The document describes ceph multimode installation, setting up of hosts (VM) key confiuguration files, openstack + ceph integration along with screenshots at the end of each of the sections. Key points are highligtedin bold

Integrating Ceph (multinodes) with openstack (using VM's)

A four node (four VM cluster) for ceph and openstack (one VM) . The ceph cluster VM nodes are ceph admin (referred as ubuntuadmin hostname, VM1), ceph Monitor (referred as ubuntumonnode1 hostname, VM2), ceph OSD0 (referred as ubuntuosd0node2, VM3) and ceph osd1(referred as ubuntuosd1mode3, VM4) and openstack is referred as openstack node, VM5

A cephclient node is separately used as another VM to test filesystem and blockstorage initially. Later openstack becomes the client for ceph in integration.

Entries of hosts, and other key configuration files at each node

(Note : Detailed installation instructions and integration instructions along with screenshots are given after this section)

Ubuntu admin (VM1) node key files entries (used as cephadmin)

(a) /etc/hosts entries

127.0.0.1 localhost

127.0.1.1 ubuntuadmin

192.168.80.154 ubuntumonnode1

192.168.80.155 ubuntuosd0node2

192.168.80.156 ubuntuosd1node3

192.168.80.157 cephclient (ceph client is used initially to test ceph installation then replaced with openstack node)

192.168.80.164 openstack

192.168.80.165 ubuntuadminip (ip address of Ubuntu admin given as separate host entry)

(b) .ssh/config entries

```
Host ubuntumonnode1
  Hostname ubuntumonnode1
  User cephuser
Host ubuntuosd0node2
  Hostname ubuntuosd0node2
  User cephuser
Host ubuntuosd1node3
  Hostname ubuntuosd1node3
```

User cephuser

Host cephclient

Hostname cephclient

User cephclient

Host openstack

Hostname openstack

(c)

/etc/ceph.conf

[global]

fsid = 0e7fd6ed-ccc6-4dfa-b7a3-58081b86e506

mon_initial_members = ubuntumonnode1

mon_host = 192.168.80.154

auth_cluster_required = cephx

auth_service_required = cephx

auth_client_required = cephx

filestore_xattr_use_omap = true

osd_pool_default_size = 2

Ubuntumonnode1 (VM2)

/etc/hosts entries

127.0.0.1 localhost

192.168.80.154 ubuntumonnode1

192.168.80.164 openstack

Ubuntuosd0node2 (VM3) , ubuntuosd1node3 (VM4)

/etc/hosts

127.0.0.1 localhost

192.168.80.155 ubuntuosd0node2 same for osd1node3

Openstack node (VM5)

/etc/hosts entries

127.0.0.1 localhost

192.168.80.164 openstack

192.168.80.165 ubuntuadminip

192.168.80.154 ubuntumonnode1

192.168.80.155 ubuntuosd0node2

192.168.80.156 ubuntuosd1node3

Cinder.conf entries in openstack node (in /etc/cinder folder)

[keystone_authtoken]

signing_dir = /var/cache/cinder

admin_password = iiit123

admin_user = cinder

admin_tenant_name = service

auth_uri = http://192.168.80.164:5000/v2.0

cafile = /opt/stack/data/ca-bundle.pem

identity_uri = http://192.168.80.164:35357

auth_protocol = http

auth_port = 35357

auth_host = 192.168.80.164

[DEFAULT]

glance_api_servers = http://192.168.80.164:9292

osapi_volume_workers = 2

logging_exception_prefix = %(color)s%(asctime)s.%(msecs)03d TRACE %(name)s ^[[01;35m%(instance)s^[[00m

logging_debug_format_suffix = ^[[00;33mfrom (pid=%(process)d) %(funcName)s %(pathname)s:%(lineno)d^[[00m

logging_default_format_string = %(asctime)s.%(msecs)03d %(color)s%(levelname)s %(name)s [^[[00;36m-%(color)s] ^[[01;35m%(instance)s%(color)s%(message)s^[[00m

logging_context_format_string = %(asctime)s.%(msecs)03d %(color)s%(levelname)s %(name)s [^[[01;36m%(request_id)s ^[[00;36m%(user_id)s %(project_id)s%(color)s] ^[[01;35m%(instance)s%(color)s%(message)s^[[00m

rabbit_password = iiit123

rabbit_hosts = 192.168.80.164

rpc_backend = cinder.openstack.common.rpc.impl_kombu

#default_volume_type = lvmdriver-1

enabled_backends = lvmdriver-1

enabled_backends +=ceph #added

enable_v1_api = true

periodic_interval = 60

lock_path = /opt/stack/data/cinder

state_path = /opt/stack/data/cinder

osapi_volume_extension = cinder.api.contrib.standard_extensions

rootwrap_config = /etc/cinder/rootwrap.conf

api_paste_config = /etc/cinder/api-paste.ini

sql_connection = mysql://root:iiit123@127.0.0.1/cinder?charset=utf8

iscsi_helper = tgtadm

my_ip = 192.168.80.164

verbose = True

debug = True

auth_strategy = keystone

#entries added start here , comment the default lvm and keep the lvm driver in the end

volume_driver=cinder.volume.drivers.rbd.RBDDriver

rbd_pool=volumes

rbd_ceph_conf=/etc/ceph/ceph.conf

rbd_flatten_volume_from_snapshot=false

rbd_max_clone_depth=5

rbd_store_chunk_size=4

rados_connect_timeout=-1

glance_api_version=2

rbd_user=cinder

rbd_secret_uuid=27c1d318-8b12-4fb1-9d71-a48c77e5661d

#entries adeded end here

[lvmdriver-1]

volume_group = stack-volumes-lvmdriver-1

volume_driver = cinder.volume.drivers.lvm.LVMISCSIDriver

volume_backend_name = lvmdriver-1

nova.conf entries (in openstack node /etc/nova folder:Note check the ip address in URL's it should not refer to the loopback)

