OpenStack Manila Driver Configuration Guide

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About This Document

Intended Audience

This document is intended for:

- Technical support engineers
- O&M engineers
- Engineers with basic knowledge of storage and OpenStack

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
⚠ DANGER	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
🕮 NOTE	Supplements the important information in the main text. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Issue	Date	Description
01	2023-09-28	This issue is the first official release.

Contents

1 Overview

Huawei Manila Driver is a plug-in deployed on the OpenStack Manila module. It connects to Huawei storage to provide share storage capabilities for the OpenStack platform.

2 Version Mappings

This chapter describes the version mappings among Huawei Manila Driver, Huawei storage, and OpenStack.

Table 2-1 Storage product versions supported by Manila Driver

OpenStack Version	Storage Product Version
Mitaka/Newton/Ocata/Pike/Queens/Rocky/Stein/Train/Ussuri/Victoria/Wallaby/Xena/Yoga/Zed/Antelope	● OceanStor V5: V500R007C61/V500R007C70 ● OceanStor 6.1.3/6.1.5/6.1.6 ● OceanStor Dorado 6.1.0/6.1.2/6.1.3/6.1.5/6.1.6

Table 2-2 Support for Manila Driver features (√: supported; x: not supported)

Feature	Normal Share	HyperMetro Share	Remarks
OpenStack	Mitaka/Newton/Ocata/Pike/Queens/Rocky/Stein/Train/Ussuri/Victoria/Wallaby/Xena/Yoga/Zed/Antelope	Mitaka/Newton/Ocata/Pike/Queens/Rocky/Stein/Train/Ussuri/Victoria/Wallaby/Xena/Yoga/Zed/Antelope	N/A
Create Share	√	√	N/A
Delete Share	√	√	N/A
Allow access	√	√	N/A

Feature	Normal Share	HyperMetro Share	Remarks
Deny access	√	√	N/A
Create Snapshot	√	√	Snapshots can be created only for the local HyperMetro share.
Delete Snapshot	√	√	Snapshots can be deleted only for the local HyperMetro share.
Revert Snapshot	√	√	Snapshots can be used for rollback only for the local HyperMetro share.
Extend Share	√	√	N/A
Shrink Share	√	√	N/A
Create Share from Snapshot	√	√	A share can be created using a snapshot only for the local HyperMetro share.
Manage/Unmanage Share	√	x	The file systems and shares managed by Manila Driver must be in one-to-one mapping. Only file systems and shares of the system vStore can be managed.
Manage/Unmanage Snapshot	√	x	N/A
Replication	√	x	N/A
QoS	√	√	SmartQoS can be configured only for the local HyperMetro share.
Multi-tenancy	√	x	N/A
SmartThin/ SmartThick	√	√	N/A
SmartCompression	√	√	N/A
SmartDedupe	√	√	N/A
Ensure Share	√	√	N/A
Create a share on a certain storage pool	√	√	N/A

Feature	Normal Share	HyperMetro Share	Remarks
Create a share with a certain disk type	√	√	N/A
SectorSize	√	√	N/A
SmartPartition	√	√	SmartPartition can be configured only for the local HyperMetro share.
SmartCache	√	√	SmartCache can be configured only for the local HyperMetro share.

NOTE

- The architecture of OceanStor Dorado NAS has changed. The features of the local HyperMetro share are subject to the actual storage.
- For OceanStor Dorado 6.1.2 and later versions, you can create or delete a HyperMetro share, create, delete, or roll back a snapshot, create a share using a snapshot, and expand or reduce the capacity of a share after a primary/secondary switchover.

Table 2-3 Mappings between Manila Driver features and storage devices

Feature	OceanStor V5	OceanStor 6.1.3/6.1.5/6.1.6	OceanStor Dorado
Thin share	Supported	Supported	Supported
Thick share	Supported	Not supported	Not supported
SmartDedupe	Supported (only for thin share)	Supported (only for thin share)	Supported (only for thin share)
SmartCompression	Supported (only for thin share)	Supported (only for thin share)	Supported (only for thin share)
SmartCache	Supported	Not supported	Supported
SmartPartition	Supported	Not supported	Not supported

Feature	OceanStor V5	OceanStor 6.1.3/6.1.5/6.1.6	OceanStor Dorado
SmartQoS ● Protection policy parameters: **latency**, **minIOPS**, and **minBandWidth** ● Restriction policy parameters: **maxIOPS** and **maxBandWidth**	Supported. Protection policy parameters and restriction policy parameters cannot be configured at the same time.	Supported. Protection policy parameters and restriction policy parameters cannot be configured at the same time.	Supported. Protection policy parameters and restriction policy parameters cannot be configured at the same time.

3 Specifications

Feature	Sub-feature	Description	Remarks
Mapping platform	Native OpenStack platform	OpenStack versions: Mitaka/Newton/Ocata/Pike/Queens/Rocky/Stein/Train/Ussuri/Victoria/Wallaby/Xena/Yoga/Zed/Antelope	-

Feature	Sub-feature	Description	Remarks
Configuration	XML configuration file	● Ensure that the storage pool used for configuring Manila Driver exists on Huawei storage. Otherwise, you need to manually create one. In addition, the type of this storage pool must be the file storage service. ● All parameter values in the Huawei Manila Driver configuration file cannot contain the following XML special characters: <>&'" ● Set **Product** based on the actual back-end storage model.	-
Policy	SmartQoS	● Protection policy parameters and restriction policy parameters are mutually exclusive. If they are configured at the same time, the share will fail to be created. ● In the QoS property, **IOType** is mandatory. If **IOType** is not configured in a QoS policy, the share will fail to be created.	● Restriction policy parameters: **maxIOPS** and **maxBandWidth** ● Protection policy parameters: **minIOPS**, **minBandWidth**, and **latency**

4 Installing Manila Driver

4.1 Obtaining Manila Driver

Procedure

Step 1 Open a browser and enter **https://github.com/Huawei/OpenStack_Driver** in the address box.

Step 2 Choose **Code** > **Download ZIP** to download the Huawei Manila Driver package to a local PC.

Step 3 Decompress the package.

Step 4 In the directory generated upon decompression, find the **Manila** directory, which contains Huawei Manila Driver of multiple OpenStack versions.

NOTE

Huawei OpenStack Manila Driver warehouse maintains 15 stable versions (M-A), ensuring long-term stable running of historical versions.

----End

4.2 Deploying Huawei Manila Driver for the Manila Share Service in Non-Containerized Mode

The standard deployment procedure of the OpenStack community is as follows:

Step 1 Search for the original Huawei Manila Driver code directory in the system.

- The relative path is **.../manila/share/drivers/huawei**.
- The absolute path may vary in different systems. You can search for the code directory of Huawei Manila Driver as follows:
  - Run the following command. In the command output, **/usr/lib/python2.7/site-packages/manila/share/drivers/huawei** is the code directory.

    ```
    # python -c "from manila.share.drivers import huawei; print (huawei.__path__)"
    ['/usr/lib/python2.7/site-packages/manila/share/drivers/huawei']
    ```

  - Run the following command. In the command output, **/usr/lib/python3.7/site-packages/manila/share/drivers/huawei** is the code directory.

    ```
    # python3 -c "from manila.share.drivers import huawei; print (huawei.__path__)"
    ['/usr/lib/python3.7/site-packages/manila/share/drivers/huawei']
    ```

Step 2 Copy the obtained OpenStack Manila Driver to the driver installation directory of the Manila node. For details about the default path, see **Step 1**. The following uses version X as an example.

