd[1]: Started A high performance web server and a reverse proxy server.
root@test-tut:/home/ubuntu# netstat -tanp
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:80              0.0.0.0:*               LISTEN      1329/nginx: master
tcp        0      0 127.0.0.53:53           0.0.0.0:*               LISTEN      525/systemd-resolve
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN      596/sshd: /usr/sbin
tcp        0      0 127.0.0.1:6010          0.0.0.0:*               LISTEN      871/sshd: ubuntu@pt
tcp        0      0 192.168.1.26:22         58.57.111.22:3577       TIME_WAIT   -
tcp        0    304 192.168.1.26:22         194.210.119.252:51080   ESTABLISHED 753/sshd: ubuntu [p
tcp6       0      0 :::80                   :::*                    LISTEN      1329/nginx: master
tcp6       0      0 :::22                   :::*                    LISTEN      596/sshd: /usr/sbin
```

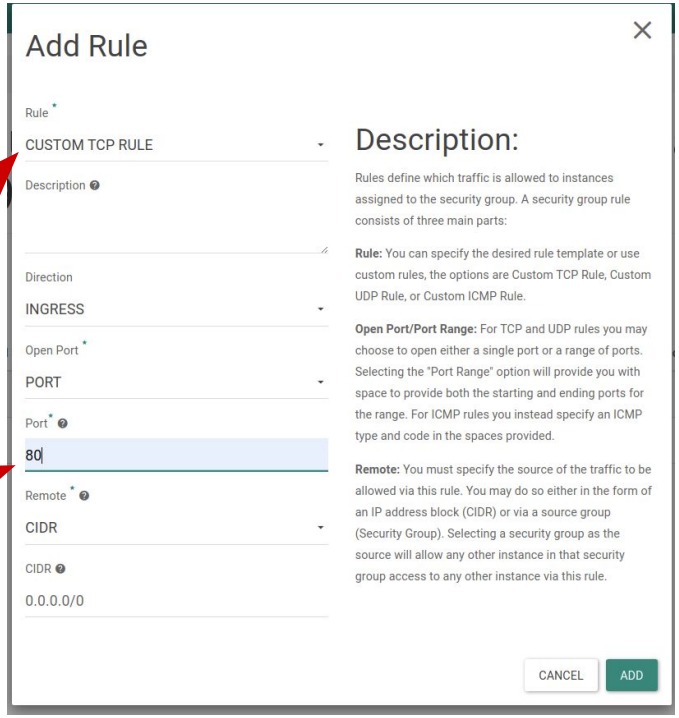
nginx - port TCP/80 is filtered

```
david@pcdavid:~$ nmap 194.210.120.241 -p 80 -Pn

Starting Nmap 7.60 ( https://nmap.org ) at 2021-05-10 11:03 WEST
Nmap scan report for 194.210.120.241
Host is up.

PORT   STATE    SERVICE
80/tcp filtered http

Nmap done: 1 IP address (1 host up) scanned in 2.03 seconds
david@pcdavid:~$
```

Security groups



Create a new Security Group



Add firewall rule TCP 80

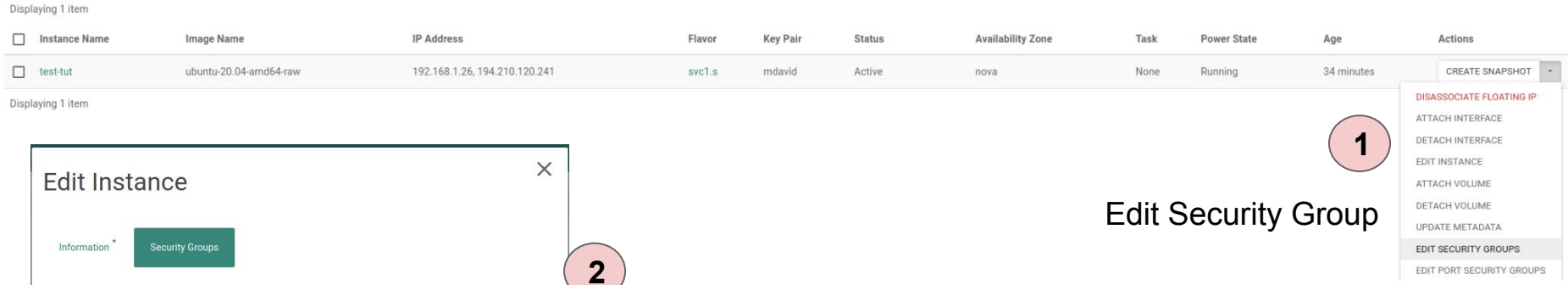
Manage Security Group Rules: http/https (47b8-9a8c-a04e6a795cda)

Displaying 4 items

Direction	Ether Type	IP Protocol	Port Range	Remote IP Prefix
Egress	IPv4	Any	Any	0.0.0.0/0
Egress	IPv6	Any	Any	::/0
Ingress	IPv4	TCP	80 (HTTP)	0.0.0.0/0
Ingress	IPv4	TCP	443 (HTTPS)	0.0.0.0/0