[DEFAULT]

flat_interface = eth0

flat_network_bridge = br100

vlan_interface = eth0

public_interface = br100

network_manager = nova.network.manager.FlatDHCPManager

firewall_driver = nova.virt.libvirt.firewall.IptablesFirewallDriver

compute_driver = libvirt.LibvirtDriver

default_ephemeral_format = ext4

metadata_workers = 2

ec2_workers = 2

osapi_compute_workers = 2

rabbit_password = iiit123

rabbit_hosts = 192.168.80.164

rpc_backend = nova.openstack.common.rpc.impl_kombu

keystone_ec2_url = http://192.168.80.164:5000/v2.0/ec2tokens

ec2_dmz_host = 192.168.80.164

vncserver_proxyclient_address = 127.0.0.1

vncserver_listen = 127.0.0.1

#vncserver_proxyclient_address = 192.168.80.164

#vncserver_listen = 192.168.80.164

vnc_enabled = true

xvpvncproxy_base_url = http://192.168.80.164:6081/console

novncproxy_base_url = http://192.168.80.164:6080/vnc_auto.html

logging_exception_prefix = %(color)s%(asctime)s.%(msecs)03d TRACE %(name)s ^[[01;35m%(instance)s^[[00m

logging_debug_format_suffix = ^[[00;33mfrom (pid=%(process)d) %(funcName)s %(pathname)s:%(lineno)d^[[00m

logging_default_format_string = %(asctime)s.%(msecs)03d %(color)s%(levelname)s %(name)s [^[[00;36m-%(color)s] ^[[01;35m%(instance)s%(color)s%(message)s^[[00m

logging_context_format_string = %(asctime)s.%(msecs)03d %(color)s%(levelname)s %(name)s [^[[01;36m%(request_id)s ^[[00;36m%(user_name)s %(project_name)s%(color)s] ^[[01;35m%(instance)s%(color)s%(message)s^[[00m

force_config_drive = always

instances_path = /opt/stack/data/nova/instances

lock_path = /opt/stack/data/nova

state_path = /opt/stack/data/nova

enabled_apis = ec2,osapi_compute,metadata

instance_name_template = instance-%08x

sql_connection = mysql://root:iiit123@127.0.0.1/nova?charset=utf8

#sql_connection = mysql://root:iiit123@192.168.80.164/nova?charset=utf8

my_ip = 192.168.80.164

s3_port = 3333

s3_host = 192.168.80.164

default_floating_pool = public

force_dhcp_release = True

dhcpbridge_flagfile = /etc/nova/nova.conf

scheduler_driver = nova.scheduler.filter_scheduler.FilterScheduler

rootwrap_config = /etc/nova/rootwrap.conf

api_paste_config = /etc/nova/api-paste.ini

allow_migrate_to_same_host = True

allow_resize_to_same_host = True

debug = True

verbose = True

[osapi_v3]

enabled = True

[keystone_authtoken]

signing_dir = /var/cache/nova

admin_password = iiit123

admin_user = nova

admin_tenant_name = service

auth_uri = http://192.168.80.164:5000/v2.0

cafile = /opt/stack/data/ca-bundle.pem

identity_uri = http://192.168.80.164:35357

auth_protocol = http

auth_port = 35357

auth_host = 192.168.80.164

[spice]

enabled = false

html5proxy_base_url = http://192.168.80.164:6082/spice_auto.html

[glance]

api_servers = http://192.168.80.164:9292

[libvirt]

#inject_partition = -2 (I had to move this entry down , otherwise it was not working)

live_migration_uri = qemu+ssh://iiit@%s/system

use_usb_tablet = False

cpu_mode = none

virt_type = qemu

images_type=rbd (entries added start)

images_rbd_pool=vms

images_rbd_ceph_conf=/etc/ceph/ceph.conf

rbd_user=cinder

rbd_secret_uuid=27c1d318-8b12-4fb1-9d71-a48c77e5661d

inject_password=false

inject_key=false

inject_partition=-2 #this entry needs to be moved down

live_migration_flag="VIR_MIGRATE_UNDEFINE_SOURCE,VIR_MIGRATE_PEER2PEER,VIR_MIGRATE_LIVE,VIR_MIGRATE_PERSIST_DEST" #(entries added end)

[keymgr]

fixed_key = 8dd6dbe0117941ad3bacb2bfa21758c2e2423638875db232e9f544aabceee71b

glance-api.conf entries (in openstack node /etc/glance folder)

This is a huge file. Hence only pasting entries relevant :

[glance_store] #Note this parameter has given me lot of problem , it does not work as per documentation, there is a bug and I had to change this entry to rbd

#stores = glance.store.filesystem.Store,

stores =rbd

rbd_store_user=glance

rbd_store_pool=images

show_image_direct_url=True

Ceph cluster installation

On admin node run the following commands for installing ceph-deploy:

```
(1)wget -q -O-
'https://ceph.com/git/?p=ceph.git;a=blob_plain;f=keys
/release.asc' | sudo apt-key add -

(2)echo deb http://ceph.com/debian-giant/
$(lsb_release -sc) main | sudo tee
/etc/apt/sources.list.d/ceph.list (Note : we have
installed giant version, if firefly is installed it
can be replaced by firefly)

(3) sudo apt-get update && sudo apt-get install ceph-
deploy

(4) Add ceph user thru : sudo useradd -d /home/iiit -
m iiit (In our case the user name is IIIT) and set
password through sudo passwd iiit

(5) echo "iiit ALL = (root) NOPASSWD:ALL" | sudo tee
/etc/sudoers.d/iiit
```

```
sudo chmod 0440 /etc/sudoers.d/iiit (to give sudo
permissions)
```

Note : Before starting the installation of ceph basic configurations need to be done between the nodes to enable direct SSH access from admin node (VM1) to all remaining nodes (VM2 to VM5 and ceph client VM). For this SSH (openssh) needs to be installed in all VMs and the preflight checks section of official ceph documentation ceph.com can be used. This has steps for SSH- keygen and ssh-copy-id on the admin node and enabling permissions on the file.

For our installation we have generated keys on the ubuntuadmin node and copied to ubuntumonnode1, ubuntuosd0node2 , ubuntuosd1node3, openstack and cephclient hosts (VM's). Similarly the NTP software also needs to be installed. This can be tested for example by doing ssh login without password. Ex: on ubuntuadmin node ssh iiit@ubuntumonnode1 where iiit is the user name.

After the preflight on the admin node make a directory by name my-cluster and do cd my-cluster, in my-cluster run

```
(1) ceph-deploy new ubuntuadmin

(2) In the same directory add an entry in the
    ceph.conf file in the [global] section the
    entry is <<osd pool default size = 2>>

(3) Install ceph on all the nodes by the command
```

```
ceph-deploy install ubuntuadmin ubuntumonnode1
ubuntuosd0node2 ubuntuosd1node3
```

Log snippet (brief extract): [ubuntuosd0node2][DEBUG] Get:21 http://ceph.com/debian-firefly/ trusty/main ceph amd64 0.80.7-1trusty [5,538 kB] ……..