NOTICE

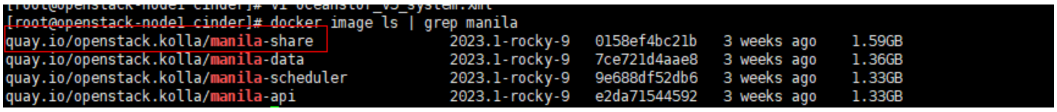
You only need to copy and overwrite the driver. Do not delete the original one.

```
# ls -l
-rw-r--r-- 1 root root  4453 Mar 30 10:51 constants.py
-rw-r--r-- 1 root root 41592 Mar 30 10:51 helper.py
-rw-r--r-- 1 root root 10467 Mar 30 10:51 huawei_config.py
-rw-r--r-- 1 root root 92785 Mar 30 10:51 huawei_nas.py
-rw-r--r-- 1 root root  9791 Mar 30 10:51 huawei_utils.py
-rw-r--r-- 1 root root  7875 Mar 30 10:51 hypermetro.py
-rw-r--r-- 1 root root    23 Mar 30 10:51 __init__.py
-rw-r--r-- 1 root root  3380 Mar 30 10:51 manager.py
-rw-r--r-- 1 root root 13173 Mar 30 10:51 replication.py
-rw-r--r-- 1 root root  8171 Mar 30 10:51 rpcapi.py
-rw-r--r-- 1 root root  4491 Mar 30 10:51 smartx.py
```

----End

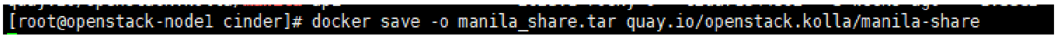
4.3 Deploying Huawei Manila Driver for the Manila Share Service in Containerized Mode

Step 1 Log in to a node that has a Manila Share container image and run the **docker image ls** command to query the Manila Share container image.



```
[root@openstack-node1 cinder]# vi oceanstor_v5_system.xml
[root@openstack-node1 cinder]# docker image ls | grep manila
quay.io/openstack.kolla/manila-share                2023.1-rocky-9   0158ef4bc21b   3 weeks ago    1.59GB
quay.io/openstack.kolla/manila-data                 2023.1-rocky-9   7ce721d4aae8   3 weeks ago    1.36GB
quay.io/openstack.kolla/manila-scheduler            2023.1-rocky-9   9e688df52db6   3 weeks ago    1.33GB
quay.io/openstack.kolla/manila-api                  2023.1-rocky-9   e2da71544592   3 weeks ago    1.33GB
```

Step 2 Run the **docker save -o manila_share.tar quay.io/openstack.kolla/manila-share** command to back up the Manila Share container image to an image file.



```
[root@openstack-node1 cinder]# docker save -o manila_share.tar quay.io/openstack.kolla/manila-share
```

NOTE

manila_share.tar is a user-defined name of the backup image, and **quay.io/openstack.kolla/manila-share** is the name of the Manila Share container image.

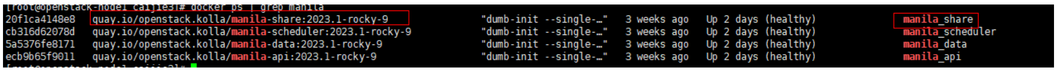
Step 3 Create a temporary directory named **huawei** in any directory.

```
# mkdir huawei
```

Step 4 Copy the obtained Huawei Manila Driver code files of the corresponding version to the **huawei** directory. The minimum permission required for the Manila Driver code files is **644**.

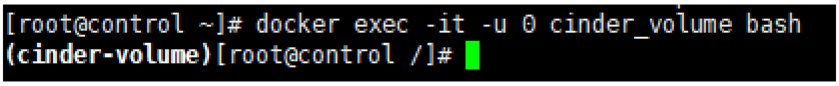
```
# ls -l
-rw-r--r--. 1 root root  4661 Dec  7 19:14 constants.py
-rw-r--r--. 1 root root 44837 Dec  7 19:14 helper.py
-rw-r--r--. 1 root root 12795 Dec  7 19:14 huawei_config.py
-rw-r--r--. 1 root root 98273 Dec  7 19:13 huawei_nas.py
-rw-r--r--. 1 root root 12082 Dec  7 19:13 huawei_utils.py
-rw-r--r--. 1 root root  7684 Dec  7 19:13 hypermetro.py
-rw-r--r--. 1 root root    21 Dec  7 19:14 __init__.py
-rw-r--r--. 1 root root  4285 Dec  7 19:13 manager.py
-rw-r--r--. 1 root root 12870 Dec  7 19:13 replication.py
-rw-r--r--. 1 root root 10835 Dec  7 19:13 rpcapi.py
-rw-r--r--. 1 root root  4357 Dec  7 19:14 smartx.py
```

Step 5 Run the **docker ps | grep manila** command to list Manila Share containers. In the command output, **manila_share** indicates the container name.



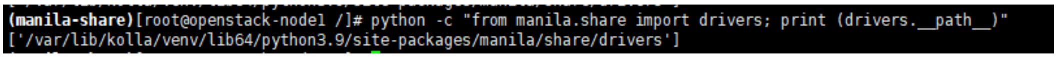
```
[root@openstack-nodel caljle3]# docker ps | grep manila
20f1ca4148e8   quay.io/openstack.kolla/manila-share:2023.1-rocky-9          "dumb-init --single-…"   3 weeks ago   Up 2 days (healthy)            manila_share
cb316d62078d   quay.io/openstack.kolla/manila-scheduler:2023.1-rocky-9      "dumb-init --single-…"   3 weeks ago   Up 2 days (healthy)            manila_scheduler
5a5376fe8171   quay.io/openstack.kolla/manila-data:2023.1-rocky-9           "dumb-init --single-…"   3 weeks ago   Up 2 days (healthy)            manila_data
ecb9b65f9011   quay.io/openstack.kolla/manila-api:2023.1-rocky-9            "dumb-init --single-…"   3 weeks ago   Up 2 days (healthy)            manila_api
```

Step 6 Run the **docker exec -it -u 0 manila_share bash** command to access the **manila_share** container.



```
[root@control ~]# docker exec -it -u 0 cinder_volume bash
(cinder-volume)[root@control /]#
```

Step 7 Run the **python -c "from manila.share import drivers; print (drivers.__path__)"** command to query the path of the original Huawei Manila Driver code.

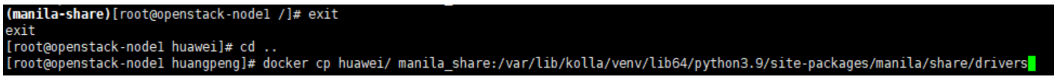


```
(manila-share)[root@openstack-nodel /]# python -c "from manila.share import drivers; print (drivers.__path__)"
['/var/lib/kolla/venv/lib64/python3.9/site-packages/manila/share/drivers']
```

NOTE

- **manila_share** is the container name obtained in **Step 5**.
- **/var/lib/kolla/venv/lib64/python3.9/site-packages/manila/share/drivers** is the path of the original Huawei Manila Driver code.

Step 8 Run the **exit** command to exit the **manila_share** container, go to the upper-level directory of the **huawei** directory created in **Step 3**, and copy the **huawei** directory to the path of the original Huawei Manila Driver code in **Step 7**.



