Abstract
This guide describes how to install and use HPE 3PAR Plug-in for VMware vRealize Orchestrator for running workflows for 3PAR operations in HPE 3PAR StoreServ Systems. The guide is intended for the system administrators who use HPE 3PAR StoreServ Systems, HPE Recovery Manager Central (RMC) and VMware vRealize Orchestrator.
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Introduction

Overview

HPE 3PAR Plug-in for VMware vRealize Orchestrator enables support for HPE 3PAR StoreServ arrays in VMware vRealize Orchestrator. With the predefined workflows that enables specific operations in HPE 3PAR StoreServ, the plug-in:

- Automates provisioning of storage arrays.
- Protects datastores using HPE RMC

For more information about HPE Recovery Manager Central, see HPE RMC documents.

The 3PAR Plug-in for VMware vRealize Orchestrator supports:

- Automation of basic storage provisioning tasks.
- Basic virtual volume or snapshot life cycle automation capabilities for virtual volumes.
- Application of QoS settings.
- Operations to manage datastores on HPE 3PAR arrays.
- Operations to use HPE RMC protection features (Snapshot and Express Protect) to protect VMware VMFS data stores created with 3PAR virtual volumes.
- Operations to create and manage 3PAR physical copies of virtual volumes and volume sets.

The 3PAR Plug-in for VMware vRealize Orchestrator provides the following workflows:

- Provisioning workflows
  - Common Provisioning Groups (CPG) management
  - Quality of Service (QoS) management
  - Virtual Volume management
  - Virtual Volume set management
  - Host management
  - Host set management
  - Physical copy management
  - Export management (Presentation of volumes to 3PAR managed hosts)
  - Snapshot management

- Protection workflows
  - Protect Datastores and VMs
  - Promote Datastore and VM snapshots or Backups

- Composite workflows
Prerequisites

The HPE 3PAR plugin for VMware vRealize Orchestrator depends on the following:

- To add a 3PAR connection, Import a certificate from URL with certificate alias workflow available in Library > HPE Storage > 3PAR StoreServ > Connection Management.
- RescanAll action available in com.vmware.library.vc.storage.
- To add a RMC instance, Import a certificate from URL with certificate alias workflow available in Library > HPE Storage > 3PAR StoreServ > Protection > Manage RMC Instances.
- Register the RMC-V plug-in with vCenter for using the protection features.

If the workflows and actions are not available in vRO or if they are modified, the execution of the HPE 3PAR plugin fails or may not provide the expected results.
Installation

Downloading and installing HPE 3PAR plug-in for VMware vRealize Orchestrator

Procedure
1. Download HPE 3PAR plug-in for VMware vRealize Orchestrator.
2. Install the plug-in.
3. Restart the Orchestrator Server.

Downloading the HPE 3PAR plug-in for VMware vRealize Orchestrator

Procedure
1. Navigate to Software Depot.
2. Download the 27550-02246.zip file.
   A dialog box with options to Save or Open the file appears.
3. Click Save.
   The system saves the file in the local directory.

More information
Installing the HPE 3PAR plug-in for VMware vRealize Orchestrator on page 8
Restarting the Orchestrator Server on page 9

Installing the HPE 3PAR plug-in for VMware vRealize Orchestrator

Prerequisites
Ensure that the vmoapp file is downloaded.

Procedure
1. Open VMware vRealize Orchestrator by using the VRO appliance IP address.
   The VMware vRealize Orchestrator home page appears.
2. Click Orchestrator Control Center.
3. Enter the following details to log in:
   • Username
   • Password
4. Click OK.
   VMware vRealize Orchestrator Control Center window appears.
5. Navigate to the Plug-ins section.
6. Click Manage Plug-ins.
   All plug-ins that are currently installed on VMware vRealize Orchestrator are listed.

7. On the Install Plug-in section, click Browse.

8. Navigate to the vmoapp file in the local directory, and click Open.

9. Click Install.
   The EULA window with the license details appears.

10. Select Accept EULA.
    You must select this option to continue installation.

11. Click Install.
    The storage integration plug-in appears in the plug-ins section after installation.
    You must restart the Orchestrator Server before launching the plug-in to run the workflows.

