Red Hat OpenStack Platform 16.1

Dell Storage Center Back End Guide

A Guide to Using Dell Storage Center Storage in a Red Hat OpenStack Platform Overcloud

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Legal Notice

Abstract

This document describes how to deploy a single Dell Storage Center device as a back end to the Red Hat OpenStack Platform 15 Overcloud.

Table of Contents

MAKING OPEN SOURCE MORE INCLUSIVE

Red Hat is committed to replacing problematic language in our code, documentation, and web properties. We are beginning with these four terms: master, slave, blacklist, and whitelist. Because of the enormity of this endeavor, these changes will be implemented gradually over several upcoming releases. For more details, see our CTO Chris Wright's message .

CHAPTER 1. INTRODUCTION

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

- You intend to use only Dell Storage Center devices and drivers for Block Storage back ends

- The OpenStack Overcloud has already been deployed through Director, with a properly-functional Block Storage service

- The Dell storage device has already been deployed and configured as a storage repository

- You have the necessary credentials for connecting to the Enterprise Manager and Dell Storage Center Group

- You have the username and password of an account with elevated privileges. You can use the same account that was created to deploy the Overcloud; in Creating a Director Installation User, we create and use the **stack** user for this purpose.

When RHEL OpenStack Platform is deployed through the Director, all major Overcloud settings (in particular, the Block Storage service back end) must be defined and orchestrated through the Director as well. This ensures that the settings will persist through any further Overcloud updates. For more information about deploying OpenStack through the Director, see Director Installation and Usage.

The purpose of this document is to explain how to orchestrate your desired Dell Storage Center back end configuration to the Overcloud's Block Storage service. This document will not discuss the different deployment configurations possible with the back end. Rather, to learn more about the different available deployment configurations, see your device's product documentation.

Once you are familiar with the resulting back end configuration you want to deploy (and its corresponding settings), refer to this document for instructions on how to orchestrate it through the Director.

> **NOTE**
>
> At present, the Director only has the integrated components to deploy a **single** instance of a Dell Storage Center back end. As such, this document only describes the deployment of a single back end.
>
> Deploying multiple instances of a Dell Storage Center back end requires a *custom back end configuration*. See the Custom Block Storage Back End Deployment Guide for instructions.

Before deploying Red Hat OpenStack Platform (RHOSP) with a Dell Storage Center back end, review the following limitations:

- For Dell EMC SC Series, snapshots of empty non-attached volumes are not supported. You must populate the volume or attach the volume before proceeding with snapshots. For more information, see https://bugs.launchpad.net/cinder/+bug/1616630.

- For Dell EMC SC Series, cinder backup is not supported.

CHAPTER 2. PROCESS DESCRIPTION

RHEL OpenStack Platform includes all the drivers required for all Dell devices supported by the Block Storage service. In addition, the Director also has the puppet manifests, environment files, and Orchestration templates necessary for integrating the device as a back end to the Overcloud.

Configuring a **single** Dell device as a back end involves editing the default **environment file** and including it in the Overcloud deployment. This file is available locally on the Undercloud, and can be edited to suit your environment.

After editing this file, invoke it through the Director. Doing so ensures that it will persist through future Overcloud updates. The following sections describe this process in greater detail. In addition, the default environment file already contains enough information to call the necessary puppet manifests and Orchestration (Heat) templates that will configure the rest of the required Block Storage settings.

CHAPTER 3. DEFINE A SINGLE BACK END
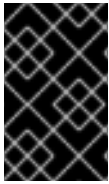
IMPORTANT

This section describes the deployment of a single back end. Deploying multiple instances of a Dell Storage Center back end requires a *custom back end configuration*. See the Custom Block Storage Back End Deployment Guide for instructions.

With a Director deployment, the easiest way to define a **single** Dell Storage Center back end is through the integrated environment file. This file is located in the following path of the Undercloud node:

/usr/share/openstack-tripleo-heat-templates/environments/cinder-dellsc-config.yaml

Copy this file to a local path where you can edit and invoke it later. For example, to copy it to **~/templates/**:

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

Afterwards, open the copy (**~/templates/cinder-dellsc-config.yaml**) and edit it as you see fit. The following snippet displays the default contents of this file:

```
# A Heat environment file which can be used to enable a
# a Cinder  Dell Storage Center ISCSI backend, configured via puppet
resource_registry:
  OS::TripleO::Services::CinderBackendDellSc: ../puppet/services/cinder-backend-dellsc.yaml #
1

parameter_defaults: # 2
  CinderEnableDellScBackend: true # 3
  CinderDellScBackendName: 'tripleo_dellsc'
  CinderDellScSanIp: ''
  CinderDellScSanLogin: 'Admin'
  CinderDellScSanPassword: ''
  CinderDellScSsn: '64702'
  CinderDellScIscsiIpAddress: ''
  CinderDellScIscsiPort: '3260'
  CinderDellScApiPort: '3033'
  CinderDellScServerFolder: 'dellsc_server'
  CinderDellScVolumeFolder: 'dellsc_volume'
```