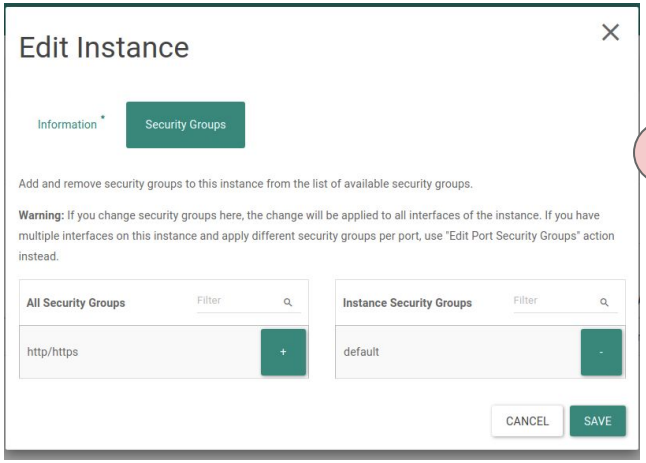
Displaying 4 items

Security groups



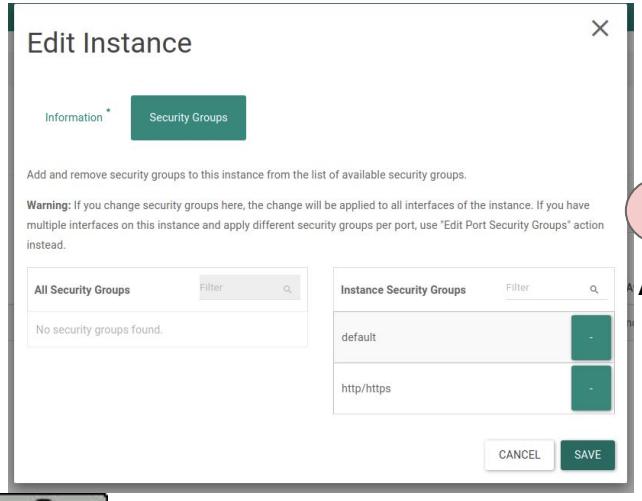
1

Edit Security Group



2

Select Security Group



3

Add+Save Security Group

Security groups

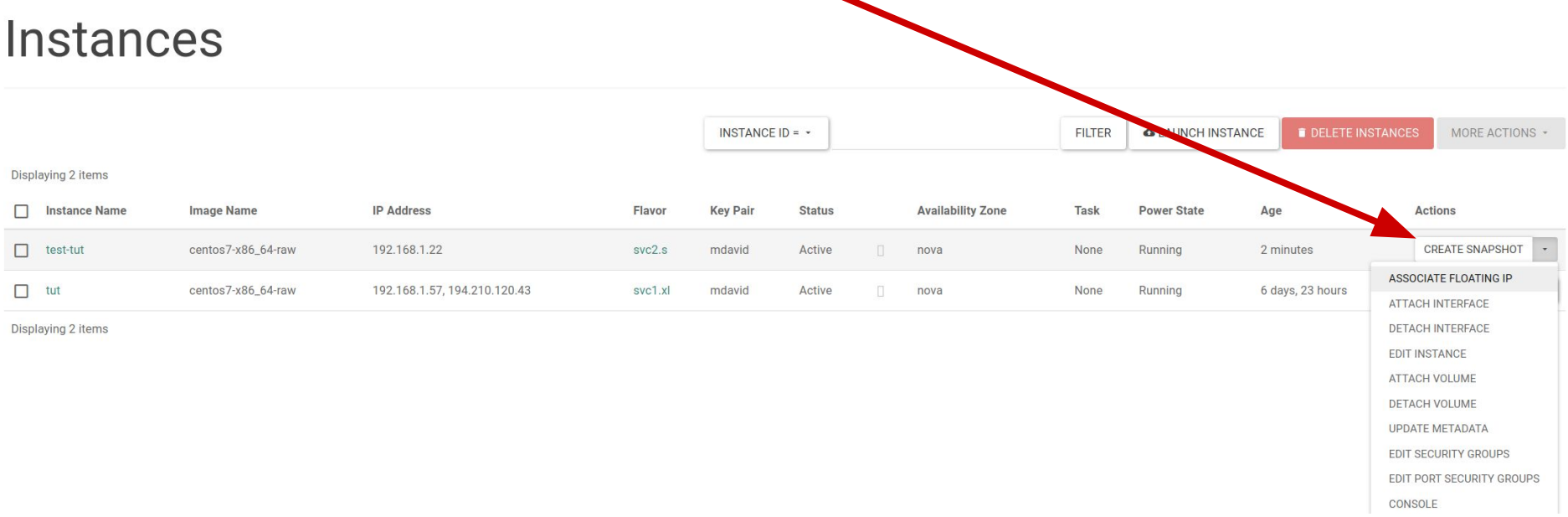
Port is now opened to public

```
david@pcdavid:~$ nmap 194.210.120.241 -p 80 -Pn

Starting Nmap 7.60 ( https://nmap.org ) at 2021-05-10 11:07 WEST
Nmap scan report for 194.210.120.241
Host is up (0.0018s latency).

PORT   STATE SERVICE
80/tcp open  http

Nmap done: 1 IP address (1 host up) scanned in 0.03 seconds
```

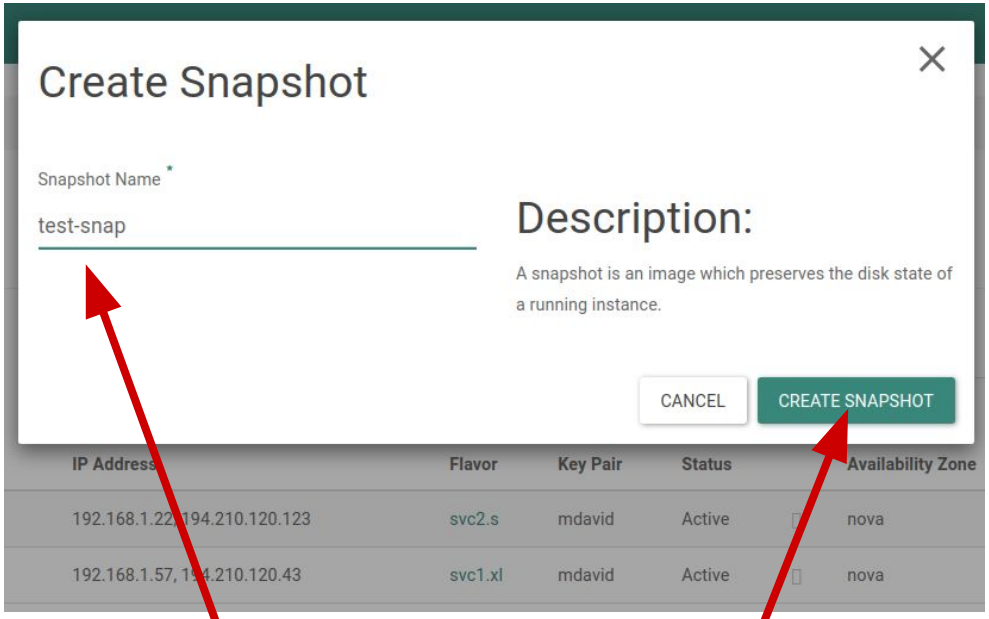
Service is accessible to public

Dashboard – Create a snapshot

Create snapshot - live instance



Dashboard – Create a snapshot



Snapshot name

Create snapshot

Dashboard – Show snapshot

Images

Click here for filters or full text search.