More information
    Restarting the Orchestrator Server on page 9

Restarting the Orchestrator Server

**NOTE:** For specific restart requirements for the version of vRO that you are using, refer to the VMware vRealize Orchestrator documentation.

Procedure

1. In the Control Center home page, click Manage > Startup Options.
   The Startup Options window appears.

2. Click Restart.
   The VMware vRealize Orchestrator is restarted.

3. Optional: Navigate to VMware vRealize Orchestrator home page, and click Help > Installed plug-ins to verify that the plug-in is installed.
   A list of all installed plug-ins appears.

More information
    Launching 3PAR plug-in workflows on page 9

Launching 3PAR plug-in workflows

To configure workflows and perform administrative tasks on Orchestrator client use Java Web Start.

**Prerequisites**

- Ensure that the 3PAR plug-in is installed.
- Ensure that VMware vRealize Orchestrator launched using the vRO appliance IP address.

Procedure

1. On the VMware vRealize Orchestrator home page, click Start Orchestrator Client.
A dialog box with options to save or open client.jnlp file appears.

2. Click **Open**.

3. Click **Allow** when prompted.

4. On the **Security Warning** dialog box, click **Continue** when prompted.
   
The **VMware vRealize Orchestrator Login** window appears.

5. In the **Host name** field, enter the host name.

6. In the **User name** field, enter the administrator user name.

7. In the **Password** field, enter the password.

8. Click **Login**.

   a. If prompted, on the **Security** window, select **Install this certificate and do not display any security warning for it any more** field and click **Ignore**.

The system launches VMware vRealize Orchestrator.
Workflows

You can use the workflows provided by the HPE 3PAR plug-in for VMware vRealize Orchestrator to perform storage provisioning tasks such as configuring virtual volumes and volume sets and configuring hosts and host sets. A workflow receives input parameters for an operation and provides an output for the operation. For example, the name of the HPE 3PAR StoreServ system and a name for the virtual volume are required as input parameters for the workflow when you intend to create a volume in a HPE 3PAR StoreServ system. This workflow configures a virtual volume in the specified HPE 3PAR StoreServ array as the output.

More information

VMware vRealize Orchestrator documentation on page 191

3PAR StoreServ

Connection management

The workflow in connection management allows the user to manage HPE 3PAR StoreServ connections in the VMware vRealize Orchestrator.

It is necessary to import the certificate from the target HPE 3PAR StoreServ system, before you add a new HPE 3PAR StoreServ connection. You can run the Import 3PAR certificate from url workflow to import the certificate from the HPE 3PAR.

NOTE: The VMware vRealize Orchestrator administrators can manage the certificates by logging in to Orchestrator Control Center.

Importing 3PAR certificate from url

Field descriptions

Table 1: Import 3PAR certificate from url

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URL</td>
<td>URL or just the host:port for non HTTPS SSL services.</td>
</tr>
<tr>
<td>ignoreWarnings</td>
<td>Option to select a certificate and add the certificate to a trusted store.</td>
</tr>
</tbody>
</table>

Prerequisites

Log in to VMware vRealize Orchestrator.

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Connection Management folder.

4. Select Import 3PAR certificate from url and perform one of the following:
• Click the Start workflow icon.
• Right-click Import 3PAR certificate from url, and click Start workflow.
• Press Ctrl+R.

The Start Workflow : Import 3PAR certificate from url window appears.

5. In the URL field, enter the URL or the host:port for the non HTTPS SSL services.
   The host:port is displayed in the following format: <hostname of 3PAR array> : 8080, where 8080 is the port number.

6. In the ignoreWarnings field, click Yes to select a certificate and add the certificate to a trusted store.

7. Click Submit.
   The system displays the HPE 3PAR StoreServ system added in the StoreServ inventory at Inventory > HPE 3PAR StoreServ folder.