[ubuntuosd1node3][DEBUG] ceph version 0.80.7 (6c0127fcb58008793d3c8b62d925bc91963672a3)

Ensure that the below command is run for permissions :

```
sudo chmod +r /etc/ceph/ceph.client.admin.keyring
```

(2) Ceph Monitor creation (on ubuntuadmin node)

(a) iiit@ubuntu:~/my-cluster$ ceph-deploy mon create-initial

Log snippet : [ceph_deploy.cli][INFO] Invoked (1.5.20): /usr/bin/ceph-deploy mon create-initial

[ceph_deploy.mon][DEBUG] Deploying mon, cluster ceph hosts ubuntumonnode1

[ubuntumonnode1][INFO] monitor: mon.ubuntumonnode1 is running

(b) run the below command

```
ceph-deploy gatherkeys ubuntumonnode1
```

iiit@ubuntu:~/my-cluster$ ls

ceph.bootstrap-mds.keyring ceph.bootstrap-osd.keyring ceph.client.admin.keyring ceph.conf ceph.log ceph.mon.keyring release.asc

(3) OSD creation

(1) $ sudo mkdir /var/local/osd0 #in ubuntuosd0node2

(2) $ sudo mkdir /var/local/osd1 #execute in ubuntuosd1node3

Connection to ubuntuosd1node3 closed.

In ubuntuadmin node run the following commands :

(1) iiit@ubuntu:~/my-cluster$ ceph-deploy osd prepare ubuntuosd0node2:/var/local/osd0 ubuntuosd1node3:/var/local/osd1

Log snippet : [ubuntumonnode1][INFO] Running command: sudo initctl emit ceph-mds cluster=ceph id=ubuntumonnode1

(2)run the command

```
ceph-deploy osd activate
ubuntuosd0node2:/var/local/osd0
ubuntuosd1node3:/var/local/osd1
```

```
(3 ) ceph-deploy admin admin-node ubuntumonnode1
ubuntuosd0node2 ubuntuosd1node3

(4) sudo chmod +r /etc/ceph/ceph.client.admin.keyring
```

iiit@ubuntu:~/my-cluster$ ceph health

HEALTH_OK

Adding a meta data server to monitor node

Execute the following command in ubuntuadmin node :

```
ceph-deploy mds create ubuntumonnode1
```

Testing ceph cluster

On ubuntuadmin node

iiit@ubuntu:~/my-cluster$ rados put testobject1 /home/iiit/my-cluster/testfile.txt --pool=data

iiit@ubuntu:~/my-cluster$ rados -p data ls

testobject1

iiit@ubuntu:~/my-cluster$ ceph osd map data testobject1

osdmap e9 pool 'data' (0) object 'testobject1' -> pg 0.4da216cd (0.d) -> up ([0,1], p0) acting ([0,1], p0)

Deploying ceph admin in a new VM node called as ceph client and testing file system storage (foo is the name)

For testing a separate VM or node called cephclient (hostname) is created and after ssh key sharing with admin following commands are run from ubuntuadmin node to setup cephclient node:

```
(1) ceph-deploy install cephclient

(2) ceph-deploy admin cephclient
```

on ceph client run the command

```
sudo chmod + r /etc/ceph/ceph.client.admin.keyring
```

on cephclient run the following commands :

iiit@ubuntu:~$ rbd create foo --size 4096

iiit@ubuntu:~$ sudo rbd map foo --pool rbd --name client.admin

iiit@ubuntu:~$ sudo mkfs.ext4 -m0 /dev/rbd/rbd/foo

```
mke2fs 1.42.9 (4-Feb-2014)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=1024 blocks, Stripe width=1024 blocks
262144 inodes, 1048576 blocks
0 blocks (0.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=1073741824
32 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks):
32768
done
Writing superblocks and filesystem accounting information: done
 ceph status
   cluster 0e7fd6ed-ccc6-4dfa-b7a3-58081b86e506
    health HEALTH_OK
    monmap e1: 1 mons at {ubuntumonnode1=192.168.80.154:6789/0}, election epoch 2, quorum 0
ubuntumonnode1
    mdsmap e4: 1/1/1 up {0=ubuntumonnode1=up:active}
    osdmap e9: 2 osds: 2 up, 2 in
     pgmap v187: 192 pgs, 3 pools, 197 MB data, 82 objects
          18358 MB used, 36842 MB / 58202 MB avail
```

192 active+clean

iiit@ubuntu:/mnt/ceph-block-device$ rbd --image foo info

rbd image 'foo':