+ CREATE IMAGE | DELETE IMAGES

Displaying 17 items

Name	Type	Status	Visibility	Protected	Disk Format	Size	
ubuntu-19.04-amd64-raw	Image	Active	Public	No	RAW	2.20 GB	LAUNCH
ubuntu-19.04-amd64	Image	Active	Public	No	QCOW2	473.19 MB	LAUNCH
ubuntu-18.04-amd64-raw	Image	Active	Public	No	RAW	2.20 GB	LAUNCH
ubuntu-18.04-amd64	Image	Active	Public	No	QCOW2	327.63 MB	LAUNCH
ubuntu-16.04-amd64-raw	Image	Active	Public	No	RAW	2.20 GB	LAUNCH
ubuntu-16.04-amd64	Image	Active	Public	No	QCOW2	282.75 MB	LAUNCH
test-snap	Snapshot	Active	Private	No	QCOW2	0 bytes	LAUNCH

Dashboard – Show snapshot

test-snap

Image

ID	affb1b5c-ed90-4b26-af60-99fd1e28caa2
Type	
Status	Active
Size	0 bytes
Min. Disk	40
Min. RAM	0
Disk Format	QCOW2
Container Format	BARE
Created At	9/16/19 12:01 PM
Updated At	9/16/19 12:02 PM

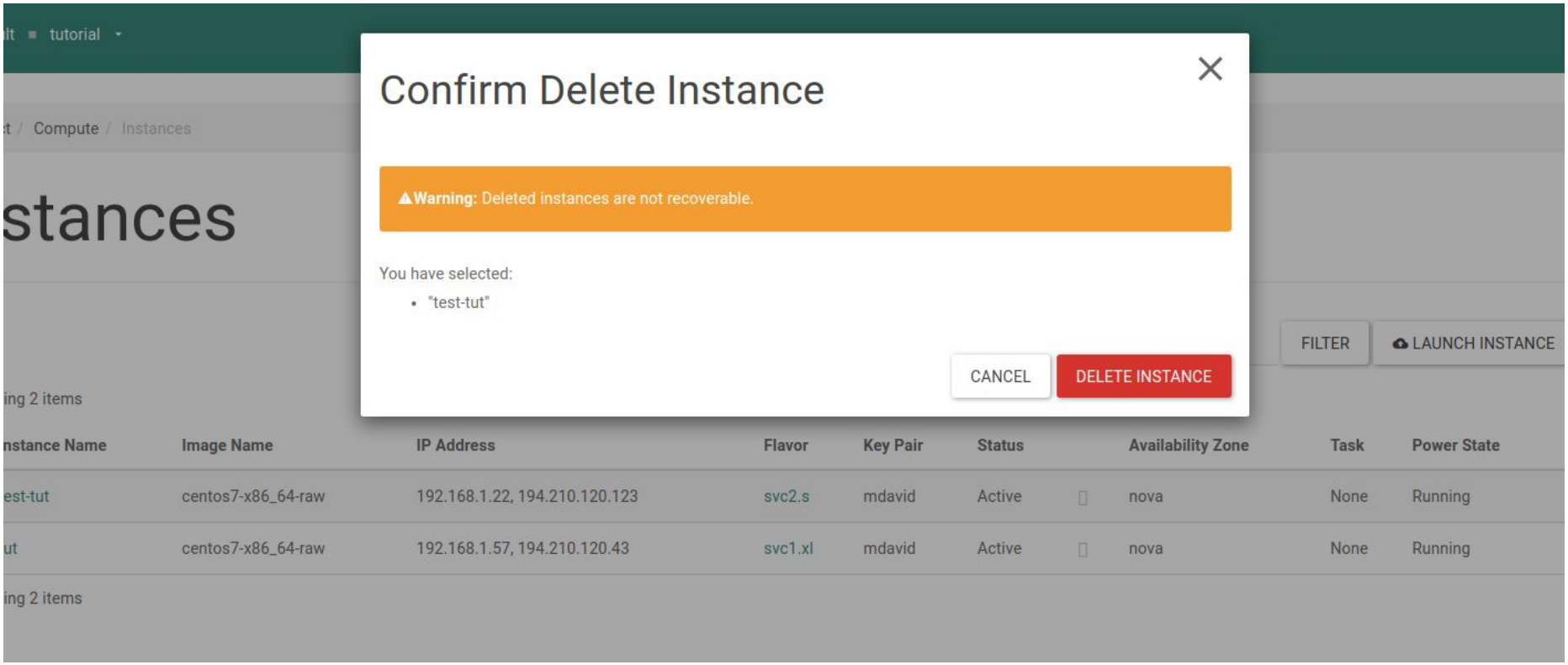