Adding 3PAR connection

Field descriptions

Table 2: Add 3PAR Connection

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Name</td>
<td>Name of the HPE 3PAR StoreServ connection.</td>
</tr>
<tr>
<td>StoreServ Storage System IP or FQDN</td>
<td>IP or FQDN of the HPE 3PAR StoreServ connection.</td>
</tr>
<tr>
<td>Username</td>
<td>StoreServ administrator username.</td>
</tr>
<tr>
<td>Password</td>
<td>StoreServ administrator password.</td>
</tr>
</tbody>
</table>

Prerequisites
Log in to VMware vRealize Orchestrator.

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Connection Management folder.

4. Select Add 3PAR Connection and perform one of the following:
• Click the Start workflow ( ) icon.
• Right-click Add 3PAR Connection, and click Start workflow.
• Press Ctrl+R.

The Start Workflow : Add 3PAR Connection window appears.

5. In the Connection Name field, enter a name for the connection.
   To add the system to the inventory, provide a name for a HPE 3PAR StoreServ connection.

6. In the StoreServ Storage System IP or FQDN field, enter the IP address or FQDN of the StoreServ connection.

7. In the Username field, enter the StoreServ administrator username.

8. In the Password field, enter the StoreServ administrator password.

9. Click Submit.
   The system displays the HPE 3PAR StoreServ system added in the StoreServ inventory at Inventory > HPE 3PAR StoreServ folder.

Removing 3PAR connection
You can remove an HPE 3PAR StoreServ connection from the HPE 3PAR StoreServ inventory in the VMware vRealize Orchestrator inventory if you no longer use the connection.

Field descriptions

Table 3: Remove 3PAR Connection

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>Name of the HPE 3PAR StoreServ connection.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Connection Management folder.

4. Select Remove 3PAR Connection and perform one of the following:

   • Click the Start workflow ( ) icon.
   • Right-click Remove 3PAR Connection, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Remove 3PAR Connection window appears.
5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. Click **Submit**.

The system removes the HPE 3PAR StoreServ array from the inventory.

### Common Provisioning Group (CPG) management

A Common Provisioning Group (CPG) is a virtual pool of logical disks (LD) that allocates space to virtual volumes on demand. A CPG enables virtual volumes to share the CPG resources. You can create fully provisioned virtual volumes (FPVVs), thinly provisioned virtual volumes (TPVVs), or thinly deduplicated virtual volumes that draw space from a CPG LD pool.

CPG enables shared access to pooled logical capacity and multiple volumes share the buffer pool of LDs. The maximum number of CPGs depend on the configuration of HPE 3PAR StoreServ system.

When you configure a CPG, set a growth increment and an optional growth warning and growth limit to restrict the CPG growth and maximum size.

### Creating CPG

Use the Create CPG workflow to define the logical disk creation characteristics, which are known as CPG, such as disk type, RAID type, set size, total space warning, and growth limits.

**Field descriptions**

**Table 4: Create CPG**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ connection to configure CPG. You can select an HPE 3PAR StoreServ array from the inventory.</td>
</tr>
<tr>
<td><strong>CPG Common Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CPG Name</strong></td>
<td>Name of the CPG. This setting is mandatory.</td>
</tr>
<tr>
<td><strong>Domain</strong></td>
<td>Domain for which CPG is configured. This setting is optional.</td>
</tr>
<tr>
<td><strong>CPG Allocation Settings</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Disk Type</strong></td>
<td>Type of disk. The options are:</td>
</tr>
<tr>
<td></td>
<td>• FC</td>
</tr>
<tr>
<td></td>
<td>• NL</td>
</tr>
<tr>
<td></td>
<td>• SSD</td>
</tr>
<tr>
<td><strong>RAID Type</strong></td>
<td>Type of RAID. The options are:</td>
</tr>
<tr>
<td></td>
<td>• RAID-0</td>
</tr>
<tr>
<td></td>
<td>• RAID-1</td>
</tr>
<tr>
<td></td>
<td>• RAID-5</td>
</tr>
<tr>
<td></td>
<td>• RAID-6</td>
</tr>
</tbody>
</table>

*Table Continued*
### Set Size
Set size for the selected RAID. For a RAID, you can select a set size from the drop-down menu of feasible set sizes.

### High Availability
System availability in a hardware failure. The options are:
- **Port** — Port failure does not affect the CPG.
- **Cage** — Disk enclosure failure does not affect the CPG.
- **Mag** — Magazine failure does not affect the CPG.