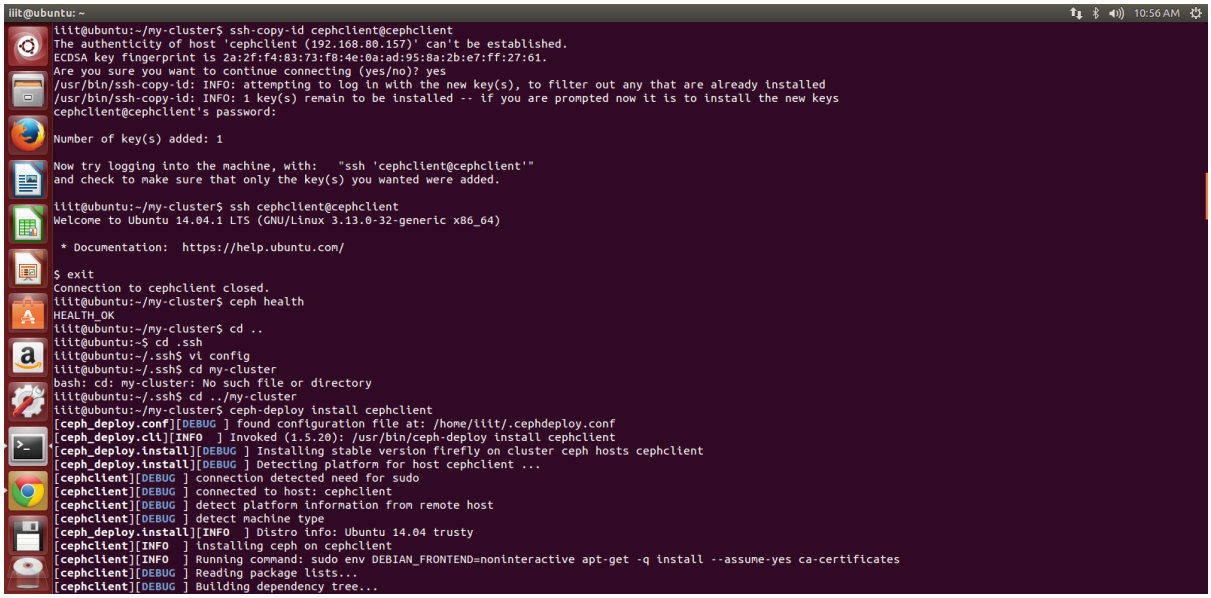
size 4096 MB in 1024 objects

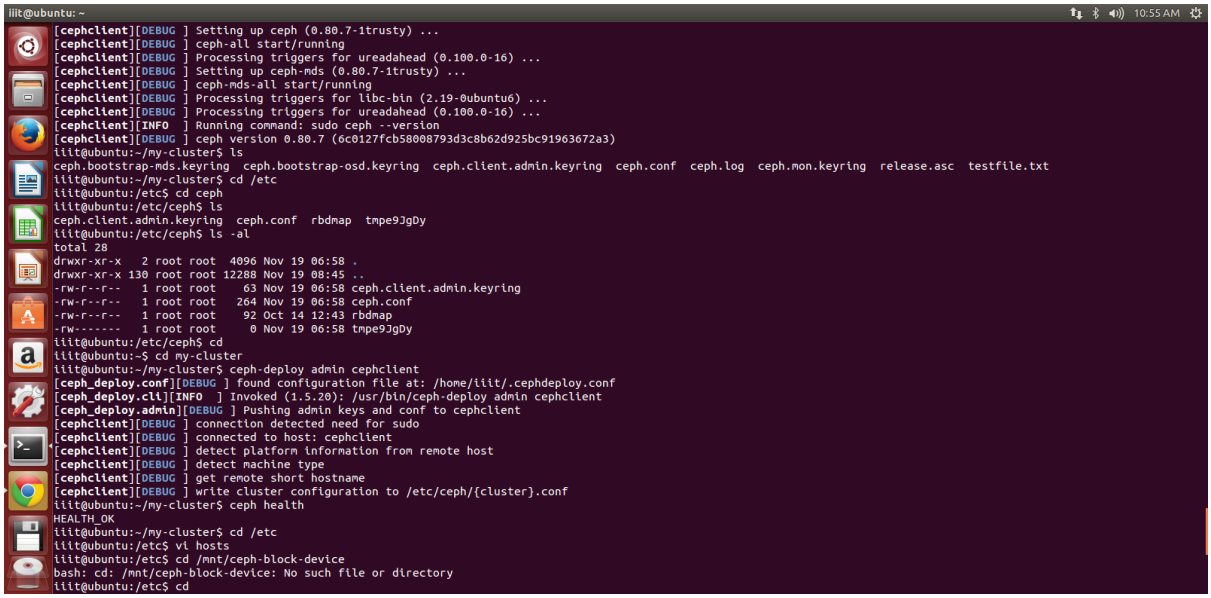
order 22 (4096 kB objects)

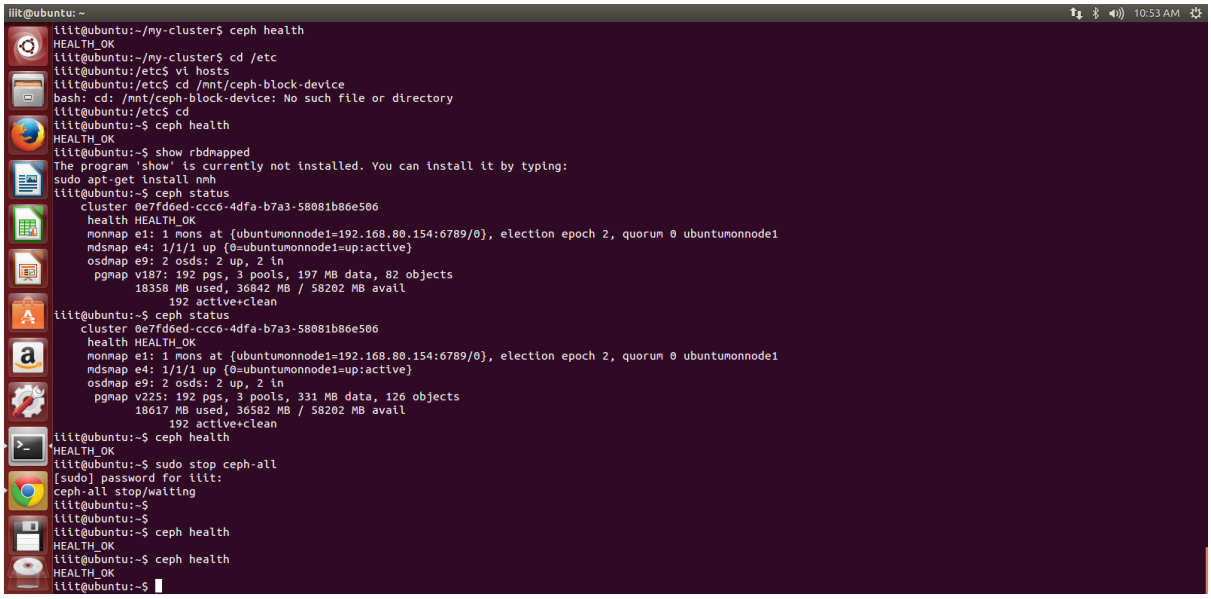
block_name_prefix: rb.0.1018.2ae8944a

format: 1

Few screenshots for ceph installation







OPenstack+Ceph Integration

Installing cephon openstack :

following commands are run from ubuntuadmin node to setup openstack node which will now act as a client to ceph:

```
(1) ceph-deploy install openstack

(2) ceph-deploy admin openstack
```

on ceph client run the command

```
sudo chmod + r /etc/ceph/ceph.client.admin.keyring
```

On Openstack node :

iiit@openstack:~$ ceph osd pool create volumes 128

pool 'volumes' created

iiit@openstack:~$ ceph osd pool create images 128

pool 'images' created

iiit@openstack:~$ ceph osd pool create backups 128

pool 'backups' created

iiit@openstack:~$ ceph osd pool create vms 128

pool 'vms' created

iiit@openstack:~$ ceph auth get-or-create client.cinder mon 'allow r' osd 'allow class-read object_prefix rbd_children, allow rwx pool=volumes, allow rwx pool=vms, allow rx pool=images'

[client.cinder]

key = AQBNpHRUcDYtCRAAponC/ugRfpWUTiyMaCYK4w==

iiit@openstack:~$ ceph auth get-or-create client.glance mon 'allow r' osd 'allow class-read object_prefix rbd_children, allow rwx pool=images'

[client.glance]

key = AQBopHRUmBfBBxAAkvU51b79PcByhDpMLt0I0w==

iiit@openstack:~$ ceph auth get-or-create client.cinder-backup mon 'allow r' osd 'allow class-read object_prefix rbd_children, allow rwx pool=backups'

[client.cinder-backup]

key = AQB9pHRUyJheLBAAA1nisXN9xoHXlmFlNVqdZQ==

iiit@openstack:~$ ceph auth get-or-create client.glance |sudo tee /etc/ceph/ceph.client.glance.keyring

[client.glance]

key = AQBopHRUmBfBBxAAkvU51b79PcByhDpMLt0I0w==

iiit@openstack:~$ ceph auth get-or-create client.cinder | sudo tee /etc/ceph/ceph.client.cinder.keyring

