HP Helion OpenStack 1.1 and 1.1.1: Configuring Ceph Cluster and Client Nodes using Ansible Playbooks

Contents

HP Helion OpenStack® 1.1 and 1.1.1: Configuring Ceph Cluster and Client Nodes using Ansible Playbooks

This section covers the following topics:

Installing the Ceph Solution

To install the Ceph solution:

1. Copy and untar the `helion-ceph.tar` file on one of the provisioned nodes identified as `ceph-admin` under `/helion-ceph/ansible-playbooks`. If `/helion-ceph/` does not exist, then create a directory named `/helion-ceph/`.

   Unpacking the tar file creates the `cephconfiguration` directory under `/helion-ceph`.
2. Ensure the client setup scripts tar ball (also containing the Ceph Debian distribution for installing on Helion nodes) has been copied under `/helion-ceph/cephconfigureation/ansible-playbooks/roles/ceph-client/files`.

   For example:

   ```
   /helion-ceph/cephconfigureation/ansible-playbooks/roles/ceph-client/files/
   ceph_client_setup-0.80.7_h1.1.fix6_newdebs.tar
   ```
3. Once the nodes are provisioned (for more information on nodes provisioning, refer *Running the Provisioning Tool*), create the following configuration files under `/helion-ceph/cephconfigureation/ansible-playbooks/` on the `ceph-admin` node

   cephcluster.csv:

   ```
   <ip-address>, <ceph-identifier>, <type>,
   <user>,<osd-partition-type [osd nodes only]>, <osd-disk-path [osd nodes
    only]>, <journal-partition-type[osd nodes only]>, <journal-disk-path [osd
    nodes only]>
   ip-address
   ```

   where:

   node ip: is the address used by configuration process to set up `ceph-cluster`. This can either be a PXE, management or some other network.

ceph-identifier: is the unique name to identify an OSD, mon, admin or RADOS. This will be used by the bootstrap script to generate Ansible metadata.

IMPORTANT: The RADOS nodes must be given the identifier `rados-1` and `rados-2`.

Type: can be `mon-master`, `mon`, `osd`, `admin`, `radosgw`, `radosgw-master`, `controllers`, `computes`

IMPORTANT: Ensure that `mon-master` is the first node to be defined in `cephcluster.csv`.

Also, if there is only one RADOS node, then the type must be `radosgw-master`.

user: used to login to Ceph nodes for performing the configuration. In this case it is **hlinux**. (**hlinux** refers to HP Linux for HP Helion OpenStack

osd-partition-type: partition type to be used while formatting the disk for OSD storage (This attribute exists only for OSD type node).

osd-disk-path: disk to be used for OSD storage (This attribute exists only for OSD type nodes) . This will be an entire physical disk to be used as a data disk. For example: `/dev/sda` or it can be a partition on a large disk. For example: `/dev/sda5`

journal-partition-type: partition type to be used while formatting the disk (SSD) for journaling (This attribute exists only for OSD type nodes). For journaling make sure the entire disk is specified. For example: `/dev/sde`. Do not use a partition for journaling. For example: `/dev/sde1` is not allowed.

journal-disk-path:disk to be used for journaling (This attribute exists only for OSD type nodes).

4. Modify the `cephcluster.csv` file to add the seed VM's details.

   For example:

```
192.168.124.4,seed0,seed
```

   The following is a sample:

```
192.168.51.90,mon-master-1,mon-master,hlinux
192.168.51.100,mon2,mon,hlinux
192.168.51.102,mon3,mon,hlinux
192.168.51.98,admin-1,admin,hlinux
192.168.51.93,rados-1,radosgw-master,hlinux
192.168.51.94,rados-2,radosgw,hlinux
192.168.51.95,ceph-osd-1,osd,hlinux,xfs,/dev/sdc,xfs,/dev/sdb
192.168.51.95,ceph-osd-2,osd,hlinux,xfs,/dev/sdd,xfs,/dev/sdb
192.168.51.95,ceph-osd-3,osd,hlinux,xfs,/dev/sde,xfs,/dev/sdb
192.168.51.95,ceph-osd-4,osd,hlinux,xfs,/dev/sdf,xfs,/dev/sdb
192.168.51.95,ceph-osd-5,osd,hlinux,xfs,/dev/sdg,xfs,/dev/sdb
192.168.51.95,ceph-osd-6,osd,hlinux,xfs,/dev/sdh,xfs,/dev/sdb
192.168.51.95,ceph-osd-7,osd,hlinux,xfs,/dev/sdi,xfs,/dev/sdb
192.168.51.96,ceph-osd-8,osd,hlinux,xfs,/dev/sdc,xfs,/dev/sdb
192.168.51.96,ceph-osd-9,osd,hlinux,xfs,/dev/sdd,xfs,/dev/sdb
192.168.51.96,ceph-osd-10,osd,hlinux,xfs,/dev/sde,xfs,/dev/sdb
192.168.51.96,ceph-osd-11,osd,hlinux,xfs,/dev/sdf,xfs,/dev/sdb
192.168.51.96,ceph-osd-12,osd,hlinux,xfs,/dev/sdg,xfs,/dev/sdb
192.168.51.96,ceph-osd-13,osd,hlinux,xfs,/dev/sdh,xfs,/dev/sdb
192.168.51.96,ceph-osd-14,osd,hlinux,xfs,/dev/sdi,xfs,/dev/sdb
192.168.51.97,ceph-osd-15,osd,hlinux,xfs,/dev/sdc,xfs,/dev/sdb
192.168.51.97,ceph-osd-16,osd,hlinux,xfs,/dev/sdd,xfs,/dev/sdb
192.168.51.97,ceph-osd-17,osd,hlinux,xfs,/dev/sde,xfs,/dev/sdb
192.168.51.97,ceph-osd-18,osd,hlinux,xfs,/dev/sdf,xfs,/dev/sdb
192.168.51.97,ceph-osd-19,osd,hlinux,xfs,/dev/sdg,xfs,/dev/sdb
192.168.51.97,ceph-osd-20,osd,hlinux,xfs,/dev/sdh,xfs,/dev/sdb
192.168.51.97,ceph-osd-21,osd,hlinux,xfs,/dev/sdi,xfs,/dev/sdb
192.168.51.88,compute0,computes
192.168.51.89,compute1,computes
192.168.51.87,controller0,controllers
```

```
192.168.51.86,controller1,controllers
192.168.51.85,controller2,controllers
192.168.124.4,seed0,seed
```

5. Edit the `group_vars` as per your set up:

```
/group_vars/all
#
cephmon_user: root
cephmon_group: root
runrados: 0 # Set this to 0 if you do not have rados nodes, to 1 if you
 have the rados nodes.
radosgwHA: 1 # Set this to 1 if you want to setup rados in HA mode where
 you need min two rados nodes. If you have only 1 node set this value to
 0.
secretuuid: 457eb676-33da-42ec-9a8c-9293d545c337 # This the UUID that will
 be used to setup the helion nodes. Change this prior to running the ceph-
client and ceph-admin roles, if you wish to newly generated UUID. The same
 UUID will work too.
clienttarname: ceph_client_setup-0.80.7_h1.1.fix6_newdebs.tar # Set this
 to the tar ball name that is being used for helion client setup. Make
 sure the tarball has been copied under roles/ceph-client/files folder
rados_1_fqdn: # Set the actual fqdn of the rados 1 node here
rados_2_fqdn: # Set the actual fqdn of the rados 2 node here
/group_vars/ceph-cluster
---
---
# Variables here are applicable to the ceph-cluster host group
osd_journal_size: 1024
mon_master: c1mon1-overcloud-ceph-cluster
fsid: 514bb61e-80e1-11e4-9461-000c2966c4ff
fssize: 2048
env: baremetal
journal: 1
dependencies:
```

Note: The `fsid` (File System ID) is a unique identifier for the cluster. Execute `uuidgen` command to generate `fsid`.

6. Copy the `cephadmin.pem` key file to the Seed node.
7. Copy the public key of heat-admin to enable SSH from the `ceph-admin` node to Helion nodes by entering:

   a. Start from the KVM host after the helion and Ceph nodes are up.

   b. From the root shell on the KVM host, SSH to the seed node, by entering:

```
ssh root @<IP of seed>
```

   c. Enter: `scp -i <keypair> /root/.ssh/id_rsa hlinux@<IP of ceph-admin>:/home/hlinux/seed-id_rsa.private`

   d. Enter: `scp -i <keypair> /root/.ssh/id_rsa.pub hlinux@<IP of ceph-admin>:/home/hlinux/seed-id_rsa.public`

   e. Copy the `seed-id_rsa.private` under the `ansible-playbooks` folder on your admin node.

   f. Copy the `seed-id_rsa.public` under the `ansible-playbooks` folder on your admin node.
8. If journaling is enabled, in `/group_vars/ceph-cluster`, run following scripts from the admin node from `helion-ceph/ansible-playbooks/`

```
sudo ./createjournalpartitions <cephadmin keypair>
```

This script will create partitions on the journal drive, as specified `cephcluster.csv` and appends the partition number and journal size to each node in this file.

```
<ipaddress>, <ceph-identifier>, <node-type>,<user>,<osd-partition-type>,
 <osd-disk-path>, <journal-partition-type>, <journal-disk-path><partition
 no>,
```

The following is sample output:

```
192.168.51.90,mon-master-1,mon-master,hlinux
192.168.51.100,mon2,mon,hlinux
192.168.51.102,mon3,mon,hlinux
192.168.51.98,admin-1,admin,hlinux
192.168.51.93,rados-1,radosgw-master,hlinux
192.168.51.94,rados-2,radosgw,hlinux
192.168.51.95,ceph-osd-1,osd,hlinux,xfs,/dev/sdc,xfs,/dev/sdb5
192.168.51.95,ceph-osd-2,osd,hlinux,xfs,/dev/sdd,xfs,/dev/sdb6
192.168.51.95,ceph-osd-3,osd,hlinux,xfs,/dev/sde,xfs,/dev/sdb7
192.168.51.95,ceph-osd-4,osd,hlinux,xfs,/dev/sdf,xfs,/dev/sdb8
192.168.51.95,ceph-osd-5,osd,hlinux,xfs,/dev/sdg,xfs,/dev/sdb9
192.168.51.95,ceph-osd-6,osd,hlinux,xfs,/dev/sdh,xfs,/dev/sdb10
192.168.51.95,ceph-osd-7,osd,hlinux,xfs,/dev/sdi,xfs,/dev/sdb11
192.168.51.96,ceph-osd-8,osd,hlinux,xfs,/dev/sdc,xfs,/dev/sdb5
192.168.51.96,ceph-osd-9,osd,hlinux,xfs,/dev/sdd,xfs,/dev/sdb6
192.168.51.96,ceph-osd-10,osd,hlinux,xfs,/dev/sde,xfs,/dev/sdb7
192.168.51.96,ceph-osd-11,osd,hlinux,xfs,/dev/sdf,xfs,/dev/sdb8
192.168.51.96,ceph-osd-12,osd,hlinux,xfs,/dev/sdg,xfs,/dev/sdb9
192.168.51.96,ceph-osd-13,osd,hlinux,xfs,/dev/sdh,xfs,/dev/sdb10
192.168.51.96,ceph-osd-14,osd,hlinux,xfs,/dev/sdi,xfs,/dev/sdb11
192.168.51.97,ceph-osd-15,osd,hlinux,xfs,/dev/sdc,xfs,/dev/sdb5
192.168.51.97,ceph-osd-16,osd,hlinux,xfs,/dev/sdd,xfs,/dev/sdb6
192.168.51.97,ceph-osd-17,osd,hlinux,xfs,/dev/sde,xfs,/dev/sdb7
192.168.51.97,ceph-osd-18,osd,hlinux,xfs,/dev/sdf,xfs,/dev/sdb8
192.168.51.97,ceph-osd-19,osd,hlinux,xfs,/dev/sdg,xfs,/dev/sdb9
192.168.51.97,ceph-osd-20,osd,hlinux,xfs,/dev/sdh,xfs,/dev/sdb10
192.168.51.97,ceph-osd-21,osd,hlinux,xfs,/dev/sdi,xfs,/dev/sdb11
192.168.51.88,compute0,computes
192.168.51.89,compute1,computes
192.168.51.87,controller0,controllers
192.168.51.86,controller1,controllers
192.168.51.85,controller2,controllers
```

Note: Before running this script, make sure that no partition numbers are associated with <journal-disk-path> in the `cephcluster.csv` file. This script will append the partition numbers once it is executed successfully.