### CPG Growth Settings

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Growth Increment</strong></td>
<td>Growth increment for the CPG. When volumes that draw storage from a CPG require additional storage, the system automatically creates additional LDs according to the CPG growth increment.</td>
</tr>
<tr>
<td><strong>growthIncrementUnit</strong></td>
<td>Unit of growth increment. Different units are:</td>
</tr>
<tr>
<td></td>
<td>• MiB</td>
</tr>
<tr>
<td></td>
<td>• GiB</td>
</tr>
<tr>
<td></td>
<td>• TiB</td>
</tr>
<tr>
<td><strong>Growth Limit</strong></td>
<td>Maximum storage that a volume can draw from the CPG. The autogrow operation is limited to this storage.</td>
</tr>
<tr>
<td></td>
<td>When the volumes that draw storage from a CPG reaches the CPG growth limit, the system prevents the volumes from allocating additional space.</td>
</tr>
<tr>
<td><strong>growthLimitUnit</strong></td>
<td>Unit of growth limit. Different units are:</td>
</tr>
<tr>
<td></td>
<td>• MiB</td>
</tr>
<tr>
<td></td>
<td>• GiB</td>
</tr>
<tr>
<td></td>
<td>• TiB</td>
</tr>
</tbody>
</table>

**NOTE:** You can set growth warnings that exceed the total capacity of the system. However, when volumes associated with a CPG use all space available to that CPG, any new writes to TPVVs associated with the CPG fail and snapshots associated with the CPG might become invalid.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Used LD Warning Alert</strong></td>
<td>Growth limit after which the system generates an alert. When the size of the volumes that draw storage from a CPG reach the CPG growth warning, the system generates an alert.</td>
</tr>
<tr>
<td><strong>growthWarningUnit</strong></td>
<td>Unit of growth warning limit. Different units are:</td>
</tr>
<tr>
<td></td>
<td>• MiB</td>
</tr>
<tr>
<td></td>
<td>• GiB</td>
</tr>
<tr>
<td></td>
<td>• TiB</td>
</tr>
</tbody>
</table>

### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Common Provisioning Group (CPG) management folder.

4. Select Create CPG and perform one of the following:
   - Click the Start workflow ( ) icon.
   - Right-click Create CPG, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Create CPG window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the CPG Common Parameters tab, enter the following details:
   - CPG Name
   - Domain

7. On the CPG Allocation Settings tab, enter the following details:
   - Disk Type
   - RAID Type
   - Set Size
   - High Availability

8. On the CPG Growth Settings tab, enter the following details:
   - Growth Increment
   - growthIncrementUnit
   - Growth Limit
   - growthLimitUnit
   - Used LD Warning Alert
   - growthWarningUnit

9. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Deleting CPG

You can delete a CPG only if no volumes are associated with the CPG.

Field descriptions
Table 5: Delete CPG

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ connection in which the CPG is configured. You can select an HPE 3PAR StoreServ array from the inventory.</td>
</tr>
<tr>
<td>CPG</td>
<td>Name of the CPG to delete. This setting is mandatory. You can select a CPG from the list of CPGs available in the selected HPE 3PAR StoreServ array.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ([ ] ) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Common Provisioning Group (CPG) management folder.

4. Select Delete CPG and perform one of the following:

   • Click the Start workflow ([ ] ) icon.
   • Right-click Delete CPG, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Delete CPG window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the CPG Parameters tab, select the CPG from inventory.

7. Click Submit.
   The system removes the CPG from the inventory.

Querying CPGs

Querying All CPGs

To get a list of all CPGs available in an HPE 3PAR StoreServ system, use the Get All CPGs workflow.

Field descriptions
### Table 6: Get All CPGs

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ connection in which the CPG is configured. You can select an HPE 3PAR StoreServ array from the inventory.</td>
</tr>
</tbody>
</table>

### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.
2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to **Common Provisioning Group (CPG) management > Query** folder.
4. To view all configured CPGs, select **Get All CPGs**.
   - Perform one of the following:
     - Click the **Start workflow** icon.
     - Right-click **Get All CPGs**, and click **Start workflow**.
     - Press Ctrl+R.
   - The **Start Workflow : Get All CPGs** window appears.
   - In the **Common Parameters** tab, enter the HPE 3PAR StoreServ connection name. You can select an HPE 3PAR StoreServ connection from the inventory.
   - Click **Submit**.