[client.cinder]

key = AQBNpHRUcDYtCRAAponC/ugRfpWUTiyMaCYK4w==

iiit@openstack:~$ ceph auth get-or-create client.cinder-backup | sudo tee /etc/ceph/ceph.client.cinder-backup.keyring

[client.cinder-backup]

key = AQB9pHRUyJheLBAAA1nisXN9xoHXlmFlNVqdZQ==

iiit@openstack:~$ ceph auth get-key client.cinder | tee client.cinder.key

AQBNpHRUcDYtCRAAponC/ugRfpWUTiyMaCYK4w==

iiit@openstack:~$ uuidgen

27c1d318-8b12-4fb1-9d71-a48c77e5661d #note this is the UUID we have generated

iiit@openstack:~$ cat > secret.xml <<EOF

> <secret ephemeral='no' private='no'>

> <uuid>27c1d318-8b12-4fb1-9d71-a48c77e5661d</uuid>

> <usage type='ceph'>

> <name>client.cinder secret</name>

> </usage>

> </secret>

> EOF

iiit@openstack:~$ sudo virsh secret-define --file secret.xml

Secret 27c1d318-8b12-4fb1-9d71-a48c77e5661d created

iiit@openstack:~$ sudo virsh secret-set-value --secret 27c1d318-8b12-4fb1-9d71-a48c77e5661d --base64 $(cat client.cinder.key) && rm client.cinder.key secret.xml

Secret value set

Sharing of the key rings from ceph to openstack where all cinder etc are installed in the same node

Execute : ceph auth get-or-create client.glance |sudo tee /etc/ceph/ceph.client.glance.keyring

Execute : ceph auth get-or-create client.cinder | sudo tee /etc/ceph/ceph.client.cinder.keyring

Execute : ceph auth get-or-create client.cinder-backup | sudo tee /etc/ceph/ceph.client.cinder-backup.keyring

Execute : ceph auth get-key client.cinder | tee client.cinder.key

Restarting services of openstack

1. cd to devstack home

2. run ./rejoin-stack

3. find the nova-api service by press crl+a +" then select the nova-api eg: n-api then press enter key

4. kill the nova-service by crl+ c then press up arrow key to find the command to start the nova api and press enter, you will see the nova-api service restarted. Similary do for cinder and glance services

Go to openstack horizon and from security/ user groups download the security configuration file called and source the file in the /home/iiit

For example : source openrc admin admin

Creating cinder volume

Execute : (all the options are not required if openrc file is sourced)

sudo cinder --os-username admin --os-password iiit123 --os-tenant-id 5b52f28b3a56494bbe68378d30009902 create --image-id 555 --display-name cephtestvolume 1

Notice : volume type is none instead of lvmdriver-1 which is default

Property	Value
attachments	[]
availability_zone	nova
bootable	false
consistencygroup_id	None
created_at	2014-11-26T19:36:50.000000
description	first cinder volume on ceph backend
encrypted	False
id	dc4597dc-9f19-4682-ad5c-d26b77d203d6
metadata	{}
name	cinder-ceph-vol1
os-vol-host-attr:host	None
os-vol-mig-status-attr:migstat	None
os-vol-mig-status-attr:name_id	None
os-vol-tenant-attr:tenant_id	5b52f28b3a56494bbe68378d30009902
os-volume-replication:driver_data	None
os-volume-replication:extended_status	None
replication_status	disabled
size	1
snapshot_id	None
source_volid	None
status	creating
user_id	3e85389555bd48808b061b2b733ca351
volume_type	None

iiit@openstack:/etc/cinder$ cinder create 1 #another volume creation

```
+---------------------+--------------------------------------+
|      Property       |                Value                 |
+---------------------+--------------------------------------+
|     attachments     |                  []                  |
|  availability_zone  |                 nova                 |
|      bootable       |                false                 |
|     created_at      |      2014-11-28T17:00:40.308873      |
| display_description |                 None                 |
|     display_name    |                 None                 |
|      encrypted      |                False                 |
|          id         | 34a0bb7b-4295-49a1-9cdd-3ad949fc86db |
|      metadata       |                  {}                  |
|         size        |                  1                   |
|     snapshot_id     |                 None                 |
|     source_volid    |                 None                 |
|        status       |               creating               |
|     volume_type     |                 None                 |
+---------------------+--------------------------------------+
```

iiit@openstack:/etc/cinder$ cinder list

```
+--------------------------------------+-----------+-----------------+------+-------------+----------+-------------+
|                  ID                  |   Status  |   Display Name  | Size | Volume Type | Bootable | Attached to |
+--------------------------------------+-----------+-----------------+------+-------------+----------+-------------+
| 029c23eb-b74c-4cb1-8bba-b28c49a78b05 |   error   |       None      |  1   | lvmdriver-1 |  false   |             |
| 34a0bb7b-4295-49a1-9cdd-3ad949fc86db |  creating |       None      |  1   |     None    |  false   |             |
```

iiit@openstack:~$ nova volume-list

```
+--------------------------------------+-----------+-----------------+------+-------------+-------------+
| ID                                   | Status    | Display Name    | Size | Volume Type | Attached to |
+--------------------------------------+-----------+-----------------+------+-------------+-------------+
```

| 5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c | available | nova-vol_ceph | 1 | - | |

| 973246fe-c719-4f06-985c-420631eeb456 | creating | nova-vol_1 | 1 | - | |

| 34a0bb7b-4295-49a1-9cdd-3ad949fc86db | creating | - | 1 | - | |

| 94ea7669-4b07-4b33-8680-3012db1eeefb | deleting | cephtest2volume | 1 | lvmdriver-1 |
|

| 5a6683c3-735b-41b2-975d-61114657028c | deleting | - | 1 | lvmdriver-1 | |

| 746e5b0e-a270-4039-8631-4ddbbbb2febf | deleting | cephtestvolume | 1 | lvmdriver-1 |
|

<u>Creation of cinder volumes and attaching to nova</u>

iiit@openstack:~$ cinder create --display-name cinder-ceph-vol1 --display-description "cinder-vol_ceph" 1