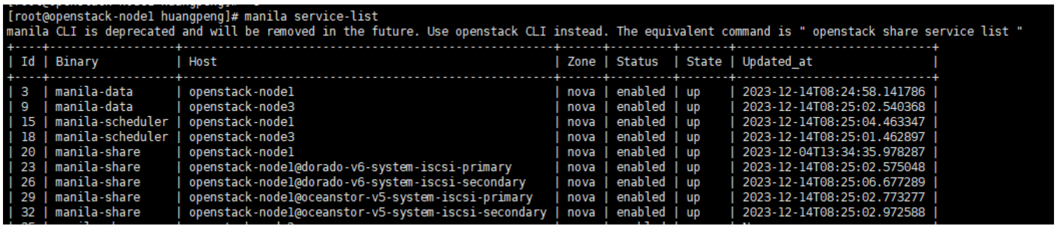
```
(manila-share)[root@openstack-nodel /]# exit
exit
[root@openstack-nodel huawei]# cd ..
[root@openstack-nodel huangpeng]# docker cp huawei/ manila_share:/var/lib/kolla/venv/lib64/python3.9/site-packages/manila/share/drivers
```

```
docker cp huawei/ manila_share:/var/lib/kolla/venv/lib64/python3.9/site-packages/manila/share/drivers
```

Step 9 Run the following command to restart the Manila Share service (**manila_share** indicates the container name obtained in **Step 5**).

```
docker restart manila_share
```

Wait about 30 seconds and run the **manila service-list** command. If the following information is displayed and the value of **State** is **up**, the Manila Share service is successfully started.



```
[root@openstack-node1 huangpeng]# manila service-list
manila CLI is deprecated and will be removed in the future. Use openstack CLI instead. The equivalent command is " openstack share service list "
+----+------------------+------------------------------------------------------+------+---------+-------+----------------------------+
| Id | Binary           | Host                                                 | Zone | Status  | State | Updated_at                 |
+----+------------------+------------------------------------------------------+------+---------+-------+----------------------------+
| 3  | manila-data      | openstack-node1                                      | nova | enabled | up    | 2023-12-14T08:24:58.141786 |
| 9  | manila-data      | openstack-node3                                      | nova | enabled | up    | 2023-12-14T08:25:02.540368 |
| 15 | manila-scheduler | openstack-node1                                      | nova | enabled | up    | 2023-12-14T08:25:04.463347 |
| 18 | manila-scheduler | openstack-node3                                      | nova | enabled | up    | 2023-12-14T08:25:01.462897 |
| 20 | manila-share     | openstack-node1                                      | nova | enabled | up    | 2023-12-04T13:34:35.978287 |
| 23 | manila-share     | openstack-node1@dorado-v6-system-iscsi-primary       | nova | enabled | up    | 2023-12-14T08:25:02.575048 |
| 26 | manila-share     | openstack-node1@dorado-v6-system-iscsi-secondary     | nova | enabled | up    | 2023-12-14T08:25:06.677289 |
| 29 | manila-share     | openstack-node1@oceanstor-v5-system-iscsi-primary    | nova | enabled | up    | 2023-12-14T08:25:02.773277 |
| 32 | manila-share     | openstack-node1@oceanstor-v5-system-iscsi-secondary  | nova | enabled | up    | 2023-12-14T08:25:02.972588 |
```

----End

5 Configuring Basic Properties of Manila Driver

This chapter describes how to configure Huawei Manila Driver.

NOTICE

- In OpenStack Ocata Manila, when you create a share without specifying a share type, the default share type in the **/etc/manila/manila.conf** file will be used.
- Ensure that the storage pool used for configuring Manila Driver exists on Huawei storage. Otherwise, you need to manually create one. In addition, the type of this storage pool must be the file storage service.
- All parameter values in the Huawei Manila Driver configuration file cannot contain the following XML special characters: <>&'"
- The snapshot and replication functions cannot be enabled at the same time.

5.1 Configuring Manila Driver in Non-Containerized Mode

Procedure

Step 1 In **/etc/manila**, create a Huawei Manila Driver configuration file in **.xml** format. You can customize the configuration file name, for example, **manila_huawei_conf.xml**.

Step 2 Edit the **manila_huawei_conf.xml** file and set mandatory parameters in the Huawei Manila Driver configuration file.

```
<?xml version='1.0' encoding='UTF-8'?>
  <config>
  <Storage>
    <Product>Dorado</Product>
    <LogicalPortIP>x.x.x.x</LogicalPortIP>
    <DNS>x.x.x.x</DNS>
    <RestURL>https://x.x.x.x:8088/deviceManager/rest/</RestURL>
    <UserName>xxx</UserName>
    <UserPassword>xxx</UserPassword>
  </Storage>
  <Filesystem>
    <StoragePool>xxx</StoragePool>
  </Filesystem>
</config>
```

Table 5-1 Mandatory parameters

Parameter	Description	Default Value	Remarks
Product	Storage product type. The value can be **V5**, **V6**, or **Dorado**.	-	-
LogicalPortIP	IP address of a logical port. You can configure multiple IP addresses separated by semicolons (;).	-	This parameter is mandatory when the **DNS** parameter is not specified. If both parameters are configured, the priority of this parameter is lower than that of the **DNS** parameter.
DNS	DNS domain name. You can configure multiple DNS domain names separated by semicolons (;).	-	This parameter is mandatory when the **LogicalPortIP** parameter is not specified. If both parameters are configured, the priority of this parameter is higher than that of the **LogicalPortIP** parameter.
RestURL	Access address of the REST interface.	-	-
UserName	User name of a storage administrator.	-	-
UserPassword	Password of the storage administrator.	-	-
StoragePool	Name of a storage pool to be used. You can configure multiple storage pools separated by semicolons (;).	-	-

Step 3 Edit the **manila_huawei_conf.xml** file and set optional parameters in the Huawei Manila Driver configuration file.

```
<?xml version='1.0' encoding='UTF-8'?>
  <Config>
    <Storage>
      <Port>abc;CTE0.A.H1</Port>
      <SnapshotSupport>True</SnapshotSupport>
      <ReplicationSupport>False</ReplicationSupport>
    </Storage>
    <Filesystem>
      <SectorSize>64</SectorSize>
      <WaitInterval>3</WaitInterval>
      <Timeout>60</Timeout>
      <SnapshotReserve>20</SnapshotReserve>
      <UnixPermission>755</UnixPermission>
      <ShowSnapshotDir>true</ShowSnapshotDir>
      <NFSClient>
        <IP>x.x.x.x</IP>
      </NFSClient>
      <CIFSClient>
        <UserName>xxx</UserName>
        <UserPassword>xxx</UserPassword>
      </CIFSClient>
    </Filesystem>
  </Config>
```

Table 5-2 Optional parameters

Parameter	Description	Default Value	Type
Port	Available service port (bond port or physical port). You can configure multiple ports separated by semicolons (;).	-	This parameter is optional when **driver_handles_share_servers** is set to **True**. If this parameter is not set, all online ports are used.
SectorSize	Size of the file system disk block. The value can be 4, 8, 16, 32, or 64 KB.	64	Optional
SnapshotSupport	Whether to enable the snapshot function.	True	Except for OceanStor Dorado, **SnapshotSupport** and **ReplicationSupport** cannot be enabled at the same time.
ReplicationSupport	Whether to enable the remote replication function.	False	Except for OceanStor Dorado, **SnapshotSupport** and **ReplicationSupport** cannot be enabled at the same time.