9. Execute the following command.

```
sudo ./bootstrap.sh <cephadmin keypair>
```

This script creates Ansible metadata from the `cephcluster.csv` manifest file, and configures the `/etc/hosts` file on Ceph nodes.

After the bootstrap is run, verify that the `hosts` file and `host_vars/*` files are generated.

The following is a sample host file:

```
[mon]
mon-2 ansible_ssh_private_key_file=c1cephadmin.pem
mon-3 ansible_ssh_private_key_file=c1cephadmin.pem
[osd]
ceph-osd-1 ansible_ssh_private_key_file=c1cephadmin.pem
```

```
ceph-osd-2 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-3 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-4 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-5 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-6 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-7 ansible_ssh_private_key_file=c1cephadmin.pem

ceph-osd-8 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-9 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-10 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-11 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-12 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-13 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-14 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-15 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-16 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-17 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-18 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-19 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-20 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-21 ansible_ssh_private_key_file=c1cephadmin.pem

[ceph-cluster]
mon-master-1 ansible_ssh_private_key_file=c1cephadmin.pem
admin-1 ansible_ssh_private_key_file=c1cephadmin.pem
rados-1 ansible_ssh_private_key_file=c1cephadmin.pem
rados-2 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-1 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-2 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-3 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-4 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-5 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-6 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-7 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-8 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-9 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-10 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-11 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-12 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-13 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-14 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-15 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-16 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-17 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-18 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-19 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-20 ansible_ssh_private_key_file=c1cephadmin.pem
ceph-osd-21 ansible_ssh_private_key_file=c1cephadmin.pem

[mon-master]
mon-master-1 ansible_ssh_private_key_file=c1cephadmin.pem

[admin]
admin-1 ansible_ssh_private_key_file=c1cephadmin.pem

[radosgw]
rados-1 ansible_ssh_private_key_file=c1cephadmin.pem
rados-2 ansible_ssh_private_key_file=c1cephadmin.pem

[computes]
compute0 ansible_ssh_private_key_file=seed-id_rsa.private
compute1 ansible_ssh_private_key_file=seed-id_rsa.private

[helionnodes:children]
```

```
computes
controllers

[controllers]
controller0 ansible_ssh_private_key_file=seed-id_rsa.private
controller1 ansible_ssh_private_key_file=seed-id_rsa.private
controller2 ansible_ssh_private_key_file=seed-id_rsa.private
```

Running the Ansible playbook

Make sure that the following three keys are present or copied from their respective nodes to the admin node under `ansible-playbook` folder:

- `cephadmin.pem` key is copied (from Undercloud) to the `ansible-playbooks` folder.
- `seed-id_rsa.private` key copied from the seed to the `ansible-playbooks` folder.
- `seed-id_rsa.public` key is copied from the seed to the `ansible-playbooks` folder.

Note: All three key ring permissions should be set to **sudo chmod 600 <key>**

```
4 -rw------- 1 hlinux hlinux 1676 Feb 24 07:46 cephadmin.pem
4 -rw------- 1 hlinux hlinux 1675 Feb 24 07:45 seed-id_rsa.private
4 -rw------- 1 hlinux hlinux 393 Feb 24 07:45 seed-id_rsa.public
```

Ceph is deployed in three different stages

You can deploy Ceph in three different stages:

1. Set up Monitors and OSD nodes.
2. Integrate Ceph on Helion nodes
3. Set up RADOS Gateway nodes in the Ceph cluster

To deploy Ceph in three different stages:

I. Set up Monitors and OSD nodes using the following command.

```
ansible-playbook -i hosts osd_mon_setup.yml
```

Following is the sample output.

```
2015-02-24 08:13:44,462 p=15079 u=hlinux | PLAY RECAP
********************************************************************
2015-02-24 08:13:44,463 p=15079 u=hlinux | admin-1 : ok=2 changed=1
 unreachable=0 failed=0
2015-02-24 08:13:44,463 p=15079 u=hlinux | ceph-osd-1 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,463 p=15079 u=hlinux | ceph-osd-10 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,463 p=15079 u=hlinux | ceph-osd-11 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,464 p=15079 u=hlinux | ceph-osd-12 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,464 p=15079 u=hlinux | ceph-osd-13 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,464 p=15079 u=hlinux | ceph-osd-14 : ok=20 changed=17
 unreachable=0 failed=0
2015-02-24 08:13:44,464 p=15079 u=hlinux | ceph-osd-15 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,465 p=15079 u=hlinux | ceph-osd-16 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,465 p=15079 u=hlinux | ceph-osd-17 : ok=20 changed=14
 unreachable=0 failed=0
```

```
2015-02-24 08:13:44,465 p=15079 u=hlinux | ceph-osd-18 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,465 p=15079 u=hlinux | ceph-osd-19 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,465 p=15079 u=hlinux | ceph-osd-2 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,466 p=15079 u=hlinux | ceph-osd-20 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,466 p=15079 u=hlinux | ceph-osd-21 : ok=20 changed=17
 unreachable=0 failed=0
2015-02-24 08:13:44,466 p=15079 u=hlinux | ceph-osd-3 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,466 p=15079 u=hlinux | ceph-osd-4 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,466 p=15079 u=hlinux | ceph-osd-5 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,467 p=15079 u=hlinux | ceph-osd-6 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,467 p=15079 u=hlinux | ceph-osd-7 : ok=20 changed=16
 unreachable=0 failed=0
2015-02-24 08:13:44,467 p=15079 u=hlinux | ceph-osd-8 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,468 p=15079 u=hlinux | ceph-osd-9 : ok=20 changed=14
 unreachable=0 failed=0
2015-02-24 08:13:44,468 p=15079 u=hlinux | mon-master-1 : ok=24 changed=20
 unreachable=0 failed=0
2015-02-24 21:27:24,358 p=15079 u=hlinux | mon-1 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,358 p=15079 u=hlinux | mon-2 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 08:13:44,468 p=15079 u=hlinux | rados-1 : ok=2 changed=1
 unreachable=0 failed=0
2015-02-24 08:13:44,468 p=15079 u=hlinux | rados-2 : ok=2 changed=1
 unreachable=0 failed=0
```

II. Integrate Ceph on Helion nodes (Controller and Compute nodes) to support the Ceph backend] by entering:

```
ansible-playbook -i hosts client_setup.yml
```

The following is sample output.

```
....
2015-02-24 21:27:24,351 p=18817 u=hlinux | PLAY RECAP
*********************************************************************
2015-02-24 21:27:24,352 p=18817 u=hlinux | admin-1 : ok=16 changed=14
 unreachable=0 failed=0
2015-02-24 21:27:24,352 p=18817 u=hlinux | ceph-osd-1 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,352 p=18817 u=hlinux | ceph-osd-10 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,353 p=18817 u=hlinux | ceph-osd-11 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,353 p=18817 u=hlinux | ceph-osd-12 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,353 p=18817 u=hlinux | ceph-osd-13 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,353 p=18817 u=hlinux | ceph-osd-14 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,353 p=18817 u=hlinux | ceph-osd-15 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,354 p=18817 u=hlinux | ceph-osd-16 : ok=2 changed=0
 unreachable=0 failed=0
```

```
2015-02-24 21:27:24,354 p=18817 u=hlinux | ceph-osd-17 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,354 p=18817 u=hlinux | ceph-osd-18 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,354 p=18817 u=hlinux | ceph-osd-19 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,355 p=18817 u=hlinux | ceph-osd-2 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,355 p=18817 u=hlinux | ceph-osd-20 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,355 p=18817 u=hlinux | ceph-osd-21 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,355 p=18817 u=hlinux | ceph-osd-3 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,355 p=18817 u=hlinux | ceph-osd-4 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,356 p=18817 u=hlinux | ceph-osd-5 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,356 p=18817 u=hlinux | ceph-osd-6 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,356 p=18817 u=hlinux | ceph-osd-7 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,356 p=18817 u=hlinux | ceph-osd-8 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,356 p=18817 u=hlinux | ceph-osd-9 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,357 p=18817 u=hlinux | compute0 : ok=27 changed=23
 unreachable=0 failed=0
2015-02-24 21:27:24,357 p=18817 u=hlinux | compute1 : ok=27 changed=23
 unreachable=0 failed=0
2015-02-24 21:27:24,357 p=18817 u=hlinux | controller0 : ok=13 changed=11
 unreachable=0 failed=0
2015-02-24 21:27:24,357 p=18817 u=hlinux | controller1 : ok=13 changed=11
 unreachable=0 failed=0
2015-02-24 21:27:24,357 p=18817 u=hlinux | controller2 : ok=13 changed=11
 unreachable=0 failed=0
2015-02-24 21:27:24,358 p=18817 u=hlinux | mon-master-1 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,358 p=18817 u=hlinux | mon-1 : ok=2 changed=0
 unreachable=0 failed=0
2015-02-24 21:27:24,358 p=18817 u=hlinux | mon-2 : ok=2 changed=0
 unreachable=0 failed=0
```

You can choose to integrate CEPH with Cinder, Glance , and Nova. To intergrate Ceph with these openstack components, execute the following command:

```
ansible-playbook –i hosts client_setup.yml
```

Execute the following command to integrate Ceph without Nova:

```
ansible-playbook –i hosts client_setup.yml --skip-tags computes
```

Integration of Ceph with HOS components

Perform the following steps to integrate ceph with HOS components

1. Login to Seed VM.

   ```
   ssh <seed IP address>
   ```

2. Source the environment variables file created during initial installation.

```
# source tripleo/tripleo-incubator/scripts/hp_ced_load_config.sh tripleo/
configs/<environment variables file name>
```

3. Execute the following command with a specfic options (refer table below) to integrate various HOS components with Ceph using passthrough:

```
python /root/tripleo/hp_ceph_passthrough/hp_ceph_load_config.py
```

The folllowing table provides a specific option to integrate various HP Helion Opentack components with CEPH.

Ceph Integrated with HOS Components	Commands	Volumes	Images	Instances
Cinder	`python/root/tripleo/hp_ceph_passthrough/hp_ceph_load_config.py -s cinder`	Supports all Cinder operations including multi-backend (VSA, 3PAR, CEPH)	All Glance operations use Default SWIFT store as backend	Instances are in default Nova pool.
Cinder and Glance	`python/root/tripleo/hp_ceph_passthrough/hp_ceph_load_config.py -s cinder,glance`	Supports all Cinder operations including multi-backend (VSA, 3PAR, CEPH)	All Glance operations use CEPH as backend	Instances are in default Nova pool.
Cinder, Glance, Nova	`python /root/tripleo/hp_ceph_passthrough/hp_ceph_load_config.p`	Only CEPH backend works	All Glance operations use CEPH as backend.	Instances are in CEPH pool.
Cinder, Nova	`python /root/tripleo/hp_ceph_passthrough/hp_ceph_load_config.py -s cinder,nova`	Only CEPH backend works	All Glance operations use Default SWIFT store as backend..	Instances are in CEPH pool.

4. Execute the following command to update the cloud:

```
bash -x tripleo/tripleo-incubator/scripts/hp_ced_installer.sh --update-
overcloud 2>&1 | tee update.log
```

Note: It is recommended to execute step **3** and **4** before updating the cloud. This is applicable for scale operation too.

5. To move from one configuration to another choose the appropriate command for the new configuration.

Example:

To move from CEPH+Cinder to CEPH +Cinder and Glance you must execute the following command:

```
python /root/tripleo/hp_ceph_passthrough/hp_ceph_load_config.py -s
 cinder,glance
```

Limitation

There are some known limitaion when you switch from one configuration to another. A few of them are listed below:

1. Cinder to Cinder+glance

   a. Existing glance image (before running update cloud) cannot be used
   b. Any instance created using the above glance image (before running update cloud) cannot be used
2. Cinder to Cinder+Glance+Nova:
   a. Existing glance image (before running update cloud) cannot be used
   b. Any instance created using the above glance image (before running update cloud) cannot be used
   c. Any instance created before update cloud cannot be used.
3. Cinder to Cinder+Nova:
   a. Any instance created before update cloud cannot be used
4. Cinder+Glance to Cinder+Glance+Nova:
   a. Any instance created before update cloud cannot be used

Note: When intergrating or removing CEPH as a backend for a given OpenStack service, all the entities created with the earlier configuration becomes unusable.

III. Set up RADOS Gateway nodes in the Ceph cluster by entering:

```
ansible-playbook -i hosts rados_setup.yml
```

If any changes are made to `ceph.conf` file on any node manually, copy `ceph.conf` file as `ceph_master.conf` from that node to the Ceph admin node `/helion-ceph/ansible-playbooks/roles/ceph-mon-master/files/ceph_master.conf`.

