



Red Hat Enterprise Linux OpenStack Platform 7 Dell StorageCenter Back End Guide

A Guide to Using Dell StorageCenter Storage in a RHEL OpenStack
Platform Environment

OpenStack Team

Red Hat Enterprise Linux OpenStack Platform 7 Dell StorageCenter Back End Guide

A Guide to Using Dell StorageCenter Storage in a RHEL OpenStack Platform Environment

OpenStack Team
rhos-docs@redhat.com

Legal Notice

Copyright © 2015 Red Hat, Inc.

The text of and illustrations in this document are licensed by Red Hat under a Creative Commons Attribution–Share Alike 3.0 Unported license ("CC-BY-SA"). An explanation of CC-BY-SA is available at

<http://creativecommons.org/licenses/by-sa/3.0/>

. In accordance with CC-BY-SA, if you distribute this document or an adaptation of it, you must provide the URL for the original version.

Red Hat, as the licensor of this document, waives the right to enforce, and agrees not to assert, Section 4d of CC-BY-SA to the fullest extent permitted by applicable law.

Red Hat, Red Hat Enterprise Linux, the Shadowman logo, JBoss, MetaMatrix, Fedora, the Infinity Logo, and RHCE are trademarks of Red Hat, Inc., registered in the United States and other countries.

Linux ® is the registered trademark of Linus Torvalds in the United States and other countries.

Java ® is a registered trademark of Oracle and/or its affiliates.

XFS ® is a trademark of Silicon Graphics International Corp. or its subsidiaries in the United States and/or other countries.

MySQL ® is a registered trademark of MySQL AB in the United States, the European Union and other countries.

Node.js ® is an official trademark of Joyent. Red Hat Software Collections is not formally related to or endorsed by the official Joyent Node.js open source or commercial project.

The OpenStack ® Word Mark and OpenStack Logo are either registered trademarks/service marks or trademarks/service marks of the OpenStack Foundation, in the United States and other countries and are used with the OpenStack Foundation's permission. We are not affiliated with, endorsed or sponsored by the OpenStack Foundation, or the OpenStack community.

All other trademarks are the property of their respective owners.

Abstract

This document describes how to configure OpenStack to use one or more Dell StorageCenter back ends.

Table of Contents

CHAPTER 1. INTRODUCTION	3
CHAPTER 2. USE A SINGLE DELL STORAGECENTER BACK END FOR OPENSTACK BLOCK STORAGE ...	4
2.1. DEFINE THE BACK END	4
2.2. LOAD THE NECESSARY ADMINISTRATOR CREDENTIALS	5
2.3. CREATE A VOLUME TYPE AND RESTART BLOCK STORAGE SERVICE	5
2.4. TEST YOUR CONFIGURATION	6
CHAPTER 3. USE MULTIPLE DELL STORAGECENTER BACK ENDS FOR OPENSTACK BLOCK STORAGE ..	7
3.1. DEFINE EACH BACK END	7
3.2. LOAD THE NECESSARY ADMINISTRATOR CREDENTIALS	9
3.3. CONFIGURE THE VOLUME SERVICE	9
3.4. TEST YOUR CONFIGURATION	10

CHAPTER 1. INTRODUCTION

This document describes how to configure OpenStack to use one or more Dell StorageCenter back ends. The following chapters assume that:

- ✦ OpenStack has already been deployed with a properly-configured Block Storage service
- ✦ A Dell StorageCenter Group is already deployed and accessible through SSH
- ✦ No other back end is configured aside from the Dell StorageCenter devices
- ✦ The target back ends require CHAP authentication
- ✦ You have the necessary credentials for connecting to the Group manager of the available Dell StorageCenter Group (namely, CHAP and Group manager credentials)
- ✦ You have the username and password of an admin account for the OpenStack deployment (see "User and Role Management" in the *Users and Identity Management Guide*, or [Creating additional OpenStack admin users](#) for more information)

CHAPTER 2. USE A SINGLE DELL STORAGECENTER BACK END FOR OPENSTACK BLOCK STORAGE

This section describes how to configure OpenStack to use a single Dell StorageCenter device as a Block Storage back end.