Parameter	Description	Default Value	Type
WaitInterval	Interval for querying file system status, expressed in seconds (s).	3	Optional
Timeout	Timeout period of waiting for a storage device to execute commands, expressed in seconds (s).	60	Optional
SnapshotReserve	Percentage (%) of the reserved snapshot space. The value ranges from 0 to 50.	0	Optional
UnixPermission	Permission on the root directory of a file system.	755	Optional. The value consists of three digits whose meanings are as follows: The first digit refers to the permissions of the owner. The second digit refers to the permissions of the user group to which the file belongs. The last digit refers to the permissions of everyone else. The digits are from 0 to 7 whose meanings are as follows: 0: No permission; 1: Execute permission; 2: Write permission; 3: Write and execute permissions; 4: Read permission; 5: Read and execute permissions; 6: Read and write permissions; 7: All permissions (read, write, and execute).
ShowSnapshotDir	Whether the snapshot directory is visible.	true	Optional. The value can be: **true**: visible **false**: invisible

Parameter	Description	Default Value	Type
NFSClient\IP	IP address used by a management node to mount an NFS share when the share is created using a snapshot.	-	This parameter is mandatory when a share is created using a snapshot.
CIFSClient\UserName	User name used by a management node to mount a CIFS share when the share is created using a snapshot.	-	This parameter is mandatory when a share is created using a snapshot. If OceanStor Dorado is used, the user name must be added to a local authentication user group that has administrator rights.
CIFSClient\UserPassword	User password used by a management node to mount a CIFS share when the share is created using a snapshot.	-	This parameter is mandatory when a share is created using a snapshot.

Step 4 Add the following information to the end of the **/etc/manila/manila.conf** file.

```
[huawei_backend]
share_driver = manila.share.drivers.huawei.huawei_nas.HuaweiNasDriver
manila_huawei_conf_file = /etc/manila/manila_huawei_conf.xml
share_backend_name = huawei_backend
driver_handles_share_servers = False
```

NOTE

- **huawei_backend** indicates the backend name. It can be customized.
- **share_driver** indicates the type of Manila Driver to be used. In this example, the parameter is set to **manila.share.drivers.huawei.huawei_nas.HuaweiNasDriver**.
- **manila_huawei_conf_file** indicates the path of the Huawei Manila Driver configuration file.
- If **driver_handles_share_servers** is set to **True**, you need to specify **share-network** when creating a share.

Step 5 In the **[DEFAULT]** section, modify the **enabled_share_backends** configuration item and add the **huawei_backend** backend.

```
[DEFAULT]
...
enabled_share_backends=xxx,huawei_backend
```

Step 6 Change the permission on the **/etc/manila/manila_huawei_conf.xml** file to be the same as that on the **/etc/manila/manila.conf** file.

```
# ls /etc/manila/
...
-rw-r-----  1 manila manila 82179 Jan 20 14:34 manila.conf
-rw-r-----. 1 manila manila  1005 Jan 20 10:55 manila_huawei_conf.xml
...
```

Step 7 Run the following command to restart the Manila service.

```
# systemctl restart openstack-manila-share.service
```

----End

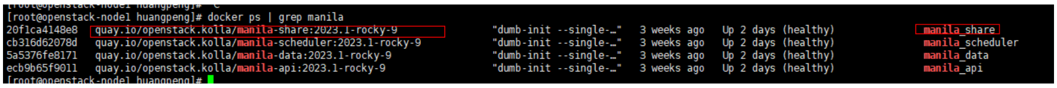
5.2 Configuring Manila Driver in Containerized Mode

Procedure

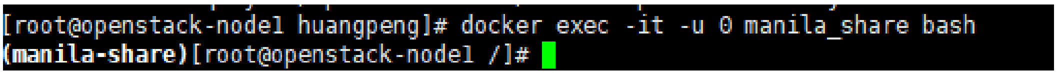
Step 1 Use a remote access tool, such as PuTTY, to log in to an OpenStack Manila Share node through the management IP address. Run the following command on a host to find the **manila.conf** file and configure parameters by referring to **Step 4** and **Step 5**.

```
find / -name manila.conf | grep manila
```

Step 2 Run the **docker ps | grep manila** command to query the Manila Share container. Then run the **docker exec -it -u 0 manila_share bash** command to access the Manila Share container.



```
[root@openstack-node1 huangpeng]# ^C
[root@openstack-node1 huangpeng]# docker ps | grep manila
20f1ca4148e8   quay.io/openstack.kolla/manila-share:2023.1-rocky-9             "dumb-init --single-…"   3 weeks ago   Up 2 days (healthy)             manila_share
cb316d62078d   quay.io/openstack.kolla/manila-scheduler:2023.1-rocky-9         "dumb-init --single-…"   3 weeks ago   Up 2 days (healthy)             manila_scheduler
5a5376fe8171   quay.io/openstack.kolla/manila-data:2023.1-rocky-9              "dumb-init --single-…"   3 weeks ago   Up 2 days (healthy)             manila_data
ecb9b65f9011   quay.io/openstack.kolla/manila-api:2023.1-rocky-9               "dumb-init --single-…"   3 weeks ago   Up 2 days (healthy)             manila_api
[root@openstack-node1 huangpeng]#
```



```
[root@openstack-node1 huangpeng]# docker exec -it -u 0 manila_share bash
(manila-share)[root@openstack-node1 /]#
```

NOTE

manila_share is the name of the Manila Share container.

Step 3 Create a Huawei Manila Driver configuration file in xml format in the **/etc/manila** directory of the Manila Share container and configure parameters by referring to **Step 2** and **Step 3**. You can customize the configuration file name, for example, **manila_huawei_conf.xml**.

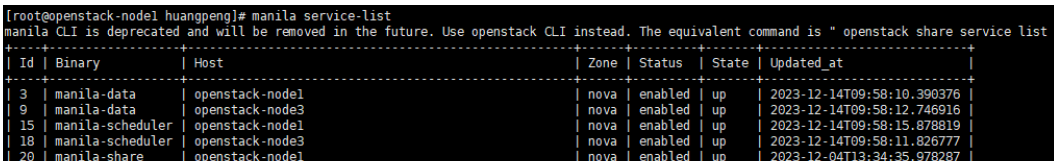
Step 4 Change the owner and user group of the Huawei Manila Driver configuration file to be the same as those of the **/etc/manila/manila.conf** file.

```
-rw-------. 1 manila manila 2962 Sep 22 07:17 manila.conf
-rw-------. 1 manila manila  443 Sep 14 03:43 manila_huawei_conf.xml
```

Step 5 Run the following command to restart the Manila Share service.

```
docker restart manila_share
```

Wait about 30 seconds and run the **manila service-list** command. If the following information is displayed and the value of **State** is **up**, the Manila Share service is successfully started.



```
[root@openstack-node1 huangpeng]# manila service-list
manila CLI is deprecated and will be removed in the future. Use openstack CLI instead. The equivalent command is " openstack share service list
+----+------------------+---------------------------------------------------+------+---------+-------+----------------------------+
| Id | Binary           | Host                                              | Zone | Status  | State | Updated_at                 |
+----+------------------+---------------------------------------------------+------+---------+-------+----------------------------+
| 3  | manila-data      | openstack-node1                                   | nova | enabled | up    | 2023-12-14T09:58:10.390376 |
| 9  | manila-data      | openstack-node3                                   | nova | enabled | up    | 2023-12-14T09:58:12.746916 |
| 15 | manila-scheduler | openstack-node1                                   | nova | enabled | up    | 2023-12-14T09:58:15.878819 |
| 18 | manila-scheduler | openstack-node3                                   | nova | enabled | up    | 2023-12-14T09:58:11.826777 |
| 20 | manila-share     | openstack-node1                                   | nova | enabled | up    | 2023-12-04T13:34:35.978287 |
```

----End

5.3 Verifying the Manila Share Service

Precautions

Except for OceanStor Dorado NAS, the snapshot and remote replication properties are mutually exclusive and cannot be configured at the same time.

Procedure

Step 1 Create a common share type.

In the following command, **general** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

```
# manila type-create general False
```

Step 2 Set the backend of the share type.