Run the following command to sync the `ceph.conf` file with all the Ceph cluster and Helion client nodes.

```
ansible-playbook -i hosts sync_all_nodes.yml
```

Scaling Ceph cluster

Add monitor

- Provision the new node with the `ceph-cluster` image using the node-provisioning tool (as mentioned above) from the seed host. You need to have three monitor nodes. This example shows adding two additional monitor nodes.

Sample Baremetal.csv

```
f0:92:1c:05:47:21,helioncsel,m0ng00s3,192.168.51.104,150,163840,200,overcloud-
ceph-cluster,c1mon4,002
f0:92:1c:05:35:58,helioncsel,m0ng00s3,192.168.51.106,163840,200,overcloud-
ceph-cluster,c1mon5,002
```

Once the node is up, from the admin node modify `/helion-ceph/ansible-playbooks/cephcluster.csv` with the new `mon` nodes.

```
192.168.51.90,mon-master-1,mon-master,hlinux
192.168.51.100,mon2,mon,hlinux
192.168.51.102,mon3,mon,hlinux
192.168.51.104,mon4,mon,hlinux
192.168.51.106,mon5,mon,hlinux
```

- Run `bootstrap.sh` from `ansible-playbook` folder as mentioned above.
- Run Ansible playbook to add the new monitors.

```
ansible-playbook -i  hosts osd_mon_setup.yml
```

- Verify, if you are seeing all five monitors by entering:

```
sudo ceph -w
```

- For NTP-related warnings, check the following section on how to sync all the servers in the Ceph cluser with the NTP server.

Add OSD

To add an Object Storage Daemon (OSD):

- Provision the new
- node with the `ceph-cluster` image using the node-provisioning tool from the seed host as mentioned above.

Sample Baremetal.csv

The following is a sample of a `baremetal.csv` file:

```
f0:92:1c:05:56:98,helioncsel,m0ng00s3,10.1.67.123,178,163840,200,overcloud-
ceph-cluster,c1osd4,002
f0:92:1c:05:33:12,helioncsel,m0ng00s3,10.1.67.123,179,163840,200,overcloud-
ceph-cluster,c1osd5,002
```

This example shows that two OSD nodes are added and under each node there are four OSDs.

- Once the node is up, from the admin node modify `/helion-ceph/ansible-playbooks/cephcluster.csv` with the new monitor node.

```
192.168.51.90,mon-master-1,mon-master,hlinux
192.168.51.121,ceph-osd-22,osd,hlinux,xfs,/dev/sdc,xfs,/dev/sdb
192.168.51.121,ceph-osd-23,osd,hlinux,xfs,/dev/sdd,xfs,/dev/sdb
192.168.51.121,ceph-osd-24,osd,hlinux,xfs,/dev/sde,xfs,/dev/sdb
192.168.51.121,ceph-osd-25,osd,hlinux,xfs,/dev/sdf,xfs,/dev/sdb
192.168.51.125,ceph-osd-26,osd,hlinux,xfs,/dev/sdc,xfs,/dev/sdb
192.168.51.125,ceph-osd-27,osd,hlinux,xfs,/dev/sdd,xfs,/dev/sdb
192.168.51.125,ceph-osd-28,osd,hlinux,xfs,/dev/sde,xfs,/dev/sdb
192.168.51.125,ceph-osd-29,osd,hlinux,xfs,/dev/sdf,xfs,/dev/sdb
```

- If you are enabling journaling, in `/group_vars/ceph-cluster` on the admin node, run the following scripts in `helion-ceph/ansible-playbooks/`:

```
sudo ./createjournalpartitions <cephadmin keypair>
192.168.51.90,mon-master-1,mon-master,hlinux
192.168.51.121,ceph-osd-22,osd,hlinux,xfs,/dev/sdc,xfs,/dev/sdb5
192.168.51.121,ceph-osd-23,osd,hlinux,xfs,/dev/sdd,xfs,/dev/sdb6
192.168.51.121,ceph-osd-24,osd,hlinux,xfs,/dev/sde,xfs,/dev/sdb7
192.168.51.121,ceph-osd-25,osd,hlinux,xfs,/dev/sdf,xfs,/dev/sdb8
192.168.51.125,ceph-osd-26,osd,hlinux,xfs,/dev/sdc,xfs,/dev/sdb5
192.168.51.125,ceph-osd-27,osd,hlinux,xfs,/dev/sdd,xfs,/dev/sdb6
192.168.51.125,ceph-osd-28,osd,hlinux,xfs,/dev/sde,xfs,/dev/sdb7
192.168.51.125,ceph-osd-29,osd,hlinux,xfs,/dev/sdf,xfs,/dev/sdb8
```

- Run `bootstrap.sh` from `ansible-playbook` folder as mentioned above.

```
sudo ./bootstrap.sh <cephadmin keypair>
```

This script creates Ansible metadata from `cephcluster.csv` manifest file, and configures `/etc/hosts` file on ceph nodes.

- Run the Ansible playbook to add the new OSD nodes by entering:

```
 ansible-playbook -i hosts osd_mon_setup.yml --tags "add-osd"
```

- Verify that you are seeing newly added OSD nodes and daemons from the `sudo ceph -w` command return.

Heartbeat Monitoring Tool (Optional)

The Heartbeat tool is written in Python and it is an open ended tool so other 3rd party service and status checks can be added or extended. This tool is run on the seed node from the HP Helion setup. This tool continuously queries for HP Helion OpenStack services and provides notifications to the pre-defined administrator when config file mismatches are detected, or when any of the specified services in config file are down. The Configuration service automatically reapplies the known good config files when the checksum does not match. It then restarts the associated services specified in the config file and triggers the validation script to do a minimal check for that service. Even if the config files are overwritten when the checksum does not match, a backup of the existing file from the current folder (named `[filename].timestamp`) is also saved in the backup folder. This allows the admin to verify the changes at any time.

The Heartbeat tar files are:

```
heartbeat-tool/Readme.md
heartbeat-tool/conf/heartbeat.conf
heartbeat-tool/conf/sample.conf heartbeat-tool/src/checks.py
heartbeat-tool/src/run.py
heartbeat-tool/src/sendemail.py

heartbeat-tool/src/osclients.py
heartbeat-tool/src/nodeaccess.py
```

These tarballs can be obtained from:

https://helion.hpwsportal.com/

Return to Top

Helion OpenStack Ceph cluster validation

To validate the Helion OpenStack Ceph cluster, perform the following:

1. Verify Ceph default pools by entering:

   ```
   ceph osd lspools
   ```

   For example:

   ```
   0 data, 1 metadata, 2rbd
   ```

2. Verify that the monitor is running by entering:

   ```
   ceph -s
   ```

   For example:

   ```
   root@ceph-mon1gw1:/var/lib/ceph/mon# ceph -s
   cluster e0f2ad6b-588f-432c-99c1-d81f0f71cb77
   health HEALTH_ERR 192 pgs stuck inactive; 192 pgs stuck unclean; no osds
   monmap e1: 1 mons at {ceph-mon1gw1=192.168.116.54:6789/0}, election epoch
    2, quorum 0
   ceph-mon1gw1
   osdmap e1: 0 osds: 0 up, 0 in
   pgmap v2: 192 pgs, 3 pools, 0 bytes data, 0 objects
       0 kB used, 0 kB / 0 kB avail
       192 creating
   ```

3. Ensure that the OSD Daemon is running by verifying the output from running `sudo ceph -w`.

4. Ensure that Ceph health and status is OK by entering:

```
ceph health
HEALTH_OK
ceph status
```

For example:

```
root@ceph-mon1:/home/ceph# ceph -s
cluster 6a710689-5b19-4ba3-b2c5-c23ddd26dce9
health HEALTH_OK
monmap e1: 1 mons at {ceph-mon1=192.168.116.54:6789/0}, election epoch 1,
 quorum 0 ceph-mon1
osdmap e336: 39 osds: 39 up, 39 in
pgmap v106607: 11456 pgs, 17 pools, 7878 MB data, 1319 kobjects
83315 MB used, 99199 GB / 99280 GB avail
11456 active+clean
```

5. Monitor and correct XFS fragmentation by entering:

```
xfs_db -c frag -r /dev/sdb1
```

which returns information such as:

```
Fragmentation on /dev/sdb1 - osd3
actual 22722, ideal 22557, fragmentation factor 0.73%
```

For example, to check the fragmentation on OSDs, enter:

```
#!/bin/sh
echo "Fragmentation on /dev/sdb1 - osd1"
xfs_db -c frag -r /dev/sdb1
echo "Fragmentation on /dev/sdc1 - osd1"
xfs_db -c frag -r /dev/sdc1
echo "Fragmentation on /dev/sdd1 - osd1"
xfs_db -c frag -r /dev/sdd1
echo "Fragmentation on /dev/sde1 - osd1"
xfs_db -c frag -r /dev/sde1
echo "Fragmentation on /dev/sdf1 - osd1"
xfs_db -c frag -r /dev/sdf1
echo "Fragmentation on /dev/sdg1 - osd1"
xfs_db -c frag -r /dev/sdg1
echo "Fragmentation on /dev/sdh1 - osd1"
xfs_db -c frag -r /dev/sdh1
echo "Fragmentation on /dev/sdi1 - osd1"
```

6. Depending on workloads, you can edit the Ceph tuning parameters:

```
osd op threads = 8
osd max backfills = 1
osd recovery max active = 1
filestore max sync interval = 100
filestore min sync interval = 50
filestore queue max ops = 2000
filestore queue max bytes = 536870912
filestore queue committing max ops = 2000
filestore queue committing max bytes = 536870912
```

Return to Top

Helion OpenStack Ceph client validation

This section explains how to validate Glance.

Glance

- Create a sample Glance Raw image on any controller node as ;shown below. Use the Raw data format with RBD for instant image snapshots and protection. For more details, refer to *http://ceph.com/docs/master/rbd/qemu-rbd/?highlight=raw*
- Use a conversion tool like `qemu-img` to convert from one image format to another.

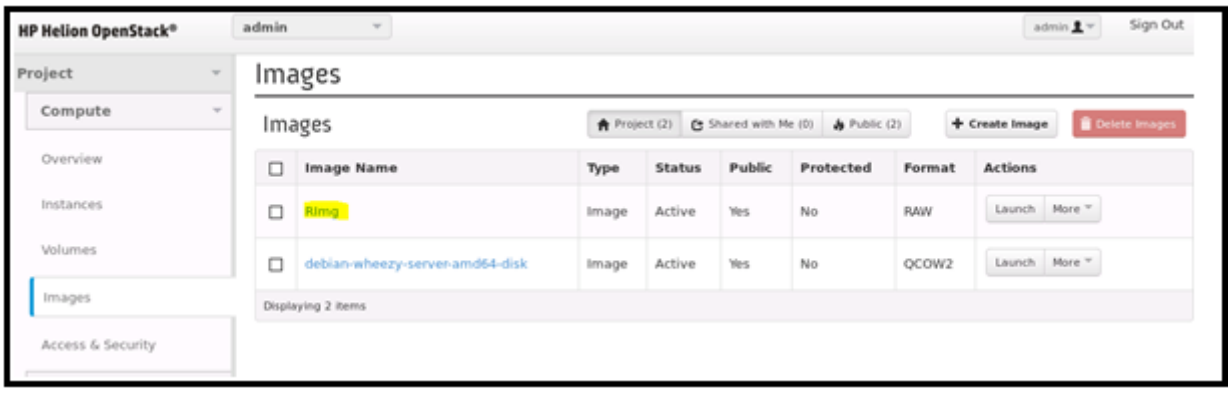
  For example:

```
qemu-img convert -f {source-format} -O {output-format} {source-filename}
 {output-filename}
qemu-img convert -f qcow2 -O raw cirros-0.3.2-x86_64-disk.img
 cirros-0.3.2-x86_64-disk.raw
glance image-create --name RImg --is-public=true --disk-format=raw --
container-format=bare --file cirros-0.3.2-x86_64-disk.raw
```

```
root@overcloud-controller0-mmr73ivs47rh:~# glance image-create --name RImg --is-public=t
--file cirros-0.3.2-x86_64-disk.raw
+------------------+--------------------------------------+
| Property         | Value                                |
+------------------+--------------------------------------+
| checksum         | cf2392db1f59d59ed69a8f8491b670e0     |
| container_format | bare                                 |
| created_at       | 2014-08-15T18:14:03                  |
| deleted          | False                                |
| deleted_at       | None                                 |
| disk_format      | raw                                  |
| id               | c40e3ac7-d1d8-4f44-aef3-7c75a16d534f |
| is_public        | True                                 |
| min_disk         | 0                                    |
| min_ram          | 0                                    |
| name             | RImg                                 |
| owner            | 5ffdf19acff547d4ae1fbfc1eafbe6cf     |
| protected        | False                                |
| size             | 41126400                             |
| status           | active                               |
| updated_at       | 2014-08-15T18:14:09                  |
| virtual_size     | None                                 |
+------------------+--------------------------------------+
root@overcloud-controller0-mmr73ivs47rh:~#
```

- Make sure that the uploaded Glance image is available in the Horizon UI and is correctly stored in the appropriate pool in Ceph by entering;

```
rbd ls -l <glance pool name>
glance image-list
```



- Enable logging in `glance-api.conf`. If you encounter a problem in any of the above steps, restart Glance services and re-run the problem step. If the problem persists, ather Glance debug logs in the `/var/log/glance` directory and contact the HP support team for help.