1 The **OS::TripleO::Services::CinderBackendDellSc** parameter in the **resource_registry** section refers to a composable service template named **cinder-backend-dellsc.yaml**. The director uses this template to load the necessary resources for configuring the back end. By default, the parameter specifies the path to **cinder-backend-dellsc.yaml** relatively. As such, update this parameter with the absolute path to the file:

```
resource_registry:
  OS::TripleO::Services::CinderBackendDellSc: /usr/share/openstack-tripleo-heat-
templates/puppet/services/cinder-backend-dellsc.yaml
```

2 The **parameter_defaults** section contains your back end definition. Specifically, it contains the parameters that the Director should pass to the resources defined in **cinder-dellsc.yaml**.

③ The **CinderEnableDellScBackend: true** line instructs the Director to use the puppet manifests necessary for the default configuration of a Dell Storage Center back end. This includes defining

To define your Dell Storage Center back end, edit the settings in the **parameter_defaults** section as you see fit. The following table explains each parameter, and also lists its corresponding **/etc/cinder/cinder.conf** setting.

Table 3.1. Dell Storage Center settings

Parameter	/etc/cinder/cinder.conf setting	Description
CinderDellScBackendName	volume_backend_name	**(Required)** An arbitrary name to identify the volume back end.
CinderDellScSanIp	san_ip	**(Optional)** The IP address used to reach the Dell Enterprise Manager.
CinderDellScSanLogin	san_login	**(Required)** The user name to login to the Dell Enterprise Manager at the **CinderDellScSanIp**. The default user name is **Admin**.
CinderDellScSanPassword	san_password	**(Optional)** The corresponding password of **CinderDellScSanLogin**.
CinderDellScSsn	dell_sc_ssn	**(Required)** The Dell Storage Center serial number to use.
CinderDellScIscsiIpAddress	iscsi_ip_address	**(Optional)** The Dell Storage Center ISCSI IP address to be used for creating volumes and snapshots.
CinderDellScIscsiPort	iscsi_port	**(Optional)** The ISCSI port of the Dell Storage Center array.
CinderDellScApiPort	dell_sc_api_port	**(Optional)** The Dell Enterprise Manager API port.
CinderDellScServerFolder	dell_sc_server_folder	**(Required)** The **Server** folder in Dell Storage Center where the new server definitions are placed.
CinderDellScVolumeFolder	dell_sc_volume_folder	**(Required)** The **Server** folder in Dell Storage Center where the new volumes are created.

CHAPTER 4. DEPLOY THE CONFIGURED BACK END

The Director installation uses a non-root user to execute commands, which includes orchestrating the deployment of the Block Storage back end. In Creating a Director Installation User, a user named **stack** is created for this purpose. This user is configured with elevated privileges.

To deploy the lone back end configured in Chapter 3, *Define a Single Back End* , first log in as the **stack** user to the Undercloud. Then, deploy the back end (defined in the edited **~/templates/cinder-dellsc-config.yaml**) by running the following:

```
$ openstack overcloud deploy --templates -e ~/templates/cinder-dellsc-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.

CHAPTER 5. TEST THE CONFIGURED BACK END

After deploying the back end, test whether you can successfully create volumes on it. Doing so will require loading the necessary environment variables first. These variables are defined in **/home/stack/overcloudrc** by default.

To load these variables, run the following command as the **stack** user:

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

> **NOTE**
>
> For more information, see Accessing the Overcloud.

You should now be logged in to the Controller node. From there, you can create a *volume type*, which can be used to specify the back end you want to use (in this case, the newly-defined back end in Chapter 3, *Define a Single Back End*). This is required in an OpenStack deployment where you have other back ends enabled (preferably, also through Director).

To create a volume type named **dellsc**, run:

```
$ cinder type-create dellsc
```

Next, map this volume type to the back end defined in Chapter 3, *Define a Single Back End* . Given the back end name **tripleo_dellsc** (as defined through the **CinderDellScBackendName** parameter, in Chapter 3, *Define a Single Back End* , run:

```
$ cinder type-key dellsc set volume_backend_name=tripleo_dellsc
```

You should now be able to create a 2GB volume on the newly defined back end by invoking its volume type. To do so, run:

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