In the following command, **huawei_backend** indicates the backend name of the share configured in **Step 4**.

```
# manila type-key general set share_backend_name=huawei_backend
```

Step 3 Set the snapshot property.

```
# manila type-key general set snapshot_support=True
```

Step 4 Set the snapshot rollback property.

```
# manila type-key general set revert_to_snapshot_support=True
```

Step 5 Set the property of creating a share using a snapshot.

```
# manila type-key general set create_share_from_snapshot_support=True
```

Step 6 Create a share that supports the preceding properties.

```
# manila create --name test001 NFS 2 --share-type general
```

----End

6 (Optional) Configuring Advanced Properties of Manila Driver

This chapter describes how to configure advanced storage properties.

Huawei storage supports multiple advanced features of the Smart series. These features can be used in OpenStack environments by associating with specific share types.

6.1 Configuring the Thin/Thick Property

This section describes how to configure the Thin/Thick property.

Procedure

Step 1 Run the **manila type-create thin_type False** command to create a share type.

In the preceding command, **thin_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Configure the Thin/Thick property.

NOTE

- If **thin_provisioning** is set to **true**, the share type is **Thin**. If **thin_provisioning** is set to **false**, the share type is **Thick**.
- If **thin_provisioning** is not configured in **share-type**, the default share type Thin is used.
- OceanStor Dorado 6.*x* and OceanStor 6.*x* do not support Thick shares.

- Configuring the Thin property

  Run the following command to configure a key-value pair whose **thin_provisioning** property is **true**.
  ```
  root@ubuntu:~# manila type-key thin_type set capabilities:thin_provisioning='<is> true'
  ```
- Configuring the Thick property

  Run the following command to configure a key-value pair whose **thin_provisioning** property is **false**.
  ```
  root@ubuntu:~# manila type-key thin_type set capabilities:thin_provisioning='<is> false'
  ```

Step 3 Run the **manila create --name test001 NFS 2 --share-type thin_type** command to create a share that supports the preceding properties.

----End

6.2 Configuring the SmartDedupe Property

This section describes how to configure the SmartDedupe property.

Precautions

SmartDedupe can be configured only when the share type is Thin.

Procedure

Step 1 Run the **manila type-create dedupe_type False** command to create a share type.

In the preceding command, **dedupe_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure a key-value pair whose **thin_provisioning** property is **true**.

```
root@ubuntu:~# manila type-key dedupe_type set capabilities:thin_provisioning='<is> true'
```

Step 3 Run the following command to configure a key-value pair whose SmartDedupe property is **true**.

```
root@ubuntu:~# manila type-key dedupe_type set capabilities:dedupe='<is> true'
```

Step 4 Run the **manila create --name test001 NFS 2 --share-type dedupe_type** command to create a share that supports the preceding properties.

----End

6.3 Configuring the SmartCompression Property

This section describes how to configure the SmartCompression property.

Precautions

SmartCompression can be configured only when the share type is Thin.

Procedure

Step 1 Run the **manila type-create compression_type False** command to create a share type.

In the preceding command, **compression_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure a key-value pair whose **thin_provisioning** property is **true**.

```
root@ubuntu:~# manila type-key compression_type set capabilities:thin_provisioning='<is> true'
```

Step 3 Run the following command to configure a key-value pair whose SmartCompression property is **true**.

```
root@ubuntu:~# manila type-key compression_type set capabilities:compression='<is> true'
```

Step 4 Run the **manila create --name test001 NFS 2 --share-type compression_type** command to create a share that supports the preceding properties.

----End

6.4 Configuring the SmartCache Property

This section describes how to configure the SmartCache property.

Procedure

Step 1 Run the **manila type-create cache_type False** command to create a share type.

In the preceding command, **cache_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure a key-value pair whose SmartCache property is **true**.

```
root@ubuntu:~# manila type-key cache_type set capabilities:huawei_smartcache='<is> true'
```

Step 3 Configure the SmartCache name that already exists on the storage device and associate the cache with the share type.

```
root@ubuntu:~# manila type-key cache_type set huawei_smartcache:cachename='test_name'
```

Step 4 Run the **manila create --name test001 NFS 2 --share-type cache_type** command to create a share that supports the preceding properties.

----End

6.5 Configuring the SmartPartition Property

This section describes how to configure the SmartPartition property.

Procedure

Step 1 Run the **manila type-create partition_type False** command to create a share type.

In the preceding command, **partition_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure a key-value pair whose SmartPartition property is **true**.

```
root@ubuntu:~# manila type-key partition_type set capabilities:huawei_smartpartition='<is> true'
```

Step 3 Configure the SmartPartition name that already exists on the storage device and associate the partition with the share type.

```
root@ubuntu:~# manila type-key partition_type set huawei_smartpartition:partitionname='test_name'
```

Step 4 Run the **manila create --name test001 NFS 2 --share-type partition_type** command to create a share that supports the preceding properties.

----End

6.6 Configuring the SmartQoS Property

Protection policy parameters and restriction policy parameters are mutually exclusive. If they are configured at the same time, the share will fail to be created.

In the QoS property, **IOType** is mandatory. If **IOType** is not configured in a QoS policy, the share will fail to be created. For OceanStor Dorado storage, **IOType** must be set to **2**.

Huawei supports the following QoS properties. One or more properties of the same type can be configured in one QoS policy.

- Protection policy parameters: **latency**, **minIOPS**, and **minBandWidth**
- Restriction policy parameters: **maxIOPS** and **maxBandWidth**

Table 6-1 IOType parameter

Parameter	Description	Remarks
IOType	Read/write type.	The value can be: ● **0**: read I/O ● **1**: write I/O ● **2**: read and write I/O

Table 6-2 QoS parameters

Parameter	Description	Remarks
maxIOPS	Maximum IOPS. This is a restriction policy parameter.	The value is an integer greater than 0. For OceanStor Dorado series, the value is an integer greater than or equal to 100.
minIOPS	Minimum IOPS. This is a protection policy parameter.	The value is an integer greater than 0. For OceanStor Dorado series, the value is an integer greater than or equal to 100.
maxBandWidth	Maximum bandwidth. This is a restriction policy parameter.	The value is an integer greater than 0, expressed in MB/s.
minBandWidth	Minimum bandwidth. This is a protection policy parameter.	The value is an integer greater than 0, expressed in MB/s.
latency	Maximum latency. This is a protection policy parameter.	The value is an integer greater than 0, expressed in ms. For OceanStor Dorado series, the value is 500 or 1500.

6.6.1 Configuring the Maximum IOPS

This section describes how to configure the maximum IOPS.

Procedure

Step 1 Run the **manila type-create maxiops_type False** command to create a share type.

In the preceding command, **maxiops_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure a key-value pair whose SmartQoS property is **true**.

```
root@ubuntu:~# manila type-key maxiops_type set capabilities:qos='<is> true'
```

Step 3 Run the following command to configure QoS parameters.

```
root@ubuntu:~# manila type-key maxiops_type set qos:IOType=0 qos:maxIOPS=50
```

- **maxIOPS**: maximum IOPS. The value is an integer greater than 0. For OceanStor Dorado series, the value is an integer greater than or equal to 100.
- **IOType** (mandatory): read/write type.
  - **0** indicates the read I/O.
  - **1** indicates the write I/O.
  - **2** indicates the read and write I/O.

Step 4 Run the **manila create --name test001 NFS 2 --share-type maxiops_type** command to create a share that supports the preceding properties.

----End

6.6.2 Configuring the Minimum IOPS

This section describes how to configure the minimum IOPS.