Ceph Glance Clone Copy On Write

Note that Clone copy-on-write (COW) is achieved when an image is in RAW format. Use a conversion tool like `qemu-img` to convert from one format to another.

- Create a Glance image using the `glance image-create` command.

For example:

```
qemu-img convert -f {source-format} -O {output-format} {source-filename}
 {output-filename}
qemu-img convert -f qcow2 -O raw cirros-0.3.2-x86_64-disk.img cirros-0.3.2-
x86_64-disk.raw
glance image-create --name RImg --is-public=true --disk-format=raw --
container-format=bare --file cirros-0.3.2-x86_64-disk.raw
```

- Create a Cinder volume on any controller node from a Glance image created above by entering:

```
cinder create -image-id <glance image id> --display-name RVol 2
```

```
root@overcloud-controller0-mmr73ivs47rh:~# cinder create --image-id  c40e3ac7-d1d8-4f4
+---------------------+--------------------------------------+
|       Property      |                Value                 |
+---------------------+--------------------------------------+
|     attachments     |                  []                  |
|  availability_zone  |                nova                  |
|       bootable      |               false                  |
|      created_at     |      2014-08-15T18:36:25.690791      |
| display_description |                None                  |
|     display_name    |                RVol                  |
|      encrypted      |               False                  |
|          id         | ed1bb437-126f-4842-87e7-4bafb5fe2398 |
|       image_id      | c40e3ac7-d1d8-4f44-aef3-7c75a16d534f |
|       metadata      |                  {}                  |
|         size        |                  2                   |
|     snapshot_id     |                None                  |
|     source_volid    |                None                  |
|        status       |              creating                |
|     volume_type     |                None                  |
+---------------------+--------------------------------------+
root@overcloud-controller0-mmr73ivs47rh:~#
```

- Make sure the Cinder volume created is available in the rbd pool by entering:

```
rbd ls -l <cinder pool name>
cinder list
```

```
root@overcloud-controller0-mmr73ivs47rh:~# rbd ls -l cinder
dNAME                                          SIZE PARENT
volume-ed1bb437-126f-4842-87e7-4bafb5fe2398 2048M glance/c40e3ac7-d1d8-4f44-aef3-7c75a
root@overcloud-controller0-mmr73ivs47rh:~# cinder list
+--------------------------------------+-----------+--------------+------+-------------
|                  ID                  |   Status  | Display Name | Size | Volume Type
+--------------------------------------+-----------+--------------+------+-------------
| ed1bb437-126f-4842-87e7-4bafb5fe2398 | available |     RVol     |  2   |     None
| f48a0506-dbed-418a-a70c-9abcada237c5 | available |     vol1     |  1   |     None
+--------------------------------------+-----------+--------------+------+-------------
root@overcloud-controller0-mmr73ivs47rh:~#
```

- Track clones to demonstrate copy-on-write feature by first listing snapshots of the Glance image, and then listing the children of the snapshot by entering:

```
rbd --pool <glance pool name> snap ls <glance image id>
rbd --pool <glance pool name> children --image <glance image id> --snap
 <snap name>
rbd children <glance pool name>/<glance-image id>@<snap name>
```

```
root@overcloud-controller0-mmr73ivs47rh:~# rbd --pool glance snap ls c40e3ac7-d1d8-4f4
SNAPID NAME     SIZE
     8 snap 40162 kB
root@overcloud-controller0-mmr73ivs47rh:~# rbd --pool glance children --image c40e3ac7
cinder/volume-ed1bb437-126f-4842-87e7-4bafb5fe2398
root@overcloud-controller0-mmr73ivs47rh:~# rbd children glance/c40e3ac7-d1d8-4f44-aef3
cinder/volume-ed1bb437-126f-4842-87e7-4bafb5fe2398
root@overcloud-controller0-mmr73ivs47rh:~#
```

- Enable logging in `glance-api.conf` and `cinder.conf` if you encounter a problem in any of the above steps. Restart Glance and Cinder services and re-run the problem step. If necessary, gather Glance debug logs in `/var/log/glance` directory and Cinder debug logs in `/var/log/upstart` directory and contact HP support team for help.

Creating a Cinder volume

There are two ways to create a volume:

- Horizon overcloud dashboard
- The Command Line Interface (CLI)

Using the Horizon Overcloud dashboard

To create a volume see *OpenStack User Guide*

Using the CLI

To create a volume using the command-line interface (CLI), from the Overcloud controller node running the Ceph client, run the following command:

```
Cinder create -display-name <name of the volume> <volume size>
```

For example:

```
# cinder create -- display-name vol2-RBD 1
```

Output:

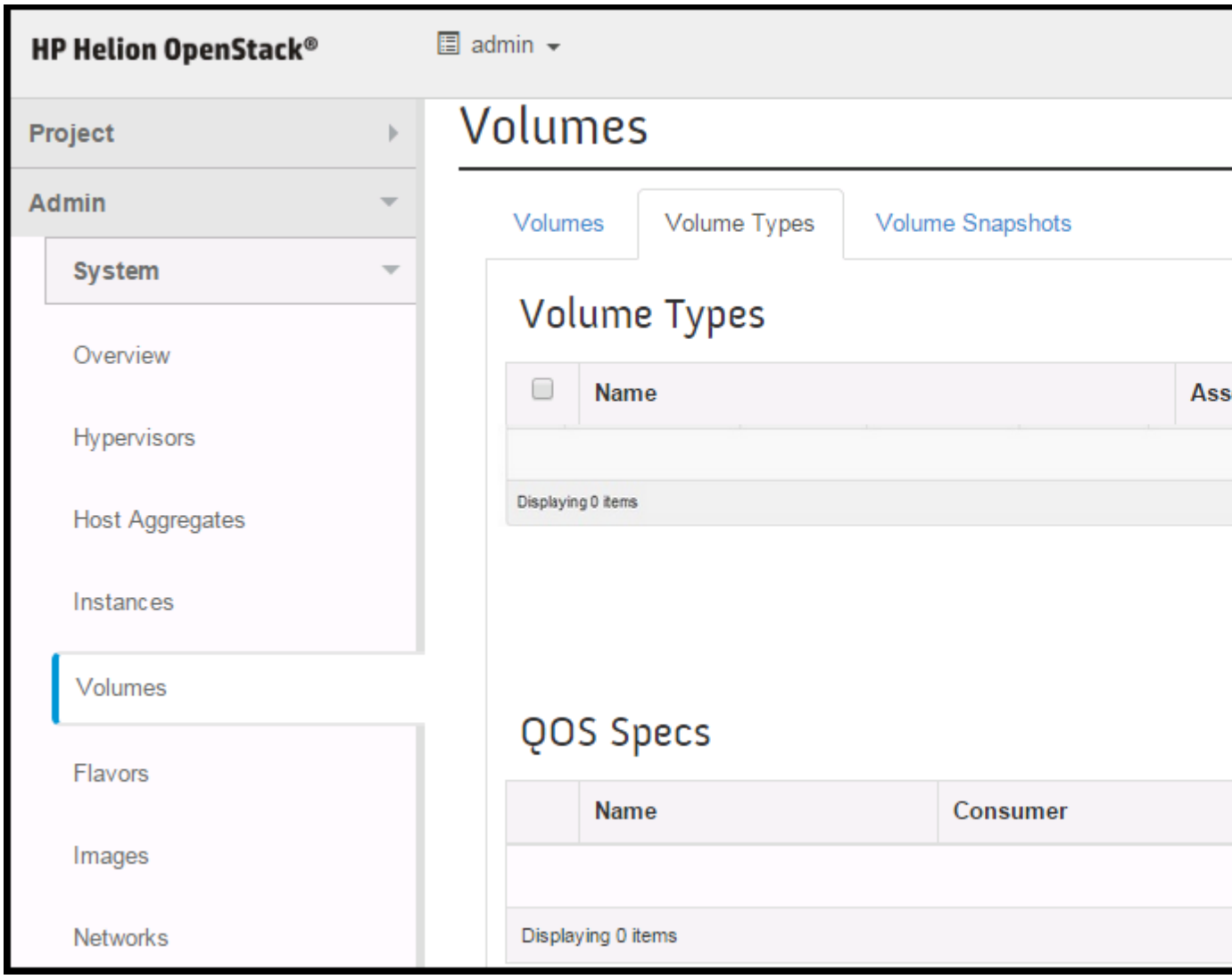
```
       +---------------------
+-------------------------------------------------------------------+
        | Property            | Value
                    |
         +---------------------
+-------------------------------------------------------------------+
        | attachments         | []
                    |
        | availability_zone   | nova
                    |
        | bootable            | false
                    |
        | created_at          |  2014-08-01T14:56:21.423821
                    |
        | display_description |  None
                    |
        | display_name        | vol2-RBD
                    |
        | encrypted           | False
                    |
```

```
        | id                  |d6064822-d1c1-4e72-b496-ee807174ef96
                  |
        | metadata            | {}
                  |
        | size                | 1
                  |
        | snapshot_id         | None
                  |
        | source_volid        | None
                  |
        | status              | creating
                  |
        |volume_type          | None
                  |
        +--------------
+-------------------------------------------------------------------------------+
```

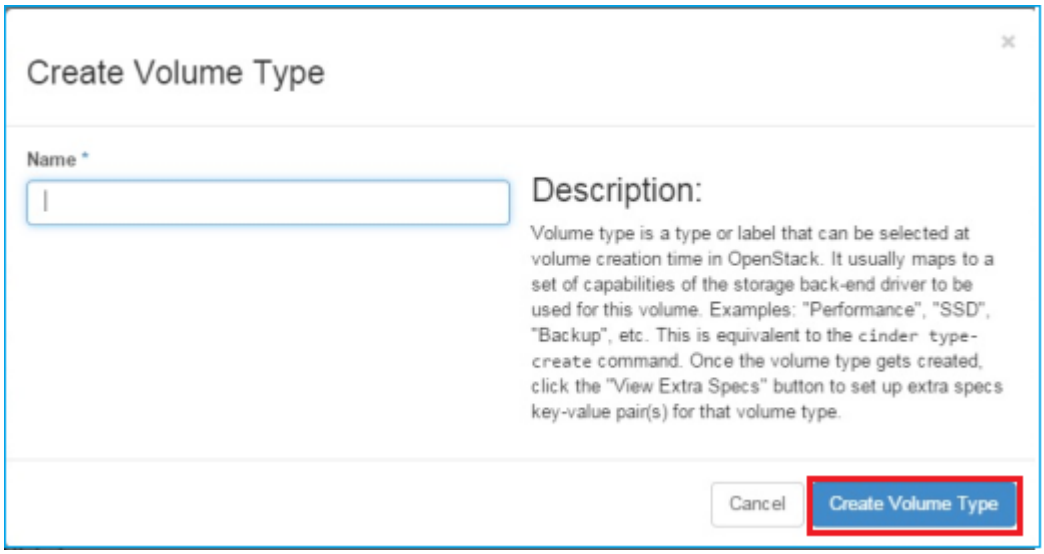
Creating Cinder Volume Type

To create a volume type using the Overcloud dashboard, do the following:

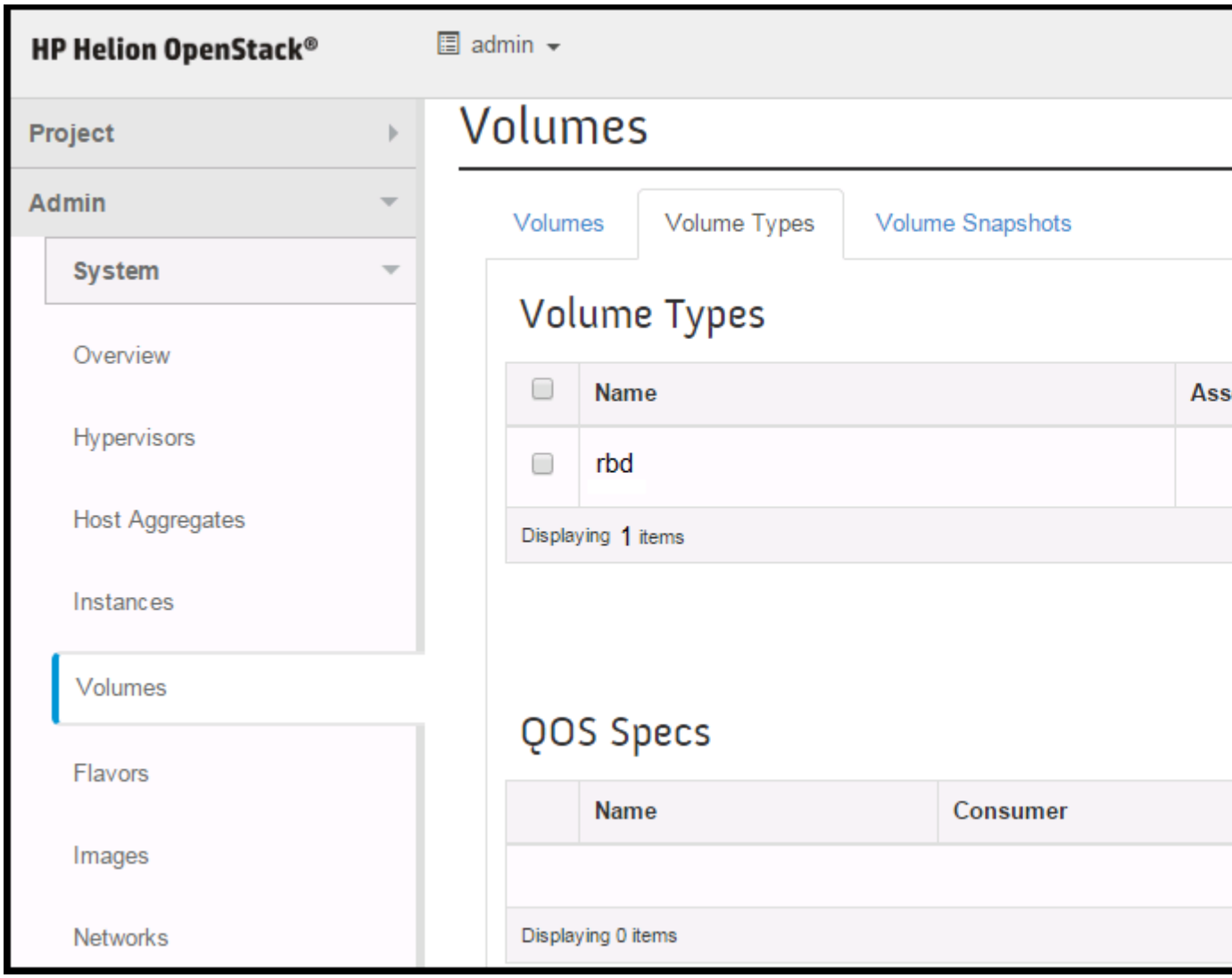
1. Log into the Overcloud Horizon dashboard. The Overcloud dashboard displays with the options in the left panel.
2. From the left panel, click the **Admin** tab and then click the **Volumes** tab to display the Volumes page.



3. Click **Create Volume Type** to display a dialog box.



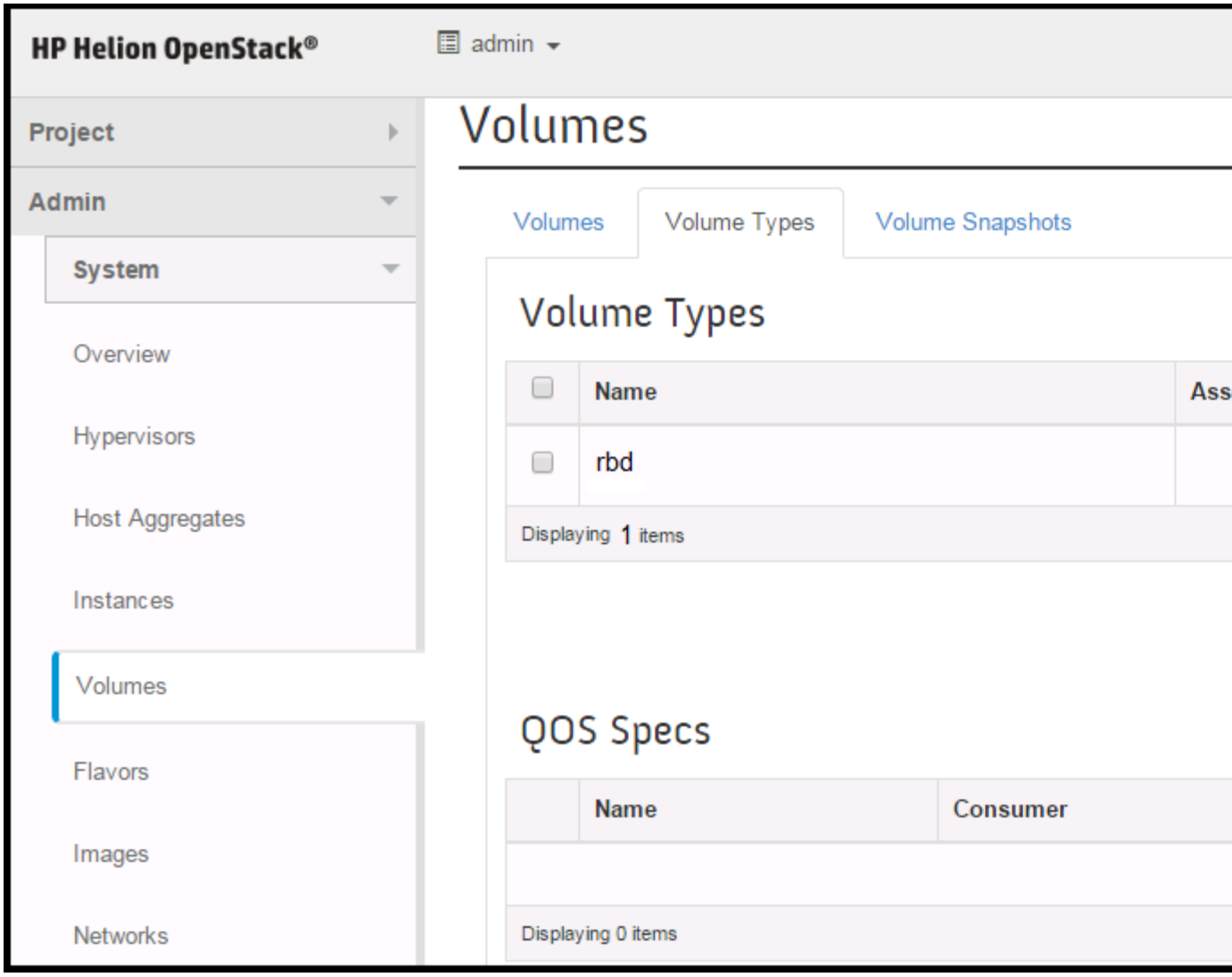
4. Enter the name of the volume type.
5. Click **Create Volume Type**. The newly created volume displays in the Volumes page.



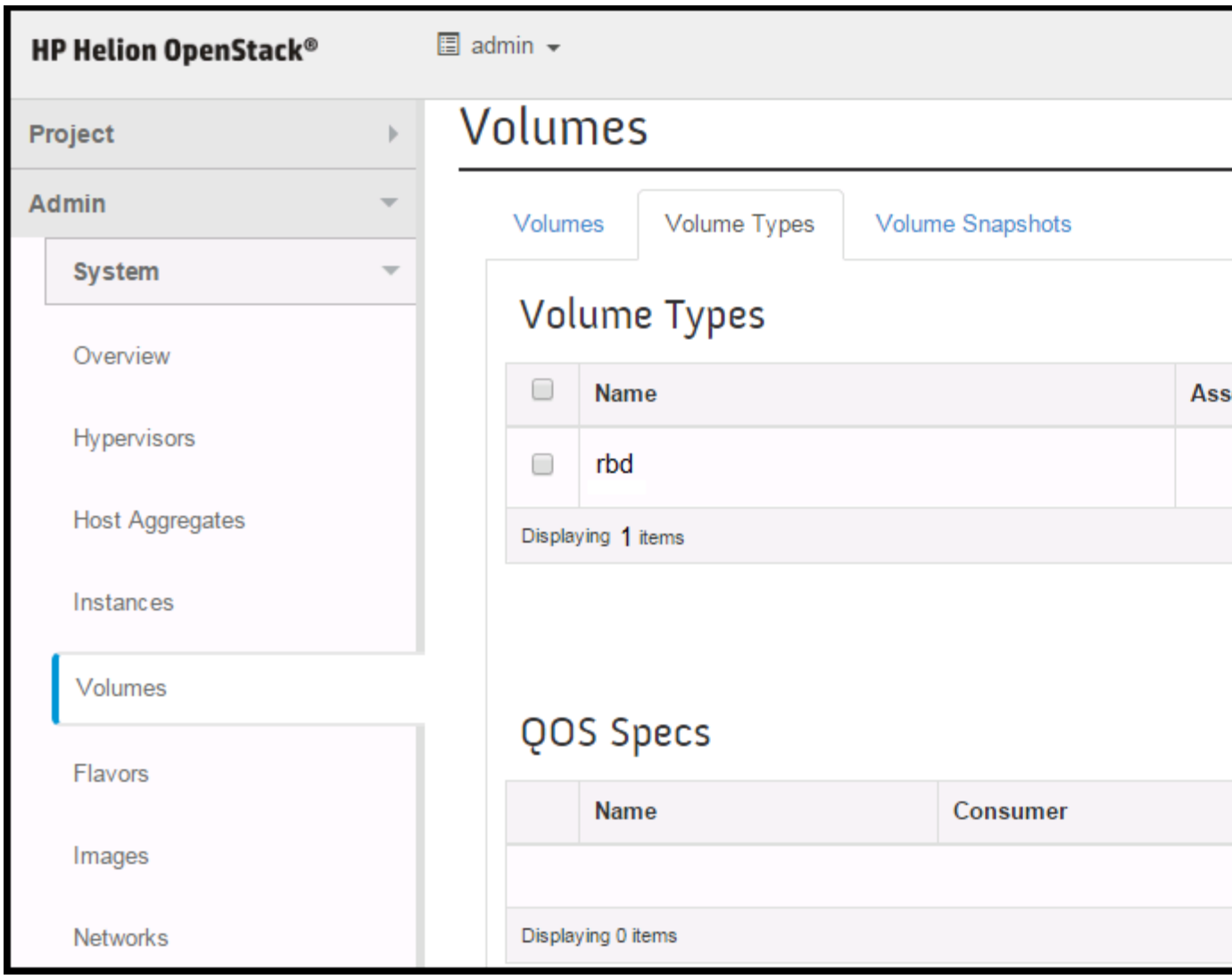
Associate the volume type to a backend

To map a volume type to a backend, do the following:

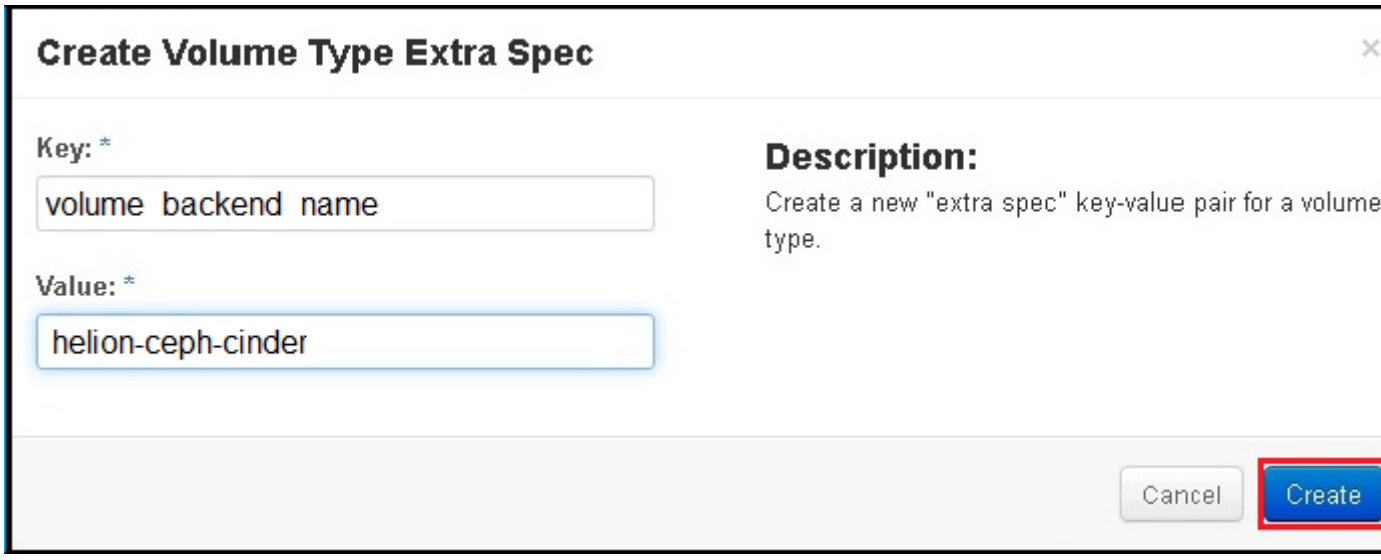
1. Login to the Overcloud Horizon dashboard. The Overcloud dashboard displays with the options in the left panel.
2. From the left panel, click the **Admin** tab and then click the **Volumes** tab to display the Volumes page.