+---------------------+--------------------------------------+

| Property | Value |

+---------------------+--------------------------------------+

| attachments | [] |

| availability_zone | nova |

| bootable | false |

| created_at | 2014-11-29T03:17:50.964491 |

| display_description | cinder-vol_ceph |

| display_name | cinder-ceph-vol1 |

| encrypted | False |

| id | 0169de96-6314-4d76-8868-3cc129832cfc |

| metadata | {} |

| size | 1 |

| snapshot_id | None |

| source_volid | None |

| status | creating |

| volume_type | None |

+---------------------+--------------------------------------+

iiit@openstack:~$ cinder list

+--------------------------------------+-----------+-----------------+------+-------------+----------+-------------+

| ID | Status | Display Name | Size | Volume Type | Bootable | Attached to |

+--------------------------------------+-----------+-----------------+------+-------------+----------+-------------+

| 0169de96-6314-4d76-8868-3cc129832cfc | available | cinder-ceph-vol1 | 1 | None | false |
|

| 34a0bb7b-4295-49a1-9cdd-3ad949fc86db | creating | None | 1 | None | false |
|

| 5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c | available | nova-vol_ceph | 1 | None | false |
|

| 5a6683c3-735b-41b2-975d-61114657028c | deleting | None | 1 | lvmdriver-1 | false |
|

| 746e5b0e-a270-4039-8631-4ddbbbb2febf | deleting | cephtestvolume | 1 | lvmdriver-1 | false
| |

| 94ea7669-4b07-4b33-8680-3012db1eeefb | deleting | cephtest2volume | 1 | lvmdriver-1 |
false | |

| 973246fe-c719-4f06-985c-420631eeb456 | creating | nova-vol_1 | 1 | None | false |
|

+--------------------------------------+-----------+-----------------+------+-------------+----------+-------------+

iiit@openstack:~$ nova volume-attach 5c721104-d79e-42bd-aa4e-1e9347dbaa0c 5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c

+----------+--------------------------------------+

| Property | Value |

+----------+--------------------------------------+

| device | /dev/vdb |

| id | 5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c |

| serverId | 5c721104-d79e-42bd-aa4e-1e9347dbaa0c |

| volumeId | 5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c |

iiit@openstack:~$ virsh attach-device instance-0000000a disk.xml

Device attached successfully

iiit@openstack:~$ rbd -p images ls

62fba1d1-0c7f-4b33-b60f-3fde922b3eb8

Creating a glance image and from there adding to a cinder volume and attaching to NOVA as a bootable volume

After downloading any image from ubuntusite Go to openstack horizon and add the image using glance as RAW image

Afterwards:

In horizon add a cinder volume associating the image as RAW image

Then execute the following to attach to NOVA instance as a bootable volume

iiit@openstack:~$ nova boot --flavor 2 --image a3fe8000-01ce-413b-991d-cb325c637fcb --block_device_mapping vda=47fffd48-564f-42bc-8e7c-12f49e0c7fde::0 --security_groups=default NovaInstanceFromVolume

Property	Value
OS-DCF:diskConfig	MANUAL
OS-EXT-AZ:availability_zone	nova
OS-EXT-SRV-ATTR:host	-
OS-EXT-SRV-ATTR:hypervisor_hostname	-
OS-EXT-SRV-ATTR:instance_name	instance-0000000c
OS-EXT-STS:power_state	0
OS-EXT-STS:task_state	scheduling
OS-EXT-STS:vm_state	building
OS-SRV-USG:launched_at	-
OS-SRV-USG:terminated_at	-
accessIPv4	
accessIPv6	
adminPass	Y7Qmd2uaBMYb
config_drive	
created	2014-11-29T08:03:09Z
flavor	m1.small (2)

| hostId | |

| id | 78c19461-5377-457c-a5b1-e3e941864dcd |

| image | glancebootimage1 (a3fe8000-01ce-413b-991d-cb325c637fcb) |

| key_name | - |

| metadata | {} |

| name | NovaInstanceFromVolume |

| os-extended-volumes:volumes_attached | [] |

| progress | 0 |

| security_groups | default |

| status | BUILD |

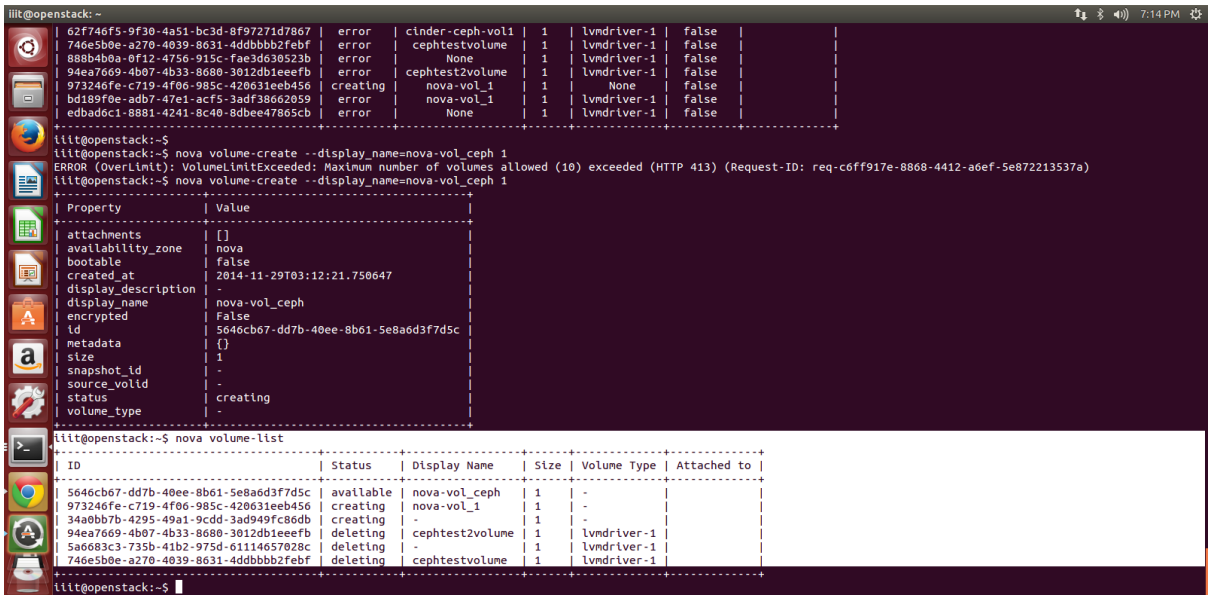
| tenant_id | 5b52f28b3a56494bbe68378d30009902 |