Security

Owner	e51b8a89b30945adbf52a5d568912e4c
Filename	-
Visibility	Private
Protected	No
Checksum	d41d8cd98f00b204e9800998ecf8427e

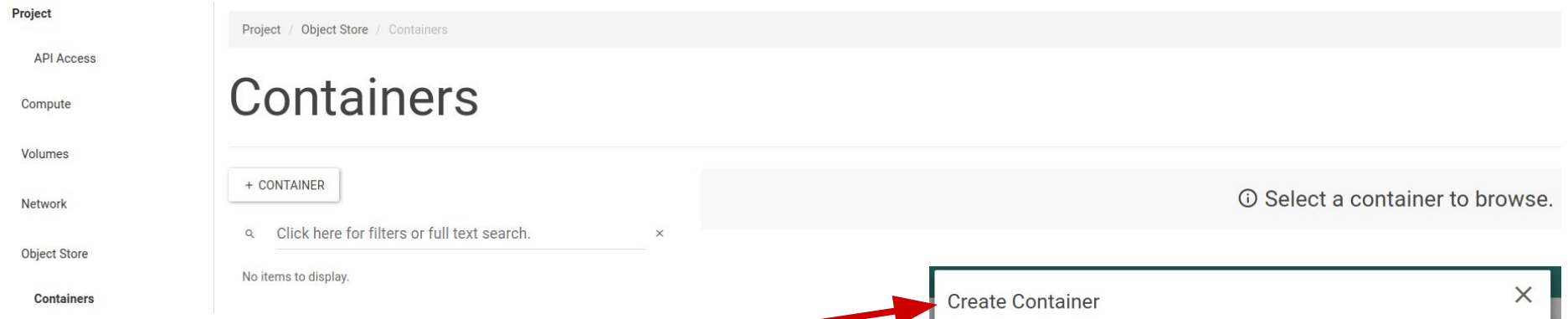
Custom Properties

bdm_v2	True
Virtual Size	
os_hash_value	cf83e1357eefb8bdf1542850d66d8007d620e4050b5715dc83f4a921d36ce9ce47d0d13c5d85f2b0ff8318d2877eec2f63b931bd47417a81a538327af927da3e
os_require_quiesce	yes
Tags	
locations	[{"url":"rbd://3db72b11-6b19-477b-b947-02d735c745c5/images/affb1b5c-ed90-4b26-af60-99fd1e28caa2/snap","metadata":{}}]
hw_qemu_guest_agent	yes
block_device_mapping	[{"guest_format": null, "boot_index": 0, "delete_on_termination": true, "no_device": null, "snapshot_id": "4964c42a-80a5-4a9b-9e5b-4314a5781d47", "volume_type": null, "device_name": "/dev/sda", "disk_bus": "scsi", "image_id": null, "source_type": "snapshot", "tag": null, "device_type": "disk", "volume_id": null, "destination_type": "volume", "volume_size": 