3. Click **View Extra Specs** displayed against the volume type which you want to associate to the backend.



The **Create Volume Type Extra Specs** dialog box displays.



4. In the **Key** box, enter *volume_backend_name*. This is the name of the key used to specify the storage backend when provisioning volumes of this volume type.

5. In the **Value** box, enter the name of the backend to which you want to associate the volume type. For example:*helion-ceph-cinder*.
6. Click **Create** to create the extra volume type specs.

Note: Once the volume type is mapped to the backend, you can create volumes.

Creating a Cinder backup

Once the Cinder service is restarted, you can create a backup of a Cinder volume. There are two ways to create a backup:

- The Horizon Overcloud Dashboard
- The Command Line Interface (CLI)

Note: For Cinder backup, the Cinder volume to be backed up must be in a detached state. The volume should not be attached to any of the instances or Virtual Machines.

Using the Horizon overcloud dashboard

Create a volume backup see *OpenStack User Guide*

Using the CLI

1. Login to the Overcloud using the `controllermanagement` command.
2. To create a cinder backup, enter:

```
cinder backup-create [--container <container>] --display-name <display-
name>] [--display-description <display-description>] <volume>
```

where:

`volume` is then name or ID of the volume to backup.

`container <container>` is the optional Backup container name. (Default=None)

`display-name <display-name>` is the optional backup name. (Default=None)

`display-description <display-description>` is the optional backup description. (Default=None)

The following example shows how to create a backup with the name of **deb7rawbackup** for an existing Cinder volume with the ID **0a2c6c62-627f-42d3-9b66-e4ba56db0ba7**:

```
cinder backup-create --display-name deb7rawbackup 0a2c6c62-627f-42d3-9b66-
e4ba56db0ba7.

cinder backup-create --display-name cindervol_backup ff8d13a5-3083-424b-
a626-0b75cbe8cf66
```

Output:

```
+-----------+--------------------------------------+
|  Property |                Value                 |
+-----------+--------------------------------------+
|     id    | 60764712-c456-465a-828b-5f45d3a14ff5 |
|    name   |           cindervol_backup           |
| volume_id | ff8d13a5-3083-424b-a626-0b75cbe8cf66 |
+-----------+--------------------------------------+
```

3. View a list of Cinder backups, enter:

```
cinder backup-list
```

Output:

```
   +--------------------------------------
+--------------------------------------+-----------+------------------
+------+-------------+---------------------+
    |                  ID                  |              Volume ID
          |   Status  |        Name       | Size | Object Count |
 Container      |
    +--------------------------------------
+--------------------------------------+-----------+------------------
+------+-------------+---------------------+
    | 244aa3a1-b291-4cfe-9999-438f7611da2b | eb170c5e-d227-40ef-b515-
b84b82c38eb0 | available |    Rvol6backup    |  15  |     None     |
 helion-ceph-backups |
    | 32ea7668-9179-433c-8fe3-44b98cd9d85b | 8aefafcc-4171-4c11-
b900-362fbda40015 | available | ubuntu1404-backup |  10  |     None     |
 helion-ceph-backups |
    | 60764712-c456-465a-828b-5f45d3a14ff5 | ff8d13a5-3083-424b-
a626-0b75cbe8cf66 |  creating |  cindervol_backup |  15  |     None     |
        None        |
    | beeccb71-81e7-4860-8d38-add05a2e610d | eb170c5e-d227-40ef-b515-
b84b82c38eb0 | available |    Rvol6backup    |  15  |     None     |
 helion-ceph-backups |
    +--------------------------------------
+--------------------------------------+-----------+------------------
+------+-------------+---------------------+
```

4. To view details of a selected volume, enter:

```
cinder backup-show 60764712-c456-465a-828b-5f45d3a14ff5
```

Output:

```
+------------------+--------------------------------------+
|      Property    |                Value                 |
+------------------+--------------------------------------+
| availability_zone |                None                |
|     container    |                None                |
|     created_at   |      2014-10-01T18:14:50.000000      |
|    description   |                None                |
|    fail_reason   |                None                |
|        id        | 60764712-c456-465a-828b-5f45d3a14ff5 |
|       name       |           cindervol_backup           |
|    object_count  |                None                |
|       size       |                 15                 |
|      status      |               creating               |
|     volume_id    | ff8d13a5-3083-424b-a626-0b75cbe8cf66 |
+------------------+--------------------------------------+
```

5. Enter:

```
rbd ls -l helion-ceph-backups
```

Output:

```
       NAME
                                                          SIZE PARENT FMT
PROT LOCK
       volume-0a2c6c62-627f-42d3-9b66-e4ba56db0ba7.backup.base
                                                        10240M          2
```

```
        volume-0a2c6c62-627f-42d3-9b66-
e4ba56db0ba7.backup.base@backup.02c6df2c-d03a-44ad-847a-
ce03b580ee23.snap.1412106395.75 10240M          2
        volume-0a2c6c62-627f-42d3-9b66-
e4ba56db0ba7.backup.base@backup.c9c20a09-403e-4011-
a3f8-2fea11a560ee.snap.1412042130.16 10240M          2
        volume-3adf1c83-2efa-4a1e-bef6-cdaffd13b489.backup.base
                                                      3072M          2
        volume-3adf1c83-2efa-4a1e-bef6-
cdaffd13b489.backup.base@backup.cdd27130-1791-45f6-8b6e-
cc284922b02e.snap.1412041965.31  3072M          2
```

6. To view cluster utilization, enter:

```
    rados df
```

Output:

```
    pool name       category                 KB      objects       clones
    degraded      unfound           rd        rd KB           wr        wr
 KB
    .rgw            -                          9411        51459
 0            0           0       110460        85700       130906
 51952
    .rgw.buckets    -                       20004       188711
  0            0           0      6466145      4329147      8000069
 1563078
    helion-ceph-backups -                   54343272        13300
 2190            0           0        16295     40106569        38157
 70071922
```

Note: You can delete a Cinder volume by executing: `cinder backup-delete`.

7. Attach the Cinder volume to a Nova instance by entering:

```
nova volume-attach <instance id> <volume ID>
```

8. Select the instance and provide the device name by entering:

```
nova volume-attach <server> <volume> <device>
```

Mounting the volume and Copying a new image

To mount the volume and copy the new image file from the VM, perform these steps:

1. Log in as root.
2. List the block devices by entering:

```
lsblk
```

Output:

```
NAME                    MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
vda                     254:0    0    10G  0 disk
aavda1                  254:1    0   243M  0 part /boot
aavda2                  254:2    0     1K  0 part
aavda5                  254:5    0   7.8G  0 part
  aadebian-root (dm-0)  253:0    0   7.4G  0 lvm  /
  aadebian-swap_1 (dm-1) 253:1    0   376M  0 lvm  [SWAP]
vdb                     254:16   0    26G  0 disk
vdc                     254:32   0    10G  0 disk
vdd                     254:48   0    10G  0 disk
```

```
vde                         254:64   0    10G  0 disk
vdf                         254:80   0    10G  0 disk
vdg                         254:96   0    10G  0 disk
vdi                         254:128  0    15G  0 disk
vdj                         254:144  0    15G  0 disk
```

3. Mount `dev` to `vol` by entering:

```
mount /dev/vdj /mnt/vol
```

Output:

```
mount: mount point /mnt/vol does not exist
```

4. Mount `dev` to `vol1` by entering:

```
mount /dev/vdj /mnt/vol1
```

5. Change the directory by entering:

```
cd /mnt/vol1
```

6. List all the sub-directories by entering:

```
ls -ltr
```

7. To view disk usage, enter:

```
df -h
```

Output:

```
Filesystem               Size  Used Avail Use% Mounted on
rootfs                   7.3G  6.7G  248M  97% /
udev                      10M     0   10M   0% /dev
tmpfs                    397M  208K  397M   1% /run
/dev/mapper/debian-root  7.3G  6.7G  248M  97% /
tmpfs                    5.0M     0  5.0M   0% /run/lock
tmpfs                    794M     0  794M   0% /run/shm
/dev/vda1                228M   18M  199M   9% /boot
/dev/vdj                  15G  847M   14G   6% /mnt/vol1
```

8. To mount, enter:

```
mount
```

Output:

```
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
udev on /dev type devtmpfs
 (rw,relatime,size=10240k,nr_inodes=506385,mode=755)
devpts on /dev/pts type devpts
 (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,noexec,relatime,size=406364k,mode=755)
/dev/mapper/debian-root on / type ext4 (rw,relatime,errors=remount-
ro,user_xattr,barrier=1,data=ordered)
tmpfs on /run/lock type tmpfs (rw,nosuid,nodev,noexec,relatime,size=5120k)
tmpfs on /run/shm type tmpfs
 (rw,nosuid,nodev,noexec,relatime,size=812720k)
/dev/vda1 on /boot type ext2 (rw,relatime,errors=continue)
```

```
/dev/vdj on /mnt/vol1 type ext4
 (rw,relatime,user_xattr,barrier=1,data=ordered)
```

Now the Cinder volume has additional file system changes within the volume.

9. To list the additional file system changes, enter:

```
ls-ltr
```

Output:

```
total 6328752
drwx------ 2 root root      16384 Oct  1 05:22 lost+found
-rwxr-x--- 1 root root  702939136 Oct  1 05:23 CentOS_65.qcow2
-rw-r--r-- 1 root root   10870593 Oct  1 05:24 initrd.img-3.2.0-4-amd64
-rw-r--r-- 1 root root 5766807552 Oct  2 00:34 Debian_7.raw
```

10. To view disk usage, enter:

```
df -h
```

Output:

```
Filesystem               Size  Used Avail Use% Mounted on
rootfs                   7.3G  6.7G  248M  97% /
udev                      10M     0   10M   0% /dev
tmpfs                    397M  208K  397M   1% /run
/dev/mapper/debian-root  7.3G  6.7G  248M  97% /
tmpfs                    5.0M     0  5.0M   0% /run/lock
tmpfs                    794M     0  794M   0% /run/shm
/dev/vda1                228M   18M  199M   9% /boot
/dev/vdj                  15G  6.2G  8.6G  42% /mnt/vol1
```

11. To unmount the volume, enter:

```
umount /dev/vdj
```

12. To mount the volume, enter:

```
mount
```

Output:

```
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
udev on /dev type devtmpfs
 (rw,relatime,size=10240k,nr_inodes=506385,mode=755)
devpts on /dev/pts type devpts
 (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,noexec,relatime,size=406364k,mode=755)
/dev/mapper/debian-root on / type ext4 (rw,relatime,errors=remount-
ro,user_xattr,barrier=1,data=ordered)
tmpfs on /run/lock type tmpfs (rw,nosuid,nodev,noexec,relatime,size=5120k)
tmpfs on /run/shm type tmpfs
 (rw,nosuid,nodev,noexec,relatime,size=812720k)
/dev/vda1 on /boot type ext2 (rw,relatime,errors=continue)
```

Restoring data from a Cinder backup

You can restore the backed up volume to a new volume or an existing volume.

In the following example, a new volume is created and the data is restored to it.