The system returns an array with the list of all CPGs in the selected HPE 3PAR StoreServ system.

### Querying CPG by Name

Use the Get CPG by Name workflow to ensure that a specific CPG is available in the system.

### Field descriptions

#### Table 7: Get CPG by name

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ connection in which the CPG is configured. You can select an HPE 3PAR StoreServ array from the inventory.</td>
</tr>
<tr>
<td><strong>CPG Parameters</strong></td>
<td>Name of the CPG.</td>
</tr>
</tbody>
</table>
Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Common Provisioning Group (CPG) management > Query** folder.

4. To view a particular CPG by name, select **Get CPG by name**.
   
   - Perform one of the following:
     
     - Click the **Start workflow** icon.
     - Right-click **Get CPG by Name**, and click **Start workflow**.
     - Press **Ctrl+R**.

     The **Start Workflow : Get CPG by Name** window appears.

   b. On the **Connection** tab, enter the HPE 3PAR StoreServ connection name.

   c. On the **CPG Parameters** tab, enter the CPG name.

   d. Click **Submit**.

   If the specified CPG is available in the HPE 3PAR StoreServ system, the system returns the details of the CPG.

Virtual Volume (VV) management

Virtual volumes draw resources from CPGs and volumes are exported as logical unit numbers (LUNs) to hosts. Virtual volumes are the only data layers visible to the hosts. Before creating virtual volumes, you must create CPGs to allocate space to the virtual volumes. The two types of volumes are base volumes and snapshot volumes.

A Thinly Provisioned Virtual Volume (TPVV) is a volume that uses LDs that belong to a CPG. TPVVs associated with the same CPG draw space from the LD pool as needed, allocating space on demand in 16 KB increments. When the volumes that draw space from the CPG require additional storage, the 3PAR OS automatically creates additional LDs and adds them to the pool until the CPG reaches the user-defined growth limit, which restricts the CPG maximum size. The TPVV volume size limit is 16 TB.

An Fully Provisioned Virtual Volume (FPVV) is a volume that uses LDs that belong to a CPG. Unlike TPVVs, FPVVs have a set amount of user space allocated in the system for user data. FPVVs require the system to reserve the entire amount of space required by the FPVV whether the space is used. The FPVV size is fixed, and the size limit is 16 TB. You can set snapshot space allocation limits and usage warnings to help manage the growth of snapshot space.

A thinly deduplicated virtual volume is a TPVV with space for the base volume allocated from the associated user CPG and snapshot space allocated from the associated snapshot CPG, if any.

Creating virtual volume

To configure a new 3PAR virtual volume in an HPE 3PAR StoreServ system, use the Create Virtual Volume workflow. You can configure any number of virtual volumes in an HPE 3PAR StoreServ system depending upon the storage capacity of the system.
Field descriptions

Table 8: Create Virtual Volume

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServe array in which the virtual volume is configured. You can select the HPE 3PAR StoreServe system from the inventory.</td>
</tr>
<tr>
<td>Name of the Virtual Volume</td>
<td>Name of the virtual volume. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td>User CPG</td>
<td>Name of the CPG in which the virtual volume is configured. You can select a CPG from the inventory.</td>
</tr>
<tr>
<td>Size</td>
<td>Size of the virtual volume.</td>
</tr>
<tr>
<td>Size Increment Unit</td>
<td>Unit for the size increment. The options are:</td>
</tr>
<tr>
<td></td>
<td>• MiB</td>
</tr>
<tr>
<td></td>
<td>•GiB</td>
</tr>
<tr>
<td></td>
<td>• TiB</td>
</tr>
<tr>
<td>Virtual Volume provisioning type</td>
<td>Type of virtual volume. The options are:</td>
</tr>
<tr>
<td></td>
<td>• Thin — Thinly Provisioned virtual volume.</td>
</tr>
<tr>
<td></td>
<td>• ThinDedupe — Thinly Provisioned virtual volume with dedupe feature.</td>
</tr>
<tr>
<td></td>
<td>• Full — Fully Provisioned virtual volume.</td>
</tr>
<tr>
<td>Enable or disable compression</td>
<td>Specifies whether the virtual volume is compressed. Only TPVVs support this feature.</td>
</tr>
<tr>
<td></td>
<td>This feature is available on 3PAR OS 3.3.1 or later only.</td>
</tr>
<tr>
<td></td>
<td>The options are:</td>
</tr>
<tr>
<td></td>
<td>• Yes</td>
</tr>
<tr>
<td></td>
<td>• No</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab. The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the Virtual Volume (VV) management > Tune folder, and double-click the Tune folder.
4. Select Create Virtual Volume and perform one of the following:
• Click the Start workflow (play) icon.
• Right-click Create Virtual Volume, and click Start workflow.
• Press Ctrl+R.

