



Red Hat Enterprise Linux OpenStack Platform 5 Cloud Administrator Guide

Managing and troubleshooting a Red Hat Enterprise Linux OpenStack Platform environment

6 Aug 2014

Red Hat Documentation Team

Managing and troubleshooting a Red Hat Enterprise Linux OpenStack Platform environment

6 Aug 2014

Red Hat Documentation Team

Legal Notice

Copyright © 2014 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 guide covers the software administrators can use to manage and troubleshoot a Red Hat Enterprise Linux OpenStack Platform cloud.

Table of Contents

Chapter 1. Block Storage	2
1.1. Configure a multiple-storage back-end	2
Enable multi back-end	2
Configure Block Storage scheduler multi back-end	3
Volume type	3
Usage	4

Chapter 1. Block Storage

1.1. Configure a multiple-storage back-end

With multiple storage back-ends configured, you can create several back-end storage solutions serving the same OpenStack Compute configuration. Basically, multi back-end launches one **cinder-volume** for each back-end or back-end pool.

In a multi back-end configuration, each back-end has a name (**volume_backend_name**). Several back-ends can have the same name. In that case, the scheduler properly decides which back-end the volume has to be created in.

The name of the back-end is declared as an extra-specification of a volume type (such as, **volume_backend_name=LVM_iSCSI**). When a volume is created, the scheduler chooses an appropriate back-end to handle the request, according to the volume type specified by the user.

Enable multi back-end

To enable a multi back-end configuration, you must set the **enabled_backends** flag in the **cinder.conf** file. This flag defines the names (separated by a comma) of the configuration groups for the different back-ends: one name is associated to one configuration group for a back-end (such as, **[lvmdriver-1]**).



Note

The configuration group name is not related to the **volume_backend_name**.

The options for a configuration group must be defined in the group (or default options are used). All the standard Block Storage configuration options (**volume_group**, **volume_driver**, and so on) might be used in a configuration group. Configuration values in the **[DEFAULT]** configuration group are not used.

This example shows three back-ends:

```
enabled_backends=lvmdriver-1,lvmdriver-2,lvmdriver-3
[lvmdriver-1]
volume_group=cinder-volumes-1
volume_driver=cinder.volume.drivers.lvm.LVMISCSIDriver
volume_backend_name=LVM_iSCSI
[lvmdriver-2]
volume_group=cinder-volumes-2
volume_driver=cinder.volume.drivers.lvm.LVMISCSIDriver
volume_backend_name=LVM_iSCSI
[lvmdriver-3]
volume_group=cinder-volumes-3
volume_driver=cinder.volume.drivers.lvm.LVMISCSIDriver
volume_backend_name=LVM_iSCSI_b
```

In this configuration, **lvmdriver-1** and **lvmdriver-2** have the same **volume_backend_name**. If a volume creation requests the **LVM_iSCSI** back-end name, the scheduler uses the capacity filter scheduler to choose the most suitable driver, which is either **lvmdriver-1** or **lvmdriver-2**. The capacity filter scheduler is enabled by default. The next section provides more information. In addition, this example presents a **lvmdriver-3** back-end.

Some volume drivers require additional settings to be configured for each back-end. The following example shows the typical configuration for a Block Storage service that uses two Dell EqualLogic back-ends:

```
enabled_backends=backend1, backend2
san_ssh_port=22
ssh_conn_timeout=30

[backend1]
volume_driver=cinder.volume.drivers.eqlx.DellEQLSanISCSIDriver
volume_backend_name=backend1
san_ip=IP_EQLX
san_login=SAN_UNAME
san_password=SAN_PW
eqlx_group_name=EQLX_GROUP
eqlx_pool=EQLX_POOL

[backend2]
volume_driver=cinder.volume.drivers.eqlx.DellEQLSanISCSIDriver
volume_backend_name=backend2
san_ip=IP_EQLX
san_login=SAN_UNAME
san_password=SAN_PW
eqlx_group_name=EQLX_GROUP
eqlx_pool=EQLX_POOL
```

In this example:

- Each Dell EqualLogic back-end configuration (**[backend1]** and **[backend2]**) has the same required settings as a single back-end configuration, with the addition of **volume_backend_name**.
- The `<parameter>san_ssh_port</parameter>` option is set to its default value, **22**. This option sets the port used for SSH.
- The **ssh_conn_timeout** option is also set to its default value, **30**. This option sets the timeout (in seconds) for CLI commands over SSH.

For more information on required and optional settings for Dell EqualLogic back-ends, refer to the *Configuration Reference Guide*:

[Dell EqualLogic volume driver](#)

Configure Block Storage scheduler multi back-end

You must enable the **filter_scheduler** option to use multi back-end. Filter scheduler acts in two steps:

1. The filter scheduler filters the available back-ends. By default, **AvailabilityZoneFilter**, **CapacityFilter** and **CapabilitiesFilter** are enabled.
2. The filter scheduler weighs the previously filtered back-ends. By default, **CapacityWeigher** is enabled. The **CapacityWeigher** attributes higher scores to back-ends with the most available capacity.

The scheduler uses the filtering and weighing process to pick the best back-end to handle the request, and explicitly creates volumes on specific back-ends through the use of volume types.

Volume type

Before using it, a volume type has to be declared to Block Storage. This can be done by the following command:

```
$ cinder --os-username admin --os-tenant-name admin type-create lvm
```

Then, an extra-specification has to be created to link the volume type to a back-end name. Run this command:

```
$ cinder --os-username admin --os-tenant-name admin type-key lvm set  
volume_backend_name=LVM_iSCSI
```

This example creates a **lvm** volume type with **volume_backend_name=LVM_iSCSI** as extra-specifications.

Create another volume type:

```
$ cinder --os-username admin --os-tenant-name admin type-create lvm_gold
```

```
$ cinder --os-username admin --os-tenant-name admin type-key lvm_gold set  
volume_backend_name=LVM_iSCSI_b
```

This second volume type is named **lvm_gold** and has **LVM_iSCSI_b** as back-end name.



Note

To list the extra-specifications, use this command:

```
$ cinder --os-username admin --os-tenant-name admin extra-specs-list
```



Note

If a volume type points to a **volume_backend_name** that does not exist in the Block Storage configuration, the **filter_scheduler** returns an error that it cannot find a valid host with the suitable back-end.

Usage

When you create a volume, you must specify the volume type. The extra-specifications of the volume type are used to determine which back-end has to be used.

```
$ cinder create --volume_type lvm --display_name test_multi_backend 1
```

Considering the **cinder.conf** described previously, the scheduler creates this volume on **lvmdriver-1** or **lvmdriver-2**.

```
$ cinder create --volume_type lvm_gold --display_name test_multi_backend 1
```

This second volume is created on **lvmdriver-3**.