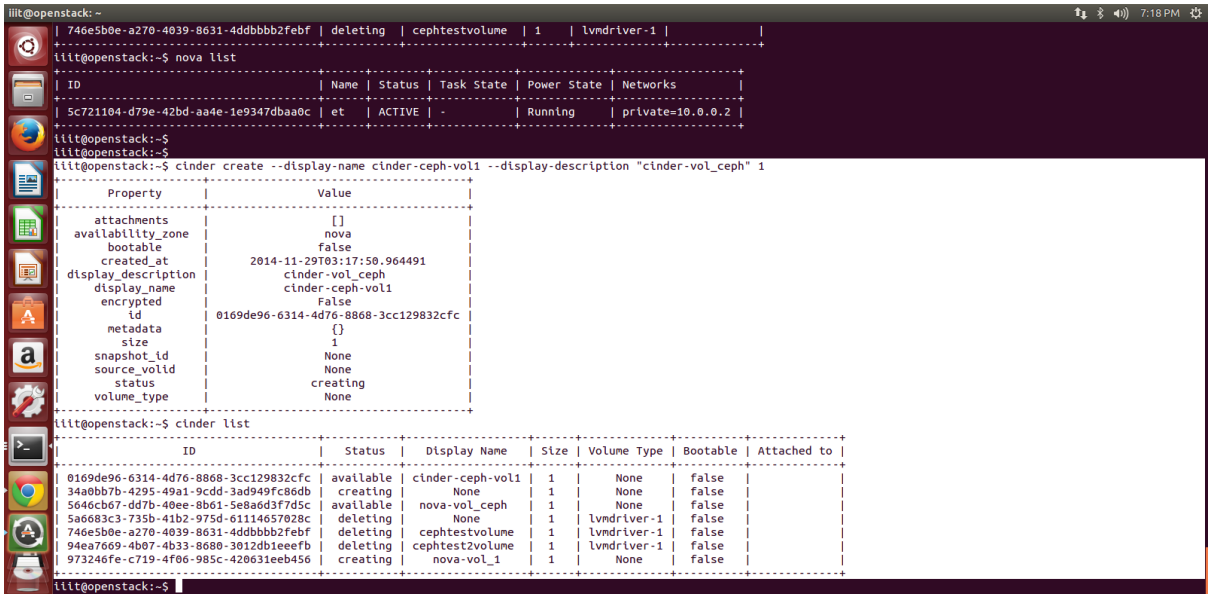
| updated | 2014-11-29T08:03:39Z |

| user_id | 3e85389555bd48808b061b2b733ca351 |

+--------------------------------------+--+

Few screenshots for OPENstack + CEPH Integtation





iiit@openstack:~$ nova volume-attach 5c721104-d79e-42bd-aa4e-1e9347dbaa0c 5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c

+----------+--------------------------------------+

| Property | Value |

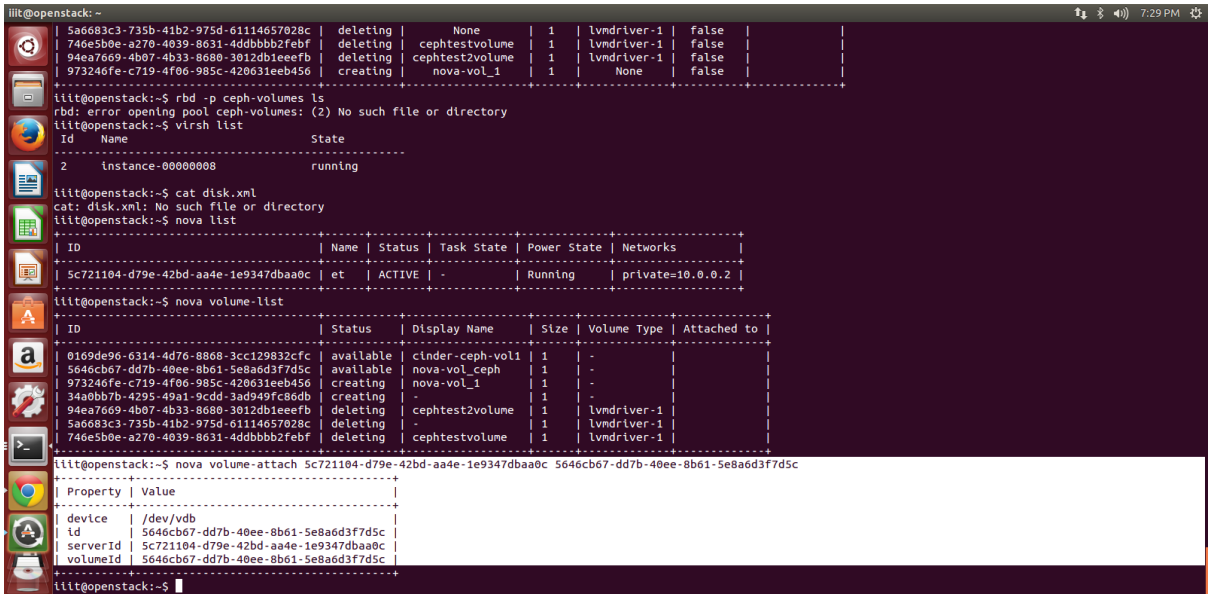
+----------+--------------------------------------+