2.1. DEFINE THE BACK END

When deploying OpenStack with a single back end, the settings for the back end are defined in the **[DEFAULT]** section. The following snippet displays the different settings required for using a Dell StorageCenter SAN device (in this case, the device is named **dell_sc_iscsi**):

[DEFAULT]

```
volume_driver=cinder.volume.drivers.dell_storagecenter_iscsi.DellStorageCenterISCSIDriver 1
volume_backend_name= dell_sc_iscsi
san_ip=10.1.1.1 2
san_login=Admin 3
san_password=password 4
iscsi_ip_address=192.168.0.20 5
dell_sc_ssn=64702 6
dell_sc_api_port=3033 7
dell_sc_server_folder=server_folder 8
dell_sc_volume_folder=volume_folder 9
iscsi_port=3260 10
```

1

volume_driver: The volume driver required for Dell StorageCenter back ends (namely, **cinder.volume.drivers.dell_storagecenter_iscsi.DellStorageCenterISCSIDriver**).

2

san_ip: The IP address used to reach the Dell Enterprise Manager. This field has no default value.

3

san_login: The user name to login to the Dell Enterprise Manager at the **san_ip**. The default user name is **Admin**.

4

san_password: The corresponding password of **san_login**. Default password is **password**.

5

iscsi_ip_address: The Dell Storage Center ISCSI IP address to be used for creating volumes and snapshots.

6

dell_sc_ssn: The Dell Storage Center serial number to use. Default is **64702**.

7

dell_sc_api_port: The Dell Enterprise Manager API port. It's optional and defaults to **3033**.

8

dell_sc_server_folder: The **Server** folder in Dell Storage Center where the new server definitions are placed.

9

dell_sc_volume_folder: The **Server** folder in Dell Storage Center where the new volumes are created. <10> **iscsi_port:** The ISCSI port of the Dell Storage Center array. This parameter is optional, and defaults to **3036**.

2.2. LOAD THE NECESSARY ADMINISTRATOR CREDENTIALS

As you will be performing administrative functions from this point onwards, you need to load the necessary environment variables to facilitate authentication. To do so, run the following commands:

```
# export OS_USERNAME=ADMIN_USER# export OS_TENANT_NAME=admin# export
OS_PASSWORD=ADMIN_PW# export OS_AUTH_URL=http://KEYSTONE_IP:35357/v2.0/#
export PS1='[\u@\h \W(keystone_admin)]\$'
```

Where:

- ✧ *ADMIN_USER* and *ADMIN_PW* are the username/password of a user account with administrative rights within the OpenStack environment.
- ✧ *KEYSTONE_IP* is the IP address or hostname of the Identity service.

For more information about OpenStack admin accounts, see [Creating additional OpenStack admin users](#).

2.3. CREATE A VOLUME TYPE AND RESTART BLOCK STORAGE SERVICE

After defining the back end, create a volume type for it. The following commands will create the volume type lvm and map it to the back end eqlsan (from [Section 2.1, “Define the Back End”](#)):

```
# cinder type-create dell_sc_backend# cinder type-key dell_sc_backend set  
volume_backend_name=dell_sc_iscsi
```

Then, restart the Block Storage service:

```
# openstack-service restart cinder
```

2.4. TEST YOUR CONFIGURATION

Verify your configuration by creating a 1GB volume named **test_backend**. To do so:

```
# cinder create --volume_type dell_sc_backend --display_name test_backend  
1
```

CHAPTER 3. USE MULTIPLE DELL STORAGECENTER BACK ENDS FOR OPENSTACK BLOCK STORAGE

This section describes how to configure OpenStack to use multiple Dell StorageCenter devices as Block Storage back ends.

3.1. DEFINE EACH BACK END

Start by creating a section for each back end in the `/etc/cinder/cinder.conf` file of the node hosting the **openstack-cinder-volume** service. The following snippet defines two back ends, **[backend1]** and **[backend2]**:

```
[backend1]
volume_driver=cinder.volume.drivers.dell_storagecenter_iscsi.
DellStorageCenterISCSIDriver 1
volume_backend_name=backend1 2
san_ip=10.1.1.1 3
san_login=Admin 4
san_password=password 5
iscsi_ip_address=192.168.0.20 6
dell_sc_ssn=64702 7
dell_sc_api_port=3033 8
dell_sc_server_folder=server_folder 9
dell_sc_volume_folder=volume_folder 10
iscsi_port=3260 11

[backend2]
volume_driver=cinder.volume.drivers. dell_storagecenter_iscsi.
DellStorageCenterISCSIDriver 12
volume_backend_name=backend1 13
san_ip=10.1.1.1 14
san_login=Admin 15
san_password=password 16
iscsi_ip_address=192.168.0.20 17
dell_sc_ssn=64702 18
dell_sc_api_port=3033 19
dell_sc_server_folder=server_folder 20
dell_sc_volume_folder=volume_folder 21
iscsi_port=3260 22
```

1

12

volume_driver: The iSCSI volume driver required for Dell StorageCenter back ends (namely,

cinder.volume.drivers.dell_storagecenter_iscsi.DellStorageCenterISCSIDriver).

