



Red Hat OpenStack Platform 15

Dell EMC PS Series Back End Guide

A Guide to using Dell EMC PS Series Storage in a Red Hat OpenStack Platform
overcloud

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Abstract

This document contains information about deploying a single Dell EMC PS Series device as a back end to the Red Hat OpenStack Platform 15 overcloud.

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CHAPTER 1. INTRODUCTION TO USING DELL EMC PS SERIES BACK END

This document contains information about configuring Red Hat OpenStack Platform (RHOSP) to use one or more Dell EMC PS Series back ends. It also includes instructions about how to address volume size discrepancies between Dell EMC PS Series devices and the OpenStack Block Storage service.

Prerequisites

- You intend to use only Dell EMC PS Series devices and drivers for Block Storage back ends.
- You have deployed your RHOSP overcloud with the RHOSP director with a properly-functional Block Storage service.
- You have deployed and configured your Dell storage device as a storage repository.
- You have deployed a Dell EMC PS Series Group and it is accessible through SSH.
- You have the necessary credentials to connect to the Group manager of the available Dell EMC PS Series Group (the CHAP and Group manager credentials).
- You have the username and password of an account with elevated privileges. You can use the **stack** user that you create to deploy the overcloud. For more information, see [Preparing the undercloud](#) in the *Director Installation and Usage* guide.

When you deploy RHOSP with the director, you must also define and orchestrate all major overcloud settings with the director. This ensures that the settings persist through any further overcloud updates. For more information about deploying RHOSP with the director, see the [Director Installation and Usage](#) guide.

This document explains how to orchestrate your Dell EqualLogic back end configuration to the Block Storage service on the overcloud. This document does not discuss the different deployment configurations that are possible with the back end. For more information about the different deployment configurations that are available, see the product documentation for your device.



NOTE

Director has the integrated components to deploy only a single instance of a Dell EqualLogic back end.

Deploying multiple instances of a Dell EqualLogic back end requires a custom back end configuration. For more information, see the [Custom Block Storage Back End Deployment Guide](#).

CHAPTER 2. DEPLOYING A DELL EMC PS SERIES BACK END

To configure the Dell EMC PS Series back ends, complete the following procedures:

1. Define a single back end. To configure a single Dell device as a back end, edit the default environment file from the core heat template collection and include this file in the overcloud deployment. For more information, see [Defining a single back end](#).
2. Deploy the configured back end and invoke it through the director. For more information, see [Deploying the Dell EMC PS Series back end](#).
3. Testing the Dell EMC PS Series back end.
4. Address any volume size discrepancies with Dell EqualLogic back ends. For more information, see [Addressing volume size discrepancies with Dell EqualLogic back ends](#) in the *Dell EMC PS Series Back End Guide*.

Red Hat OpenStack Platform includes the drivers that are required for all Dell devices supported by the Block Storage service. In addition, director also has the puppet manifests, environment files, and Orchestration (heat) templates that are necessary to integrate the device as a back end to the overcloud.

CHAPTER 3. DEFINING A SINGLE BACK END



IMPORTANT

This section describes the deployment of a single back end. Deploying multiple instances of a Dell EqualLogic back end requires a custom back end configuration. For more information, see the [Custom Block Storage Back End Deployment Guide](#).

To define a single Dell EMC PS Series back end, complete the following steps:

1. Copy the default **cinder-dellps-config.yaml** file from the core heat template collection:

```
$ cp /usr/share/openstack-tripleo-heat-templates/environments/cinder-dellps-config.yaml
~/templates/
```

2. Edit the values in the **parameter_defaults** section of the **~/templates/cinder-dellps-config.yaml** file to define your Dell EMC PS Series back end. Use the following table to understand how to define each parameter:

Table 3.1. Dell EMC PS Series settings

Parameter	/etc/cinder/cinder.conf setting	Description
CinderDellPsBackendName	volume_backend_name	An arbitrary name to identify the volume back end.
CinderDellPsSanIp	san_ip	The IP address used to reach the Dell EMC PS Series Group through SSH.
CinderDellPsSanLogin	san_login	The user name to log in to the Group manager through SSH at the CinderDellPsSanIp IP address. The default user name is grpadmin .
CinderDellPsSanPassword	san_password	The corresponding password of CinderDellPsSanLogin . The default password is password .
CinderDellPsSanThinProvision	san_thin_provision	Enables thin provisioning for SAN volumes. Thin provisioning is required for this setup.
CinderDellPsGroupname	eq x_group_name	The group that you want to use for a pool where the Block Storage service creates volumes and snapshots. The default group is group-0 .
CinderDellPsPool	eq x_pool	The pool where the Block Storage service creates volumes and snapshots. The Block Storage service cannot use this option for multiple pools on a single Dell EMC PS Series Group. The default pool is default .

Parameter	/etc/cinder/cinder.conf setting	Description
CinderDellPsChapLogin	eqlx_chap_login	The CHAP login account for each volume in a pool. The default account name is chapadmin .
CinderDellPsChapPassword	eqlx_chap_password	The corresponding password of CinderDellPsChapLogin . The default password is randomly generated in hexadecimal, so you must set this password manually.
CinderDellPsUseChap	eqlx_use_chap	Enables CHAP authentication. the default value is false .