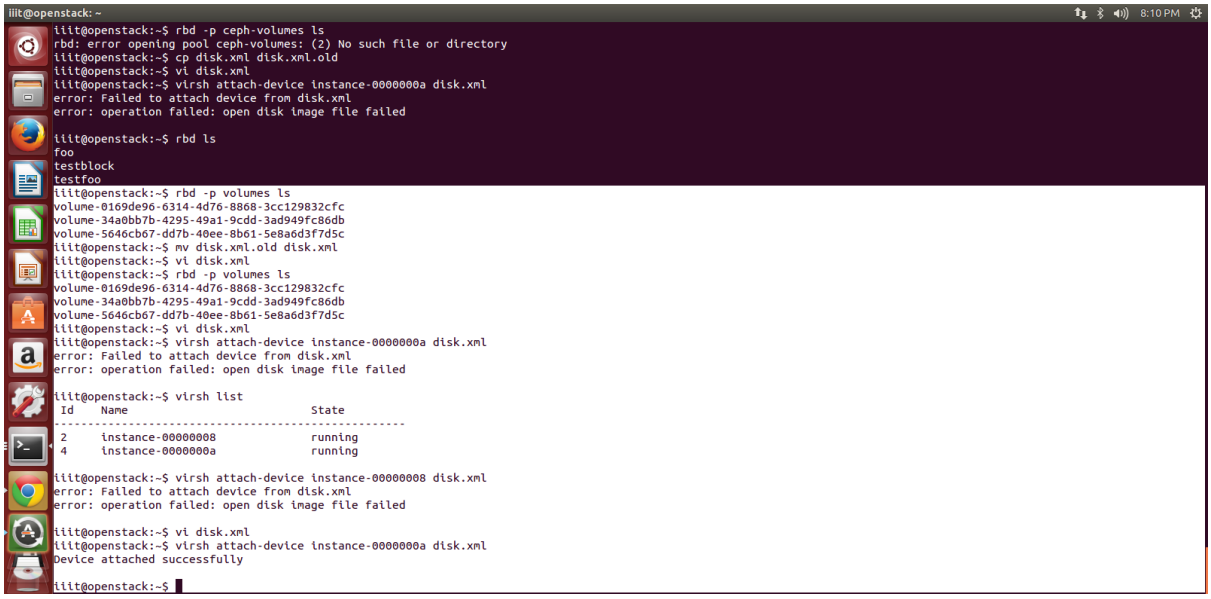
| device | /dev/vdb |

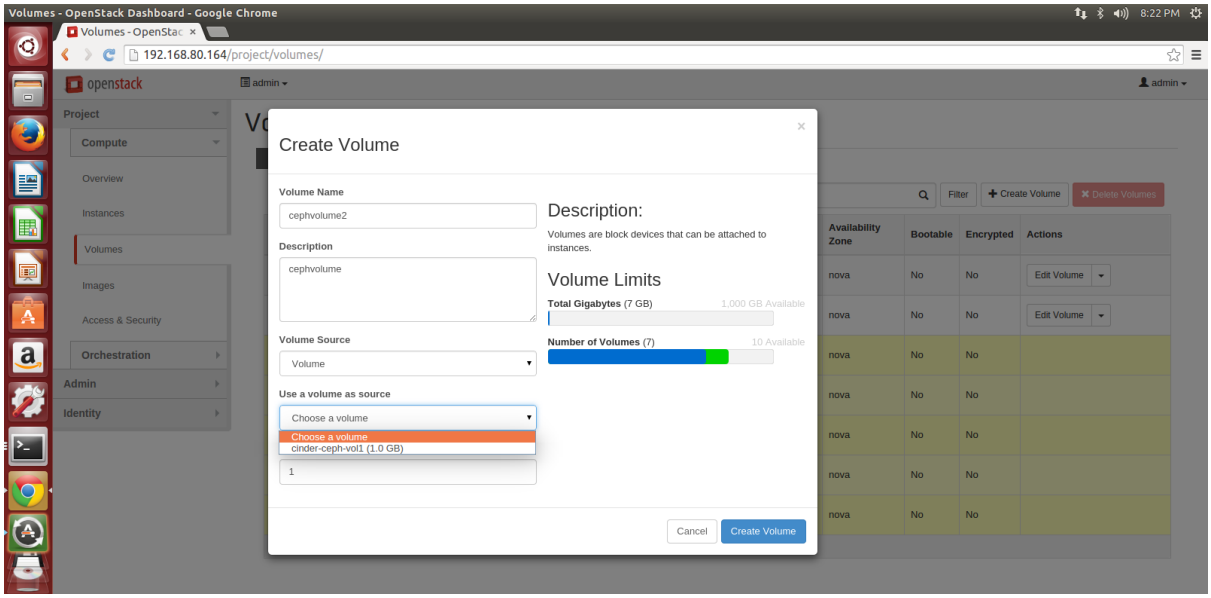
| id | 5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c |

| serverId | 5c721104-d79e-42bd-aa4e-1e9347dbaa0c |

| volumeId | 5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c |


iiit@openstack: ~
7:29 PM
5a6683c3-735b-41b2-975d-61114657028c	deleting	None	1	lvmdriver-1	false
746e5b0e-a270-4039-8631-4ddbbbb2febf	deleting	cephtestvolume	1	lvmdriver-1	false
94ea7669-4b07-4b33-8680-3012db1eeefb	deleting	cephtest2volume	1	lvmdriver-1	false
973246fe-c719-4f06-985c-420631eeb456	creating	nova-vol_1	1	None	false
iiit@openstack:~$ rbd -p ceph-volumes ls
rbd: error opening pool ceph-volumes: (2) No such file or directory
iiit@openstack:~$ virsh list
Id Name State
2 instance-00000008 running
iiit@openstack:~$ cat disk.xml
cat: disk.xml: No such file or directory
iiit@openstack:~$ nova list
ID	Name	Status	Task State	Power State	Networks
5c721104-d79e-42bd-aa4e-1e9347dbaa0c	et	ACTIVE	-	Running	private=10.0.0.2
iiit@openstack:~$ nova volume-list
ID	Status	Display Name	Size	Volume Type	Attached to
0169de96-6314-4d76-8868-3cc129832cfc	available	cinder-ceph-vol1	1	-	
5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c	available	nova-vol_ceph	1	-	
973246fe-c719-4f06-985c-420631eeb456	creating	nova-vol_1	1	-	
34a0bb7b-4295-49a1-9cdd-3ad949fc86db	creating	-	1	-	
94ea7669-4b07-4b33-8680-3012db1eeefb	deleting	cephtest2volume	1	lvmdriver-1	
5a6683c3-735b-41b2-975d-61114657028c	deleting	-	1	lvmdriver-1	
746e5b0e-a270-4039-8631-4ddbbbb2febf	deleting	cephtestvolume	1	lvmdriver-1
iiit@openstack:~$ nova volume-attach 5c721104-d79e-42bd-aa4e-1e9347dbaa0c 5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c
Property	Value
device	/dev/vdb
id	5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c
serverId	5c721104-d79e-42bd-aa4e-1e9347dbaa0c
volumeId	5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c
iiit@openstack:~$


iiit@openstack: ~
8:10 PM
iiit@openstack:~$ rbd -p ceph-volumes ls
rbd: error opening pool ceph-volumes: (2) No such file or directory
iiit@openstack:~$ cp disk.xml disk.xml.old
iiit@openstack:~$ vi disk.xml
iiit@openstack:~$ virsh attach-device instance-0000000a disk.xml
error: Failed to attach device from disk.xml
error: operation failed: open disk image file failed
iiit@openstack:~$ rbd ls
foo
testblock
testfoo
iiit@openstack:~$ rbd -p volumes ls
volume-0169de96-6314-4d76-8868-3cc129832cfc
volume-34a0bb7b-4295-49a1-9cdd-3ad949fc86db
volume-5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c
iiit@openstack:~$ mv disk.xml.old disk.xml
iiit@openstack:~$ vi disk.xml
iiit@openstack:~$ rbd -p volumes ls
volume-0169de96-6314-4d76-8868-3cc129832cfc
volume-34a0bb7b-4295-49a1-9cdd-3ad949fc86db
volume-5646cb67-dd7b-40ee-8b61-5e8a6d3f7d5c
iiit@openstack:~$ vi disk.xml
iiit@openstack:~$ virsh attach-device instance-0000000a disk.xml
error: Failed to attach device from disk.xml
error: operation failed: open disk image file failed
iiit@openstack:~$ virsh list
Id Name State
2 instance-00000008 running
4 instance-0000000a running
iiit@openstack:~$ virsh attach-device instance-00000008 disk.xml
error: Failed to attach device from disk.xml
error: operation failed: open disk image file failed
iiit@openstack:~$ vi disk.xml
iiit@openstack:~$ virsh attach-device instance-0000000a disk.xml
Device attached successfully
iiit@openstack:~$



a1be0be9-d56a-4edc-84c3-929ca673e041