To create a new volume and to restore data backup perform the following steps.

1. To create a volume, enter:

```
cinder create --display-name restore_volume1 15
```

Output:

```
   +---------------------+--------------------------------------+
    |       Property      |                Value                 |
    +---------------------+--------------------------------------+
    |     attachments     |                  []                  |
    |  availability_zone  |                 nova                 |
    |       bootable      |                false                 |
    |      created_at     |      2014-10-01T21:48:42.727440      |
    | display_description |                 None                 |
    |     display_name    |           restore_volume1            |
    |      encrypted      |                False                 |
    |          id         | 1b4614f8-8069-4211-8a3e-797be5641964 |
    |       metadata      |                  {}                  |
    |         size        |                  15                  |
    |     snapshot_id     |                 None                 |
    |     source_volid    |                 None                 |
    |        status       |               creating               |
    |     volume_type     |                 None                 |
    +---------------------+--------------------------------------+
```

2. Execute the following command to the Cinder backup restore:

```
cinder backup-restore --volume-id restore_volume1 60764712-
c456-465a-828b-5f45d3a14ff5
```

3. View the Cinder backup by entering:

```
cinder backup-list
```

Output:

```
+--------------------------------------
+--------------------------------------+-----------+------------------
+------+--------------+---------------------+
|                  ID                  |              Volume ID
    |   Status  |        Name       | Size | Object Count |      Container
      |
+--------------------------------------
+--------------------------------------+-----------+------------------
+------+--------------+---------------------+
| 02c6df2c-d03a-44ad-847a-ce03b580ee23 | 0a2c6c62-627f-42d3-9b66-
e4ba56db0ba7 | available |   deb7rawbackup   |  10  |     None     |
 helion-ceph-backups |
| 244aa3a1-b291-4cfe-9999-438f7611da2b | eb170c5e-d227-40ef-b515-
b84b82c38eb0 | available |    Rvol6backup    |  15  |     None     |
 helion-ceph-backups |
| 32ea7668-9179-433c-8fe3-44b98cd9d85b | 8aefafcc-4171-4c11-
b900-362fbda40015 | available | ubuntu1404-backup |  10  |     None     |
 helion-ceph-backups |
| 60764712-c456-465a-828b-5f45d3a14ff5 | ff8d13a5-3083-424b-
a626-0b75cbe8cf66 | restoring |  cindervol_backup |  15  |     None     |
 helion-ceph-backups |
| beeccb71-81e7-4860-8d38-add05a2e610d | eb170c5e-d227-40ef-b515-
b84b82c38eb0 | available |    Rvol6backup    |  15  |     None     |
 helion-ceph-backups |
```

```
| c9c20a09-403e-4011-a3f8-2fea11a560ee | 0a2c6c62-627f-42d3-9b66-
e4ba56db0ba7 | available |  RDebian7_backup  |  10  |     None     |
 helion-ceph-backups |
| cdd27130-1791-45f6-8b6e-cc284922b02e | 3adf1c83-2efa-4a1e-bef6-
cdaffd13b489 | available |      Rbackup1     |  3   |     None     |
 helion-ceph-backups |
+--------------------------------------
+--------------------------------------+-----------+------------------
+------+-------------+---------------------+
```

4. View the Cinder list by entering:

```
cinder list
```

Output:

```
+--------------------------------------+------------------
+----------------------+------+-------------+----------
+--------------------------------------+
|                  ID                  |      Status      |      Display
 Name     | Size | Volume Type | Bootable |             Attached to
       |
+--------------------------------------+------------------
+----------------------+------+-------------+----------
+--------------------------------------+
| 0219d66e-d69d-4e28-bf4f-cb5f096696e3 |    available     |
 Rsmallvol4      |  1   |     None    |  false   |
              |
| 0285ee63-4ebd-4cd1-915c-933c48503d00 |      in-use      |
 Rvol1         |  10  |     None    |  false   | 54938de0-49dd-4b01-931e-
dafcddc41518 |
| 054bfa98-1d69-4cb8-b195-9b9481f5b8c7 |      in-use      |
 Rwin2012Cowrawvol1  |  26  |     None    |   true   | 0bf98387-b0c9-4814-
a2ef-f81c1ef1322e |
| 1b4614f8-8069-4211-8a3e-797be5641964 | restoring-backup |
 restore_volume1    |  15  |     None    |  false   |
                |
+--------------------------------------+------------------
+----------------------+------+-------------+----------
+--------------------------------------+
```

Once the backup is created, the volume name remains the same as the Cinder-backup name.

5. Verify the volume name by entering:

```
cinder list
```

Output:

```
+--------------------------------------+-----------
+--------------------------------------+------+-------------+----------
+--------------------------------------+
|                  ID                  |   Status  |             Display
 Name            | Size | Volume Type | Bootable |             Attached to
             |
+--------------------------------------+-----------
+--------------------------------------+------+-------------+----------
+--------------------------------------+
| 0219d66e-d69d-4e28-bf4f-cb5f096696e3 | available |
 Rsmallvol4             |  1   |     None    |  false   |
                    |
```

```
| 0285ee63-4ebd-4cd1-915c-933c48503d00 |   in-use  |                 Rvol1
                 |  10  |     None    |  false   | 54938de0-49dd-4b01-931e-
dafcddc41518 |
| 1b4614f8-8069-4211-8a3e-797be5641964 | available |
 cindervol_forbackup          |  15  |     None    |  false   |
                           |
+--------------------------------------+-----------
+--------------------------------------+------+-------------+----------
+--------------------------------------+
```

Verify the attachment of volume to a VM

Perform the following to verify the attachment of a volume to a VM and verify the content.

1. Change the directory by entering:

```
cd /mnt/vol1
```

2. Verify the content by entering:

```
ls -ls
```

Output

```
total 697100
686468 -rwxr-x--- 1 root root 702939136 Oct 1 05:23 CentOS_65.qcow2
10616 -rw-r--r-- 1 root root 10870593 Oct 1 05:24 initrd.img-3.2.0-4-amd64
16 drwx------ 2 root root 16384 Oct 1 05:22 lost+found
```

Return to Top

Volume snapshots

Volume snapshots are saved in a Cinder pool.

Creating a volume snapshot for backup

You can create new and identical volumes by taking a snapshot of the volume.

There are two ways to create a snapshot backup:

1. Horizon Overcloud dashboard
2. The Command Line Interface (CLI)

Notes for taking snapshots

- The volume must be detached and must be in an **available** state to take a snapshot of it. An error occurs if you try to snapshot a used volume.
- To function properly, keep the original volume, whose snapshot was taken. If the original volume is deleted then the snapshot becomes unusable.

Using the Horizon Overcloud dashboard

To create a snapshot from volume, see *OpenStack User Guide*

Using the CLI

The following steps show how to create a snapshot using the CLI.

1. To create a snapshot, enter:

```
nova volume-snapshot-create --force [TRUE or FALSE] --display_name
 [DISPLAY_NAME] --display_description [DISPLAY_DESCRIPTION] [VOLUME_ID]
```

Note: This is a base command without the variable set.

2. To view the snapshot, enter:

```
nova volume-snapshot-list
```

Output

```
+--------------------------------------
+--------------------------------------+-----------
+--------------------------------------+------+
| ID | Volume ID | Status | Display Name | Size |
+--------------------------------------
+--------------------------------------+-----------
+--------------------------------------+------+
| 1f9cae44-e3c9-4326-a1f9-68aeea34d672 |
 0285ee63-4ebd-4cd1-915c-933c48503d00 | available | snapshot for
 Rinstgeneral_snapshot | 10 |
| 2758b62c-8f2a-482c-bf2c-9183c8304227 | f628002a-6cc4-4e70-a98f-
d575e36fca75 | available | snapshot for Rinstgeneral_snapshot | 10 |
| 32267733-bf04-4180-a1ea-bc133726bb7b | 525bd6a2-05cc-4bba-9a6a-
f8e8a3f6ce68 | available | snapshot for Rinstgeneral_snapshot | 10 |
| 4b1e37f6-04f6-41c4-a80c-34ce8d8c743a | 386ed069-71c4-428b-9ecc-
f21d572d74b2 | available | snapshot for Rdeb8cowinst7_snapshot | 10 |
+--------------------------------------
+--------------------------------------+-----------
+--------------------------------------+------+
```

Working with Nova

There are two ways to list the Nova instance:

- The Horizon Overcloud Dashboard
- The Command Line Interface (CLI)

Note: For Cinder backups, the Cinder volume to be backed up must be in a detached state. The volume should not be attached to any of the instances or Virtual Machines.

Using the Horizon Overcloud dashboard

1. Log into the Overcloud Horizon.
2. From the left panel, click the **Projects** tab and then **Instances** to view the list of instances.
3. Click on the **Instance Name** to view the instance console log.

Using the Command Line Interface

```
<img src="/media/ceph-ansible-nova1.png"/)>
```

From the CLI, perform the following:

1. List all of the Nova instances

```
nova list
```

```
root@overcloud-controller0-4rooy7pzo4dz:~# nova list
+--------------------------------------+--------------+--------+------
----------------+
| ID                                   | Name         | Status | Task
               |
+--------------------------------------+--------------+--------+------
----------------+
| 249f0727-d4a8-4f11-b6c7-0cce447a5116 | instance1_RBD | ACTIVE | -
0.5, 192.0.8.24 |
| b0867155-e48d-4023-b84a-6a676310d58a | instance2_RBD | ACTIVE | -
0.6, 192.0.8.23 |
| 34dff699-2156-4a83-b7b4-8d678bd8e602 | instance3_RBD | ACTIVE | -
0.7             |
| 839019a9-c7aa-44b0-a226-46a1e97bb371 | instance4_RBD | ACTIVE | -
0.9             |
+--------------------------------------+--------------+--------+------
----------------+
```

2. Verify instance status by entering:

```
sudo ceph -w
```

```
root@overcloud-controller0-4rooy7pzo4dz:~# ceph -w
    cluster f6d33f33-7278-4387-afe1-f5f8983cb7c8
     health HEALTH_OK
     monmap e1: 1 mons at {ceph-mon=192.168.122.110:6789/0}, election e
     osdmap e60: 3 osds: 3 up, 3 in
      pgmap v11494: 620 pgs, 7 pools, 1067 MB data, 282 objects
            22641 MB used, 105 GB / 134 GB avail
                 620 active+clean

2014-08-14 21:17:22.348164 mon.0 [INF] pgmap v11494: 620 pgs: 620 activ
05 GB / 134 GB avail; 2617 B/s rd, 7852 B/s wr, 4 op/s
```

Attaching the Cinder volume to the Nova instance

There are two ways to attach a Cinder volume to a Nova instance.

- The Horizon overcloud dashboard
- The Command Line Interface (CLI)

Attaching a Cinder volume from Horizon Overcloud dashboard

To attach a Cinder volume to a Nova instance perform the following steps:

1. In the Horizon Dashboard, click the **Project** Tab.
2. Click **Compute** and then **Volume** to open the Volume page.
3. Click the **More Action** tab, and select **Edit Attachments**.
4. Click the **Attach to Instance** drop-down list and select the instance.
5. In the **Device Name** box, enter the name of the selected instance.
6. Click **Attach Volume** to attach the Cinder volume to the Nova instance. To undo these changes, click **Cancel**.