CHAPTER 4. DEPLOYING THE DELL EMC PS SERIES BACK END

To deploy the single back end that you created as part of the procedure in [Defining a single back end](#), complete the following steps:

Procedure

1. Log in to the undercloud as the stack user.
2. Run the deploy command:

```
$ openstack overcloud deploy --templates -e ~/templates/cinder-dellps-config.yaml
```



IMPORTANT

If you passed any extra environment files when you created the overcloud, pass them again here using the **-e** option to avoid making undesired changes to the overcloud. For more information, see [Modifying the Overcloud Environment](#) in the *Director Installation and Usage* guide.

Test the back end after director orchestration is complete.

CHAPTER 5. TESTING THE DELL EMC PS SERIES BACK END

After you deploy the back end, test that you can successfully create volumes on it.

Procedure

1. Log in to the undercloud node as the **stack** user.

2. Source the **overcloudrc** credentials file:

```
$ source /home/stack/overcloudrc
```

3. Create a new volume type that you can use to specify the new back end. Run the following command to create a volume type called **dellps**, run:

```
$ cinder type-create dellps
```

4. Map the new volume type to the new back end, **tripleo_dellps**, as defined through the **CinderDellPsBackendName** parameter in [Chapter 3, Defining a single back end](#):

```
$ cinder type-key dellps set volume_backend_name=tripleo_dellps
```

5. Create a new 2GB volume on the new back end:

```
$ cinder create --volume-type dellps 2
```



NOTE

For more information, see [Accessing the Overcloud](#) in the *Director Installation and Usage* guide.

CHAPTER 6. ADDRESSING VOLUME SIZE DISCREPANCIES WITH DELL EQUALLOGIC BACK ENDS

When Dell EqualLogic (EQL) back ends report volume sizes, they also assess the additional storage that they require for internal volume metadata. This total size is slightly larger than the volume size that the Block Storage services report. However, the volume size that EQL back ends report is the same size that the Image service uses.

As a result, when you create an image-backed volume on an EQL back end, first check the size of the image. If the image was originally volume-backed, then EQL and the Image service report a volume size slightly larger than the Block Storage service reports.

If the image size reported by EQL is slightly larger, then you must accommodate the size discrepancy when you create volumes backed by this image.

6.1. EXAMPLE DELL EQUALLOGIC VOLUME SIZE DISCREPANCY

To illustrate, when you create a 1GB volume:

```
# cinder create --display-name vol1 1
```

```
+-----+
| Property | Value |
+-----+
| attachments | [] |
| availability_zone | nova |
| bootable | false |
| created_at | 2014-12-19T03:57:47.730359 |
| display_description | None |
| display_name | vol1 |
| encrypted | False |
| id | 6bdace69-bd41-42fc-a63a-f834fb65a2e4 |
| metadata | {} |
| size | 1 |
| snapshot_id | None |
| source_volid | None |
| status | creating |
| volume_type | None |
+-----+
```

The Block Storage service reports a volume size of 1GB, but on the EQL array the size (VolReserve) is slightly bigger:

```
eql> volume select volume-6bdace69-bd41-42fc-a63a-f834fb65a2e4
```

```
eql (volume-6bdace69-bd41-42fc-a63a-f834fb65a2e4)> show
```

```

_____ Volume Information _____
Name: volume-6bdace69-bd41-42fc-a63a-f834fb65a2e4
Size: 1GB
VolReserve: 1.01GB
...

```

When you create a new image from this volume, the Block Storage service reports the correct volume size of 1GB:

```
# cinder upload-to-image --disk-format raw --container-format bare vol1 image_vol1
```

```
+-----+
| Property | Value |
+-----+
| container_format | bare |
| disk_format | raw |
| display_description | None |
| id | 6bdace69-bd41-42fc-a63a-f834fb65a2e4 |
| image_id | c65f7eae-e2c1-44ba-8af1-e33695897559 |
| image_name | image_vol1 |
| size | 1 |
| status | uploading |
| updated_at | 2014-12-19T03:57:48.000000 |
| volume_type | None |
+-----+
```

However, the Image service reports a slightly larger size:

```
# glance image-list
```

```
...+-----+
...| Name | Disk Format | Container Format | Size | Status |
...+-----+
...| image_vol1 | raw | bare | 1085276160 | active |
...+-----+
```

The **glance** tool reports an image size of approximately 1.01GB. As a result, you cannot create a new 1GB volume backed by this image:

```
# cinder create --display-name vol2 --image-id c65f7eae-e2c1-44ba-8af1-e33695897559 1
```

```
ERROR: Invalid input received: Size of specified image 2 is larger than volume size 1
```

6.2. WORKAROUND FOR DELL EQUALLOGIC VOLUME SIZE DISCREPANCY

You must consider the discrepancy between the volume sizes reported by the Image and the Block Storage services when you specify the size of image-backed volumes. This means that when you specify the size of the image-backed volume, you must use the next whole number after the image size reported by the Image service (glance).

In [Section 6.1, "Example Dell EqualLogic volume size discrepancy"](#), the Image service reports an image size of 1.01GB. This means that when you create a volume, you must specify a volume size of 2GB instead of 1GB:

```
# cinder create --display-name vol2 --image-id c65f7eae-e2c1-44ba-8af1-e33695897559 2
```

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

```
| attachments | [] |
| availability_zone | nova |
| bootable | false |
| created_at | 2014-12-19T04:54:07.036260 |
| display_description | None |
| display_name | vol2 |
| encrypted | False |
| id | fcf49715-094d-4bba-9f05-8b7fa6deffce |
| image_id | c65f7eae-e2c1-44ba-8af1-e33695897559 |
| metadata | {} |
| size | 2 |
| snapshot_id | None |
| source_volid | None |
| status | creating |
| volume_type | None |
+-----+
```