2

13

volume backend name: Defines each back end's name. Each back end must have a

unique name.

3 14

san_ip: The IP address used to reach the Dell Enterprise Manager. This field has no default value.

4 15

san_login: The user name to login to the Dell Enterprise Manager at the `san_ip`. The default user name is **Admin**.

5 16

san_password: The corresponding password of `san_login`. Default password is **password**.

6 17

iscsi_ip_address: The Dell Storage Center iSCSI IP address to create volumes and snapshots.

7 18

dell_sc_ssn: The Dell Storage Center serial number to use. Default is **64702**.

8 19

dell_sc_api_port: The Dell Enterprise Manager API port. This parameter is optional, and defaults to **3033**.

9 20

dell_sc_server_folder: The **Server** folder in Dell Storage Center where the new server definitions are placed.

10 21

dell_sc_volume_folder: The **Server** folder in Dell Storage Center where the new volumes are created.

11 22

iscsi_port: The iSCSI port of the Dell Storage Center array. This parameter is optional, and defaults to **3036**.

3.2. LOAD THE NECESSARY ADMINISTRATOR CREDENTIALS

As you will be performing administrative functions from this point onwards, you need to load the necessary environment variables to facilitate authentication. To do so, run the following commands:

```
# export OS_USERNAME=ADMIN_USER# export OS_TENANT_NAME=admin# export
OS_PASSWORD=ADMIN_PW# export OS_AUTH_URL=http://KEYSTONE_IP:35357/v2.0/#
export PS1='[\u@\h \W(keystone_admin)]\$'
```

Where:

- ✱ *ADMIN_USER* and *ADMIN_PW* are the username/password of a user account with administrative rights within the OpenStack environment.
- ✱ *KEYSTONE_IP* is the IP address or hostname of the Identity service.

For more information about OpenStack admin accounts, see [Creating additional OpenStack admin users](#).

3.3. CONFIGURE THE VOLUME SERVICE

1. After defining each back end, configure the volume service to use each of them. To do so, set the defined back ends as a comma-delimited list to the `enabled_backends` setting in the **[DEFAULT]** section of `/etc/cinder/cinder.conf`. For example, to set **backend1** and **backend2** (from [Section 3.1, “Define Each Back End”](#)) as your back ends, run:

```
# openstack-config --set /etc/cinder/cinder.conf DEFAULT
enabled_backends backend1,backend2
```

2. Next, declare a *volume type* for each back end. Later on, when you create a volume, you can use the volume type to specify which back end the Block Storage service should use for creating the volume. The following commands will allow you to create two volume types: **dell_sc_iscsi1** and **dell_sc_iscsi2**:

```
# cinder type-create dell_sc_iscsi1# cinder type-create
dell_sc_iscsi2
```

3. Map the volume type **dell_sc_iscsi1** to **backend1**, and the **dell_sc_iscsi2** volume type to **backend2** (**backend1** and **backend2** are both distinct back ends defined in [Section 3.1, “Define Each Back End”](#)):

```
# cinder type-key dell_sc_iscsi1 set volume_backend_name=backend1#
cinder type-key dell_sc_iscsi2 set volume_backend_name=backend2
```

4. Configure the Block Storage service to intelligently determine which back end to use for a specific request:

```
# openstack-config --set /etc/cinder/cinder.conf DEFAULT
scheduler_default_filters CapacityFilter
```

With this, the Block Storage service will choose from the configured back ends based on each one's capacity.

5. Enable thin provisioning for SAN volumes:

```
# openstack-config --set /etc/cinder/cinder.conf DEFAULT  
san_thin_provision true
```

6. Restart the Block Storage service:

```
# openstack-service restart cinder
```

3.4. TEST YOUR CONFIGURATION

Verify your configuration by creating a 1GB volume backed by **backend2** and named **test_backend2**:

```
# cinder create --volume_type dell_sc_iscsi2 --display_name test_backend2  
1
```