Procedure

Step 1 Run the **manila type-create miniops_type False** command to create a share type.

In the preceding command, **miniops_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure a key-value pair whose SmartQoS property is **true**.

```
root@ubuntu:~# manila type-key miniops_type set capabilities:qos='<is> true'
```

Step 3 Run the following command to configure QoS parameters.

```
root@ubuntu:~# manila type-key miniops_type set qos:IOType=0 qos:minIOPS=500
```

- **minIOPS**: minimum IOPS. The value is an integer greater than 0. For OceanStor Dorado series, the value is an integer greater than or equal to 100.
- **IOType** (mandatory): read/write type.
  - **0** indicates the read I/O.
  - **1** indicates the write I/O.
  - **2** indicates the read and write I/O.

Step 4 Run the **manila create --name test001 NFS 2 --share-type miniops_type** command to create a share that supports the preceding properties.

----End

6.6.3 Configuring the Maximum Bandwidth

This section describes how to configure the maximum bandwidth.

Procedure

Step 1 Run the **manila type-create maxbandwidth_type False** command to create a share type.

In the preceding command, **maxbandwidth_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure a key-value pair whose SmartQoS property is **true**.

```
root@ubuntu:~# manila type-key maxbandwidth_type set capabilities:qos='<is> true'
```

Step 3 Run the following command to configure QoS parameters.

```
root@ubuntu:~# manila type-key maxbandwidth_type set qos:IOType=0 qos:maxBandWidth=50
```

- **maxBandWidth**: maximum bandwidth. The value is an integer greater than 0, expressed in MB/s.
- **IOType** (mandatory): read/write type.
  - **0** indicates the read I/O.
  - **1** indicates the write I/O.
  - **2** indicates the read and write I/O.

Step 4 Run the **manila create --name test001 NFS 2 --share-type maxbandwidth_type** command to create a share that supports the preceding properties.

----End

6.6.4 Configuring the Minimum Bandwidth

This section describes how to configure the minimum bandwidth.

Procedure

Step 1 Run the **manila type-create minbandwidth_type False** command to create a share type.

In the preceding command, **minbandwidth_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure a key-value pair whose SmartQoS property is **true**.

```
root@ubuntu:~# manila type-key minbandwidth_type set capabilities:qos='<is> true'
```

Step 3 Run the following command to configure QoS parameters.

```
root@ubuntu:~# manila type-key minbandwidth_type set qos:IOType=0 qos:minBandWidth=50
```

- **minBandWidth**: minimum bandwidth. The value is an integer greater than 0, expressed in MB/s.
- **IOType** (mandatory): read/write type.
  - **0** indicates the read I/O.
  - **1** indicates the write I/O.
  - **2** indicates the read and write I/O.

Step 4 Run the **manila create --name test001 NFS 2 --share-type minbandwidth_type** command to create a share that supports the preceding properties.

----End

6.6.5 Configuring the Maximum Latency

This section describes how to configure the maximum latency.

Procedure

Step 1 Run the **manila type-create latency_type False** command to create a share type.

In the preceding command, **latency_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure a key-value pair whose SmartQoS property is **true**.

```
root@ubuntu:~# manila type-key latency_type set capabilities:qos='<is> true'
```

Step 3 Run the following command to configure QoS parameters.

```
root@ubuntu:~# manila type-key latency_type set qos:IOType=0 qos:latency=500
```

- **latency**: maximum latency. The value is an integer greater than 0, expressed in ms. For OceanStor Dorado series, the value is 500 or 1500.
- **IOType** (mandatory): read/write type.
  - **0** indicates the read I/O.
  - **1** indicates the write I/O.
  - **2** indicates the read and write I/O.

Step 4 Run the **manila create --name test001 NFS 2 --share-type latency_type** command to create a share that supports the preceding properties.

----End

6.6.6 Configuring Multiple Parameters

This section describes how to configure multiple parameters.

Procedure

Step 1 Run the **manila type-create multiple_strategy_type False** command to create a share type.

In the preceding command, **multiple_strategy_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure a key-value pair whose SmartQoS property is **true**.

```
root@ubuntu:~# manila type-key multiple_strategy_type set capabilities:qos='<is> true'
```

Step 3 Run the following command to configure QoS parameters.

```
root@ubuntu:~# manila type-key multiple_strategy_type set qos:IOType=0 qos:latency=500
qos:minIOPS=500 qos:minBandWidth=50
```

- **latency**: maximum latency. The value is an integer greater than 0, expressed in ms. For OceanStor Dorado series, the value is 500 or 1500.
- **minIOPS**: minimum IOPS. The value is an integer greater than 0. For OceanStor Dorado series, the value is an integer greater than or equal to 100.
- **minBandWidth**: minimum bandwidth. The value is an integer greater than 0.
- **IOType** (mandatory): read/write type.
  - **0** indicates the read I/O.
  - **1** indicates the write I/O.
  - **2** indicates the read and write I/O.

Step 4 Run the **manila create --name test001 NFS 2 --share-type multiple_strategy_type** command to create a share that supports the preceding properties.

----End

6.7 Creating a Share in a Specified Storage Pool

This section describes how to create a share in a specified storage pool.

Procedure

Step 1 Run the **manila type-create target_pool_type False** command to create a share type.

In the preceding command, **target_pool_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure the target storage pool.

- To configure a single target storage pool, run the following command:

```
root@ubuntu:~# manila type-key target_pool_type set pool_name=StoragePool001
```

- To configure multiple target storage pools, run the following command:

```
root@ubuntu:~# manila type-key target_pool_type set pool_name="<or> StoragePool001 <or>
StoragePool002"
```

Step 3 Run the **manila create --name test001 NFS 2 --share-type target_pool_type** command to create a share that supports the preceding properties.

----End

6.8 Creating a Share on a Disk of a Specified Type

This section describes how to create a share on a disk of a specified type.

Procedure

Step 1 Run the **manila type-create disk_type False** command to create a share type.

In the preceding command, **disk_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure the disk type.

The value of **disk_type** can be **ssd**, **sas**, **nl_sas**, or **mix**, where **mix** indicates that two or more of **ssd**, **sas**, and **nl_sas** are used.

- To configure one disk type, run the following command:
```
root@ubuntu:~# manila type-key disk_type set huawei_disk_type=sas
```
- To configure multiple disk types, run the following command:
```
root@ubuntu:~# manila type-key disk_type set huawei_disk_type="<or> sas <or> ssd"
```

Step 3 Run the **manila create --name test001 NFS 2 --share-type disk_type** command to create a share that supports the preceding properties.

----End

6.9 Configuring the SectorSize Property

This section describes how to configure the SectorSize property (disk block size) of a share source file system.

Precautions

- If **SectorSize** is configured in both **share-type** and the XML file, the value of **SectorSize** in **share-type** is preferentially used.
- If **share-type** does not have an available value and **SectorSize** is configured in the XML file, the value of **SectorSize** in the XML file is used.
- If **SectorSize** is not configured in **share-type** and the XML file, the default value 64 KB provided by the storage array is used.
- In Rocky and later versions, **SectorSize** cannot be configured.

Procedure

Step 1 Run the **manila type-create sectorsize_type False** command to create a share type.

In the preceding command, **sectorsize_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure a key-value pair whose **SectorSize** property is **true**.

```
root@ubuntu:~# manila type-key sectorsize_type set capabilities:huawei_sectorsize='<is> true'
```

Step 3 Configure the value of **SectorSize**.

```
root@ubuntu:~# manila type-key sectorsize_type set huawei_sectorsize:sectorsize=4
```

NOTE

Huawei storage systems provide five **SectorSize** values (4/8/16/32/64 KB) to adapt to different application scenarios.