Attaching a Cinder volume using the Command Line Interface (CLI)

To attach a Cinder volume to a Nova instance using the CLI:

1. Execute the following command to attach the volume to a Nova instance

```
nova volume-attach <instance id> <volume ID>
```

2. To view all the volumes, enter:

```
# cinder list
```

3. To view the Nova instance, enter:

```
nova list
```

4. To view the details of the attached volume, enter:

```
# cinder show  <volume ID>
```

For example:

```
cinder show 580d3e95-970f-4a9c-92ea-284799dcbc82
```

Output:

```
+--------------------------------------
+-------------------------------------------------------------------------------------
+
| Property                             | Value

                      |
+--------------------------------------
+-------------------------------------------------------------------------------------
+
| attachments                          | [{u'device': u'/dev/
vde', u'server_id': u'd6c98de0-b65e-4e43-bd5e-04c81ad26cd1',
 u'id': u'580d3e95-970f-4a9c-92ea-284799dcbc82',
                               u'host_name': None, u'volume_id':
 u'580d3e95-970f-4a9c-92ea-284799dcbc82'}]
                      |
| availability_zone                    | nova

                      |
| bootable                             | false

                      |
| created_at                           | 2014-08-13T03:38:27.000000

                      |
| display_description                  | None

                      |
| display_name                         | volume2_RBD

                      |
| encrypetd                            | False

                      |
|  id                                  |
 580d3e95-970f-4a9c-92ea-284799dcbc82
                                                                    |
```

```
| metadata                              | {u'readonly': u'False',
 u'attached_mode': u'rw'}
                                |
| os-vol-host-attr:host                 | overcloud-controller1-
thg43e77ptei
                                 |
| os-vol-mig-status-attr:migstat        | None

                       |
| os-vol-mig-status-attr:name_id        | None

                       |
| os-vol-tenant-attr:tenant_id          | 98ae295c1958428a890cf6441d70db08

                       |
| size                                  | 2

                       |
| snapshot_id                           | None

                       |
| source_volid                          | None

                       |
| status                                | in-use

                       |
| volume_type                           | None

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

5. To view the details of the Nova instance, enter:

```
nova show < nova instance ID>
```

For example:

```
# nova show d6c98de0-b65e-4e43-bd5e-04c81ad26cd1
```

Output:

```
+--------------------------------------
+-------------------------------------------------------------------------------
+
| Property                             | Value


+--------------------------------------
+-------------------------------------------------------------------------------
+
| OS-EXT-AZ:availability_zone          | nova
                                              |

| OS-EXT-SRV-ATTR:host                 | overcloud-novacompute0-
k3kakatgtgb2                                            |

| OS-EXT-SRV-ATTR:hypervisor_hostname  | overcloud-novacompute0-
k3kakatgtgb2.novalocal                                  |
```

```
| OS-EXT-SRV-ATTR:instance_name         | instance-00000087
                                                |

| OS-EXT-STS:power_state                | 1
                                                |

| OS-EXT-STS:task_state                 | -
                                                |

| OS-EXT-STS:vm_state                   | active
                                                |

| accessIPv4                            |
                                                |

| accessIPv6                            |
                                                |
| config_drive                          |
                                                |
| created                               | 2014-08-12T23:43:50Z
                                                |
| default-net network                   | 10.0.0.43, 192.168.100.108
                                                |
| flavor                                | m1.tiny (1)
                                                |
| hostId                                |
 cf6bb4eb58517b0e06246628e3d0559267a2594c06ea44100e2fae1e
      |
| id                                    | d6c98de0-b65e-4e43-
bd5e-04c81ad26cd1                                       |
| image                                 | debian-wheezy-server-amd64-disk
 (39565ba5-bfe7-4ee7-be2b-abab70eeb989)          |
| key_name                              | default
                                                |
| metadata                              | {}
                                                |
| name                                  | vm1
                                                |
| progress                              | 0
                                                |
| security_groups                       | default
                                                |
| status                                | ACTIVE
                                                |
| tenant_id                             | 98ae295c1958428a890cf6441d70db08
                                                |
| updated                               | 2014-08-12T23:44:23Z
                                                |
| user_id                               | 835261faa1454b56bfab6cd07edfd433
                                                |
+---------------------------------------
+-------------------------------------------------------------------------------
+
```

Return to Top

Ceph RADOS gateway validation

To validate the RADOS gateway, make a GET request to the gateway server using the FQDN or IP address of the gateway server.

```
For example:
```

```
curl -k (https://gateway.ex.com)
```

- GET Response

```
<?xml version="1.0" encoding="UTF-8"?><ListAllMyBucketsResult
xmlns="http://s3.amazonaws.com/doc/2006-03-01/"><Owner><ID>anonymous</
ID><DisplayName></DisplayName></Owner><Buckets></Buckets></
ListAllMyBucketsResult>
```

This response indicates that gateway instance is working as expected.

- If there is an error, ensure `radosgw` is executed in debug mode and watch out for errors.
- If there is a permission issue on `/var/run/ceph/ceph-client.radosgw.gateway.asok`, change file permission accordingly.
- If there is error with Apache2 or FastCGI, look for debug logs in the `/var/log/apache2/error.log`. Changing permissions accordingly on `/var/www directory` or `/var/www/s3gw.fcgi` file should fix the problem.

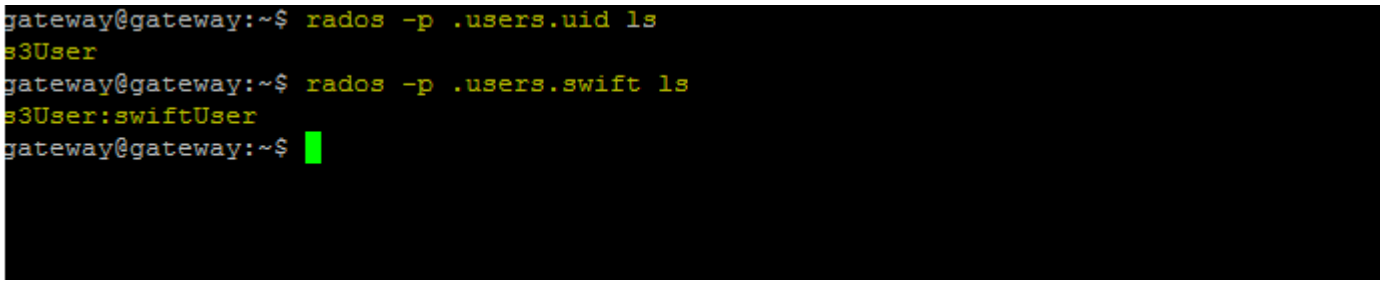
Creating Users

To create users, execute the following:

```
radosgw-admin user create --subuser=s3User:swiftUser --display-name="First
 User" --key-type=swift --access=full

<img src="/media/ceph-ansible-create-user1.png"/)>
```

- Make sure that user `s3User` and subuser `s3User:swiftUser` are stored in respective `.users.uid`and `.users.swift pool`.



- S3 users and swifts users need to have access and secret keys to enable end users to interact with the gateway instance. To create the access and secret key for s3User, enter:

```
radosgw-admin key create --uid=s3User --key-type=s3 --gen-access-key --
gen-secret
```

```
gateway@gateway:~$ radosgw-admin key create --uid=s3User --key-type=s3 --gen-access-ke
{ "user_id": "s3User",
  "display_name": "First User",
  "email": "",
  "suspended": 0,
  "max_buckets": 1000,
  "auid": 0,
  "subusers": [],
  "keys": [
        { "user": "s3User",
          "access_key": "2KASLCG8C1XVYERMD2WQ",
          "secret_key": "UpUVhhhdAemX779ZAECVQBNBxEtCaqASzjDJW8ZB"}],
  "swift_keys": [
        { "user": "s3User:swiftUser",
          "secret_key": "Pp3YqVoyqOpFF28kby03e55j3akd0wEE3NYGjXsK"}],
  "caps": [],
  "op_mask": "read, write, delete",
  "default_placement": "",
  "placement_tags": [],
  "bucket_quota": { "enabled": false,
      "max_size_kb": -1,
      "max_objects": -1},
  "user_quota": { "enabled": false,
      "max_size_kb": -1,
      "max_objects": -1},
  "temp_url_keys": []}
```

- Makesure that keys generated are free of JSON escape () characters,
- If the User or Application will write more than 1k Containers, then you must modify the `max_buckets` variable. Also, right-sizing of Placement Groups per Pool may be required. Make sure that `max_buckets` is set to unlimited size by setting it to 0. This is important in order to write unlimited containers into the `.rgw.buckets` default pool during workload testing.

```
radosgw-admin user modify --uid=s3User --max-buckets=0
```

Working with the Swift client

- The gateway instance and Swift users can be verified on gateway node or Ceph client using Swift Client by making Swift v1.0 requests
- Create `creds.py` with the following file contents

```
#Auth url pointing to gateway node
export ST_AUTH=http://gateway.ex.com/auth/v1.0
#Swift user
export ST_USER=s3User:swiftUser
#Swift user - secret key
export ST_KEY= abd
```

- Source swift credentials by entering:

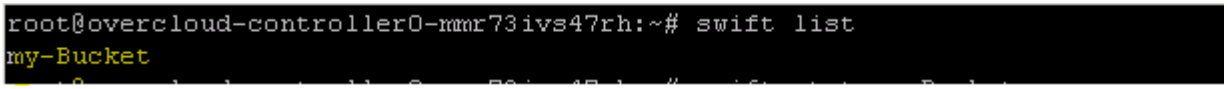
```
source creds.py
```

- List the container by entering:

```
swift --insecure -V 1.0 -A http://gateway.ex.com/auth/v1.0 -U
 s3User:swiftUser -K abc list
```

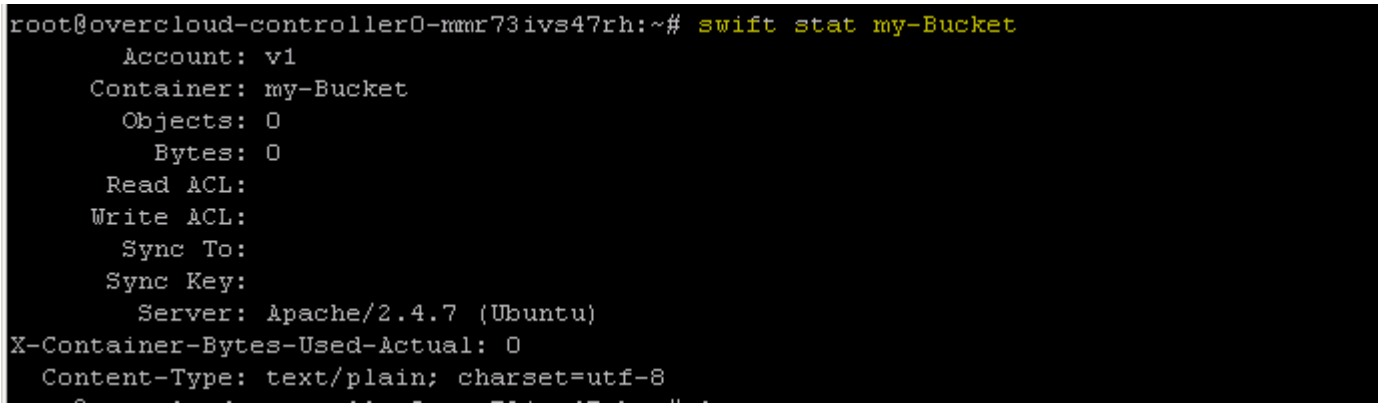
OR

```
swift list
```



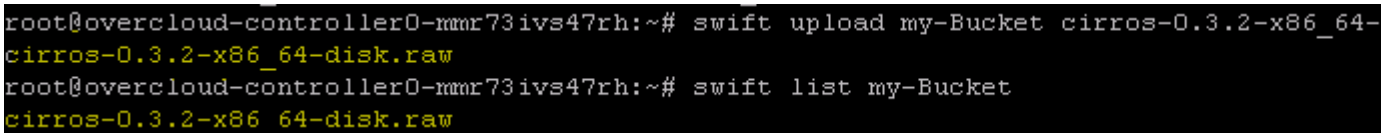
- Display container information by entering:

```
swift stat <container>
```



- Upload image into the container by entering:

```
swift upload <container> <image to upload>
```



- Verify the upload using stat by entering:

```
swift stat <container>
```

```
root@overcloud-controller0-mmr73ivs47rh:~# swift stat my-Bucket
       Account: v1
     Container: my-Bucket
       Objects: 1
         Bytes: 41126400
      Read ACL:
     Write ACL:
       Sync To:
      Sync Key:
        Server: Apache/2.4.7 (Ubuntu)
X-Container-Bytes-Used-Actual: 41127936
  Content-Type: text/plain; charset=utf-8
root@overcloud-controller0-mmr73ivs47rh:~#
```

- Verify that the uploaded image is residing in the RGW pool by entering:

```
rados -p .rgw.buckets ls
```

```
gateway@gateway:~$ rados -p .rgw.buckets ls
default.39808.1__shadow_.KC4qQI4QM_6J4-JN-TrCpruZom3vOyE_6
default.39808.1__shadow_.KC4qQI4QM_6J4-JN-TrCpruZom3vOyE_1
default.39808.1__shadow_.KC4qQI4QM_6J4-JN-TrCpruZom3vOyE_9
default.40982.1__shadow_.-HH5IMmIVqFjCg1xHkEmrq2y8aVX-Z5_7
default.40982.1__shadow_.-HH5IMmIVqFjCg1xHkEmrq2y8aVX-Z5_1
default.39808.1__shadow_.KC4qQI4QM_6J4-JN-TrCpruZom3vOyE_7
default.40982.1_cirros-0.3.2-x86_64-disk.raw
```

Next Steps

Ceph Monitoring

Return to Top