40}, {"guest_format": null, "boot_index": null, "delete_on_termination": false, "no_device": null, "snapshot_id": "74712e83-4963-439d-81a1-531b1bd3d4c5", "volume_type": null, "device_name": "/dev/sdb", "disk_bus": null, "image_id": null, "source_type": "snapshot", "tag": null, "device_type": null, "volume_id": null, "destination_type": "volume", "volume_size": 10}]
os_hidden	false

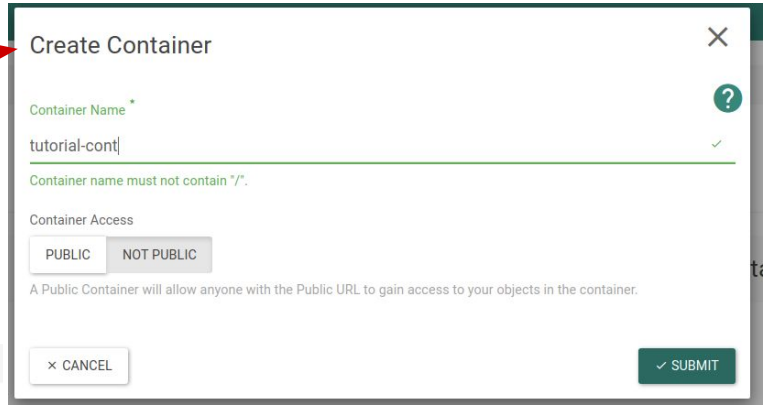
Dashboard – Terminate instance

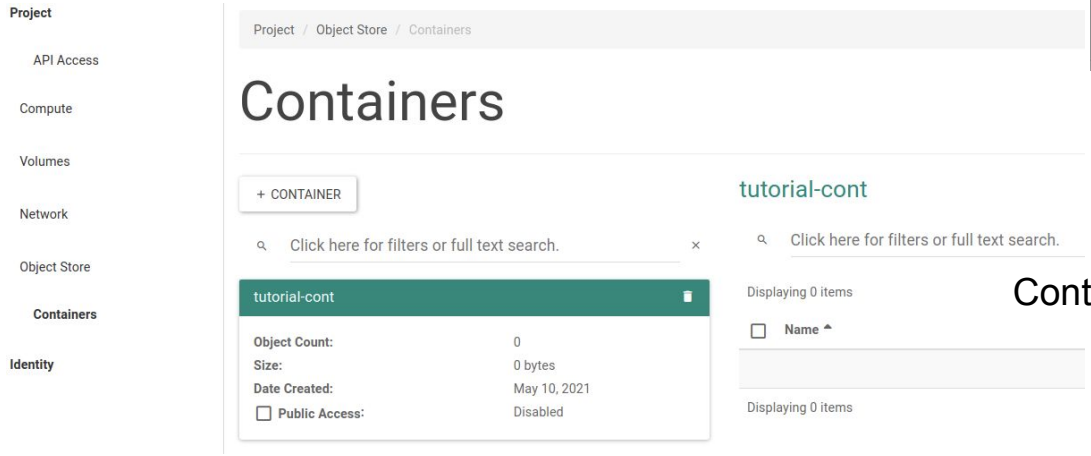


Object store - Swift



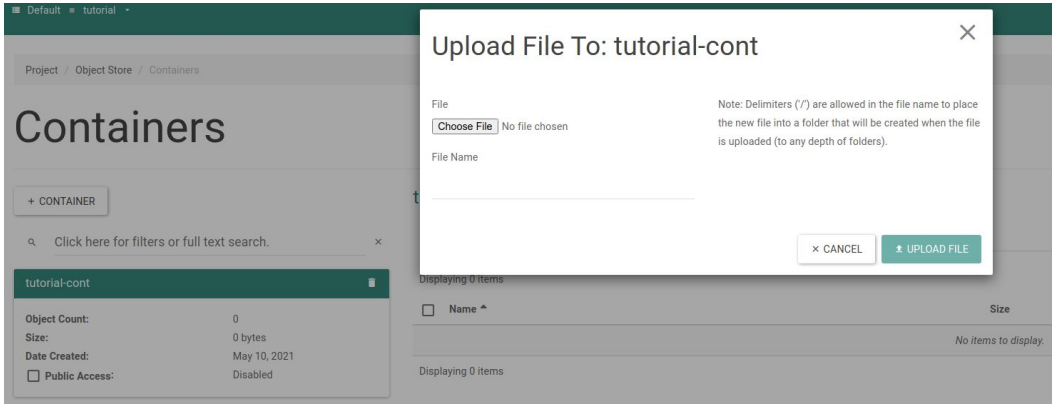
Create a container - ***directory***





Container created, also shown details

Object store - Swift



Upload a file into the previous container - ***directory***