Step 4 Run the **manila create --name test001 NFS 2 --share-type sectorsize_type** command to create a share that supports the preceding properties.

----End

6.10 Configuring the Remote Replication Property

This section describes how to configure the remote replication property.

Prerequisites

In the **/etc/manila/manila.conf** file, two backends in the remote replication relationship have been configured and the Manila service has been restarted.

- **replication_domain** is set when the remote replication function is required. The parameter value is a user-defined character string. The same parameter value must be set for backends in the remote replication relationship.
- **replica_backend** is set when the remote replication function is required. The parameter value is a user-defined character string. Backends in the remote replication relationship are **replica_backend** of each other. The name format is *Host name***@***Backend name*.
- **manila_huawei_conf_1.xml** and **manila_huawei_conf_2.xml** are custom configuration files of Manila Driver. For details, see **5 Configuring Basic Properties of Manila Driver**.
- To use the remote replication function within a storage array, add the **local_replication** parameter and set it to **True**, and set the same storage array parameters in **manila_huawei_conf_1.xml** and **manila_huawei_conf_2.xml**. If the **local_replication** parameter is not specified or is set to **False**, the remote replication function between storage arrays is used.

```
[DEFAULT]
...
enabled_share_backends = huawei_manila_1, huawei_manila_2
...

[huawei_manila_1]
share_driver = manila.share.drivers.huawei.huawei_nas.HuaweiNasDriver
manila_huawei_conf_file = /etc/manila/manila_huawei_conf_1.xml
share_backend_name = huawei_manila_1
driver_handles_share_servers = False
replication_domain = huawei_domain
local_replication = False
replica_backend = host@huawei_manila_2

[huawei_manila_2]
share_driver = manila.share.drivers.huawei.huawei_nas.HuaweiNasDriver
manila_huawei_conf_file = /etc/manila/manila_huawei_conf_2.xml
share_backend_name = huawei_manila_2
driver_handles_share_servers = False
replication_domain = huawei_domain
local_replication = False
replica_backend = host@huawei_manila_1
```

Procedure

Step 1 Run the **manila type-create replication_type False** command to create a share type.

In the preceding command, **replication_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure the remote replication type.

```
root@ubuntu:~# manila type-key replication_type set replication_type=dr
```

NOTE

Currently, Manila Driver supports only remote replication of the **dr** type. For details about **dr**, **click here**.

Step 3 Run the **manila create --name test001 NFS 2 --share-type replication_type** command to create a share that supports the preceding properties.

Step 4 Run the **manila share-replica-create test001** command to create a share replica to establish a remote replication relationship between it and the share created in **Step 3**.

----End

6.11 Configuring the Owning Controller of a File System

This section describes how to configure the owning controller of a file system.

Procedure

Step 1 Run the **manila type-create controller_type False** command to create a share type.

In the preceding command, **controller_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

```
root@ubuntu:~# manila type-create controller_type_A False
```

Step 2 Configure the controller name that already exists on the storage device and associate the **controller_type_A** with the share type.

```
root@ubuntu:~# manila type-key controller_type_A set huawei_controller:controllername='CTE0.A'
```

Step 3 Run the **manila create --name test001 NFS 2 --share-type controller_type_A** command to create a share that supports the preceding properties.

----End

6.12 Configuring the NFS Client Permission

This section describes how to configure the NFS client permission.

Procedure

Step 1 Run the **manila type-create share_privilege_type False** command to create a share type.

In the preceding command, **share_privilege_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

```
root@ubuntu:~# manila type-create share_privilege_type False
```

Step 2 Run the following command to configure the property type name that already exists on the storage device and associate **share_privilege_type** with the share type.

Table 6-3 Parameters

Parameter	Description	Value
sync	Write mode.	● **0**: synchronous ● **1**: asynchronous
allsquash	Permission constraint.	● **0**: all_squash ● **1**: no_all_squash
rootsquash	root permission constraint.	● **0**: root_squash ● **1**: no_root_squash
secure	Source port verification constraint.	● **0**: secure ● **1**: insecure

```
root@ubuntu:~# manila type-key share_privilege_type set huawei_share_privilege:sync=0
root@ubuntu:~# manila type-key share_privilege_type set huawei_share_privilege:allsquash=0
root@ubuntu:~# manila type-key share_privilege_type set huawei_share_privilege:rootsquash=0
root@ubuntu:~# manila type-key share_privilege_type set huawei_share_privilege:secure=0
```

Step 3 Run the **manila create --name test001 NFS 2 --share-type share_privilege_type** command to create a share that supports the preceding properties.

----End

6.13 Configuring the HyperMetro Property

This section describes how to configure the HyperMetro property.

Prerequisites

HyperMetro domains, vStores, vStore pairs, and logical ports visible to vStores have been configured on the local and remote storage arrays.

Procedure

Step 1 In the **/etc/manila/manila.conf** file, configure two backends in the NAS HyperMetro relationship.

- **metro_info** is set when the NAS HyperMetro function is required. The parameter value is a custom list containing multiple elements. Each element contains the **metro_domain**, **local_vStore_name**, **remote_vStore_name**,

remote_backend, and **metro_logic_ip** fields, which are separated by commas (,). For details, see **Table 6-4**.

- **manila_huawei_conf_1.xml** and **manila_huawei_conf_2.xml** are custom configuration files of Manila Driver. For details, see **5 Configuring Basic Properties of Manila Driver**.
- A share cannot be created using a snapshot of a HyperMetro share.
- For OceanStor Dorado 6.1.2 and later versions, you can create or delete a HyperMetro share, create, delete, or roll back a snapshot, create a share using a snapshot, and expand or reduce the capacity of a share after a primary/secondary switchover.
- For OceanStor Dorado 6.1.2 and later versions, if HyperMetro is used and the backends are forcibly specified in **volume_type**, set the backend names in **type** to *"<or> backend1 <or> backend2"* (*backend1* and *backend2* are HyperMetro backend names). The backend storage pool names must be the same. Otherwise, a share cannot be created using a snapshot after a HyperMetro primary/secondary switchover.

```
[DEFAULT]
...
enabled_share_backends = huawei_manila_1, huawei_manila_2
...

[huawei_manila_1]
share_driver = manila.share.drivers.huawei.huawei_nas.HuaweiNasDriver
manila_huawei_conf_file = /etc/manila/manila_huawei_conf_1.xml
share_backend_name = huawei_manila_1
driver_handles_share_servers = False
metro_info =
    metro_domain: huawei_domain,
    local_vStore_name: local_vstore,
    remote_vStore_name: remote_vstore,
    remote_backend: host@huawei_manila_2,
    metro_logic_ip: metro_logic_ip

[huawei_manila_2]
share_driver = manila.share.drivers.huawei.huawei_nas.HuaweiNasDriver
manila_huawei_conf_file = /etc/manila/manila_huawei_conf_2.xml
share_backend_name = huawei_manila_2
driver_handles_share_servers = False
metro_info =
    metro_domain: huawei_domain,
    local_vStore_name: local_vstore,
    remote_vStore_name: remote_vstore,
    remote_backend: host@huawei_manila_1,
    metro_logic_ip: metro_logic_ip
```

Table 6-4 Parameters

Parameter	Description
metro_domain	HyperMetro domain name. The same parameter value must be set for backends in the HyperMetro relationship.
local_vStore_name	Local vStore name of a HyperMetro vStore pair.
remote_vStore_name	Remote vStore name of a HyperMetro vStore pair.

