

## Contents

- [1 Overview](#)
- [2 Assumptions](#)
- [3 Pre-Check and Configuration of the Physical/Logical Drive](#)
- [4 Authors](#)

## Overview

This guide will provide a quick walk through of using the Cisco OpenStack Installer (COI) Havana Release 2 (H.2) to setup and use Cinder volumes for persistent storage on instances. This guide is not meant to provide a primer on the various storage options in OpenStack or a primer on Cinder block storage itself. This guide is meant to help you quickly leverage the Cinder support that is included in COI and to validate a basic working setup.

The default COI setup, regardless of scenario (i.e All-in-One, 2\_role, Compressed HA, etc...), provides a basic Cinder setup which includes the deployment of pre-set values in the `/etc/cinder/cinder.conf` file. Namely, the setting that is discussed in this document is the name of the default Cinder volume which is **cinder-volumes**.

## Assumptions

- You have used COI to setup a scenario such as the All-in-One (AIO) scenario.
- You have a physical hard drive or a logical hard drive (i.e. a second VMware disk attached to a VM) on that node that can be used as the cinder-volume (**Note:** You can create a physical volume and volume group that is a partition and only using a portion of the drive or you can configure Cinder to use loopbacks for testing [not discussed in this guide])

## Pre-Check and Configuration of the Physical/Logical Drive

In the example that will be used in this guide, there is a 5 Gig virtual hard drive that is attached to the COI AIO node being used as the test machine.

Check that the `/etc/cinder/cinder.conf` file does have the "cinder-volumes" name set:

```
root@all-in-one:~# grep cinder-volumes /etc/cinder/cinder.conf
volume_group = cinder-volumes
```

If you have not done so already, partition the disk, create a physical volume and a volume group on that partition with the name of "cinder-volumes". Your fdisk output may look like this:

```
root@all-in-one:~# fdisk -l /dev/sdb

Disk /dev/sdb: 5368 MB, 5368709120 bytes
181 heads, 40 sectors/track, 1448 cylinders, total 10485760 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x9516a16e
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sdb1		2048	10485759	5241856	83	Linux

## OpenStack:Havana:Cinder-Volume-Test

The physical volume may look like this:

```
root@all-in-one:~# pvdisk /dev/sdb1
--- Physical volume ---
PV Name           /dev/sdb1
VG Name           cinder-volumes
PV Size           5.00 GiB / not usable 3.00 MiB
Allocatable       yes
PE Size           4.00 MiB
Total PE          1279
Free PE           1023
Allocated PE      256
PV UUID           V7JgZ6-agKC-jhEx-7WAg-TMUK-eyC6-ecV4a0
```

The volume group may look like this:

```
root@all-in-one:~# vgdisplay cinder-volumes
--- Volume group ---
VG Name           cinder-volumes
System ID
Format            lvm2
Metadata Areas    1
Metadata Sequence No 18
VG Access         read/write
VG Status         resizable
MAX LV            0
Cur LV           1
Open LV           1
Max PV            0
Cur PV           1
Act PV            1
VG Size           5.00 GiB
PE Size           4.00 MiB
Total PE          1279
Alloc PE / Size   256 / 1.00 GiB
Free PE / Size    1023 / 4.00 GiB
VG UUID           4kdJk-j-8eNP-k4QS-PTW6-CH80-zbyf-qORyzQ
```

Now, you can begin using the Cinder client via CLI or via the OpenStack Dashboard to create a Cinder volume that will use the volume group you just created and attach that to a running instance.

For example, if you wanted to create a 1 GB Cinder volume named "test-volume" out of the 5 GB volume group that you created earlier and attach that to a running instance you would follow these steps via CLI:

Source the openrc file in /root/:

```
root@all-in-one:~# source openrc
```

Create a 1 GB volume named "test-volume"

```
cinder create --display_name test-volume 1
+-----+-----+
| Property | Value |
+-----+-----+
| attachments | [] |
| availability_zone | nova |
| bootable | false |
| created_at | 2014-03-22T09:59:26.648622 |
| display_description | None |
| display_name | test-volume |
+-----+-----+
```



## OpenStack:Havana:Cinder-Volume-Test

Now, create a directory on the instance to mount against:

```
[root@cinder-test ~]$ mkdir /test-directory
```

Create a filesystem:

```
[root@cinder-test ~]$ mkfs.ext3 /dev/vdc
mke2fs 1.42.8 (20-Jun-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
65536 inodes, 262144 blocks
13107 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=268435456
8 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376

Allocating group tables: done
Writing inode tables: done
Creating journal (8192 blocks): done
Writing superblocks and filesystem accounting information: done
```

Mount the device:

```
[root@cinder-test ~]$ mount /dev/vdc /test-directory/
```

You can now write to the volume:

```
[root@cinder-test ~]# cat > /test-directory/test-file
I can write to this file on a Cinder volume
^C
```

## Authors

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