Parameter	Description
remote_backend	Names of the remote Manila backends in the NAS HyperMetro relationship. The two backends in the NAS HyperMetro relationship are **remote_backend** of each other. The name format is *Host name*@*Backend name*.
metro_logic_ip	Logical IP address under a vStore. The same IP address is configured for the two backends in the NAS HyperMetro relationship. You can enter multiple IP addresses separated by semicolons (;).

Step 2 Run the following command to restart the Manila service.

```
root@ubuntu:~# systemctl restart openstack-manila-share.service
```

Step 3 Run the **manila type-create HyperMetro False** command to create a share type.

In the preceding command, **HyperMetro** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. This parameter cannot be set to **True** for HyperMetro.

Step 4 Run the following command to configure a key-value pair whose HyperMetro property is **true**.

```
root@ubuntu:~# manila type-key HyperMetro set capabilities:hypermetro='<is> true'
```

Step 5 Run the **manila create --name metro001 NFS 2 --share-type HyperMetro** command to create a share that supports the preceding properties.

----End

6.14 Configuring filesystem:mode

This section describes how to configure the distribution algorithm for a share source file system. Only OceanStor Dorado supports the configuration.

Procedure

Step 1 Run the **manila type-create filesystem_mode_type False** command to create a share type.

In the preceding command, **filesystem_mode_type** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

Step 2 Run the following command to configure the value of **filesystem:mode**.

- **filesystem:mode=0** indicates the performance mode.
- **filesystem:mode=2** indicates the directory balance mode.

```
root@ubuntu:~# manila type-key filesystem_mode_type set filesystem:mode=0
```

Step 3 Run the **manila create --name test001 NFS 2 --share-type filesystem_mode_type** command to create a share that supports the preceding properties.

----End

6.15 Configuring the Percentage of the Reserved Snapshot Space

This section describes how to configure the percentage of the reserved snapshot space.

Procedure

Step 1 Run the **manila type-create snapshot_reserve False** command to create a share type.

In the preceding command, **snapshot_reserve** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

```
root@ubuntu:~# manila type-create snapshot_reserve False
```

Step 2 Run the following command to configure the value of **snapshot_reserve_percentage**.

```
root@ubuntu:~# manila type-key snapshot_reserve set
huawei_snapshotreserveper:snapshot_reserve_percentage=20
```

Step 3 Run the **manila create --name test001 NFS 2 --share-type snapshot_reserve** command to create a share that supports the preceding properties.

----End

6.16 Configuring the UNIX Permission on the Root Directory of a File System

This section describes how to configure the UNIX permission on the root directory of a file system.

Procedure

Step 1 Run the **manila type-create unix_permission False** command to create a share type.

In the preceding command, **unix_permission** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

```
root@ubuntu:~# manila type-create unix_permission False
```

Step 2 Run the following command to configure the value of **unix_permission**.

```
root@ubuntu:~# manila type-key unix_permission set huawei_unixpermission:unix_permission=755
```

Step 3 Run the **manila create --name test001 NFS 2 --share-type unix_permission** command to create a share that supports the preceding properties.

----End

6.17 Configuring a Snapshot Directory to Be Visible

This section describes how to configure a snapshot directory to be visible.

Procedure

Step 1 Run the **manila type-create show_snapshot_dir False** command to create a share type.

In the preceding command, **show_snapshot_dir** indicates the share type name, which is specified by users. **False** indicates that the **driver_handles_share_servers** function is disabled. To enable the function, change it to **True**.

```
root@ubuntu:~# manila type-create show_snapshot_dir False
```

Step 2 Run the following command to configure the value of **show_snapshot_dir**.

```
root@ubuntu:~# manila type-key show_snapshot_dir set huawei_showsnapshotdir:show_snapshot_dir=true
```

Step 3 Run the **manila create --name test001 NFS 2 --share-type show_snapshot_dir** command to create a share that supports the preceding properties.

----End

6.18 Configuring Certificate Authentication

This section describes how to configure certificate authentication to connect to back-end storage.

Procedure

Step 1 Use a remote access tool, such as PuTTY, to log in to an OpenStack Malina node through the management IP address.

Step 2 Set the configuration file of Huawei Malina Driver. Add **SSLCertVerify** and **SSLCertPath** in the **<Storage>** section.

```
<?xml version='1.0' encoding='UTF-8'?>
<config>
  <Storage>
    ...
    <SSLCertVerify>True</SSLCertVerify>
    <SSLCertPath>***</SSLCertPath>
  </Storage>
  ...
</config>
```

NOTE

- **SSLCertVerify** indicates whether to enable certificate authentication. The value can be **True** or **False**. If the parameter is not set, the value is **False** by default. You are advised to enable certificate authentication.
- **SSLCertPath** indicates the certificate path for authentication and is valid only when **SSLCertVerify** is set to **True**.

----End

7 Best Practices

7.1 Quick Interconnection with Huawei Storage

This section describes how to configure Huawei Manila Driver on OpenStack to interconnect with Huawei storage systems.

Configuration Process

Step 1 Obtain Manila Driver. For details, see **4.1 Obtaining Manila Driver**.

Step 2 Create or view the file storage pool to be used on Huawei storage.

Step 3 Configure the **manila.conf** file and Huawei custom Manila Driver configuration file. For details, see **5 Configuring Basic Properties of Manila Driver**.

- In **/etc/manila**, create a Huawei custom Manila Driver configuration file in **.xml** format. You can change the name of the Manila Driver configuration file based on site requirements. For example, the Manila Driver configuration file name is **manila_huawei_conf.xml**.
- Set parameters in the Huawei custom Manila Driver configuration file.

```
<?xml version='1.0' encoding='UTF-8'?>
<Config>
  <Storage>
    <Product>Dorado</Product>
    <LogicalPortIP>x.x.x.x</LogicalPortIP>
    <RestURL>https://x.x.x.x:8088/deviceManager/rest/</RestURL>
    <UserName>xxx</UserName>
    <UserPassword>xxx</UserPassword>
    <SnapshotSupport>True</SnapshotSupport>
  </Storage>
  <Filesystem>
    <StoragePool>xxx</StoragePool>
  </Filesystem>
</Config>
```

- Configure the **manila.conf** file.

  Add the following configuration items to the end of the **/etc/manila/manila.conf** file:

  – **volume_driver** indicates the loaded Manila Driver file.

- **share_backend_name** indicates the name of the Manila share backend.
- **manila_huawei_conf_file** indicates the Huawei custom Manila Driver configuration file.

```
[huawei]
share_driver = manila.share.drivers.huawei.huawei_nas.HuaweiNasDriver
manila_huawei_conf_file = /etc/manila/manila_huawei_conf.xml
share_backend_name = huawei
driver_handles_share_servers = False
```

In the **[DEFAULT]** section, add the **huawei** backend.

```
[DEFAULT]
...
enabled_share_backends=huawei
```

Step 4 Restart the Manila service.

Step 5 Check the service status.

If the service status is up, the service is started properly.

```
root@openstack:~# manila service-list
 +----+------------------+------------------+------+---------+-------+----------------------------+
 | Id | Binary           | Host             | Zone | Status  | State | Updated_at                 |
 +----+------------------+------------------+------+---------+-------+----------------------------+
 | 1  | manila-scheduler | openstack        | nova | enabled | up    | 2020-10-30T01:26:35.000000 |
 | 2  | manila-data      | openstack        | nova | enabled | up    | 2020-10-30T01:26:34.000000 |
 | 3  | manila-share     | openstack@huawei | nova | enabled | up    | 2020-10-30T01:26:34.000000 |
 +----+------------------+------------------+------+---------+-------+----------------------------+
```

----End