The Start Workflow : Create Virtual Volume window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Virtual Volume Parameters tab:
   a. In the Name of the Virtual Volume field, enter a name for the virtual volume.
   b. In the User CPG field, enter the name of the CPG in which you want to configure the virtual volume.
   c. In the Size in MiB field, enter the storage space required for the virtual volume.
   d. From the Size Increment Unit list, select a unit.
   e. In the Virtual Volume provisioning type field, select the type of virtual volume.

7. Specify whether you want to compress the virtual volume.

8. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Deleting virtual volume
If the virtual volume is not presented or exported to any hosts, you can delete a virtual volume from a 3PAR storage systems.

Field descriptions

Table 9: Delete Virtual Volume

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Virtual Volume Parameters</td>
<td></td>
</tr>
<tr>
<td>Virtual Volume</td>
<td>Name of the virtual volume to delete. You can select a virtual volume from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows (play) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Virtual Volume (VV) management > Tune folder, and double-click the Tune folder.

4. Select Delete Virtual Volume, and perform one of the following:
• Click the **Start workflow** icon.
• Right-click **Delete Virtual Volume**, and click **Start workflow**.
• Press **Ctrl+R**.

The **Start Workflow : Delete Virtual Volume** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Virtual Volume Parameters** tab, enter the virtual volume name.

7. Click **Submit**.

   You can use **Next** or **Previous** to navigate through tabs.

   The system removes the selected virtual volume from the HPE 3PAR StoreServ inventory.

---

**Adding additional storage to virtual volume**

Even if the volume is presented to a host, you can add additional storage to a virtual volume.

**Field descriptions**

**Table 10: Grow Virtual Volume**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Virtual Volume Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Virtual Volume</strong></td>
<td>Name of the virtual volume to allocate additional storage space. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td><strong>New size of Virtual Volume in MiB</strong></td>
<td>New size of the virtual volume.</td>
</tr>
<tr>
<td><strong>Size Increment Unit</strong></td>
<td>Unit for the size increment. The options are:</td>
</tr>
<tr>
<td></td>
<td>• MiB</td>
</tr>
<tr>
<td></td>
<td>• GiB</td>
</tr>
<tr>
<td></td>
<td>• TiB</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.

   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Virtual Volume (VV) management > Tune** folder, and double-click the **Tune** folder.

4. Select **Grow Virtual Volume** and perform one of the following:
- Click the **Start workflow** icon.
- Right-click **Grow Virtual Volume**, and click **Start workflow**.
- Press **Ctrl+R**.

The **Start Workflow : Grow Virtual Volume** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Virtual Volume Parameters** tab:
   a. In the **Virtual Volume** field, enter the virtual volume name. You can select a virtual volume from the inventory.
   b. In the **New size of Virtual Volume in MiB** field, enter the new storage size for the virtual volume.
   c. From the **Size Increment Unit** list, select appropriate unit.

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

### Modifying virtual volume

**Field descriptions**

**Table 11: Modify Virtual Volume**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Virtual Volume Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>General</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Virtual Volume</strong></td>
<td>Virtual volume name. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td><strong>Set Copy CPG</strong></td>
<td>CPG for the virtual volume snapshot.</td>
</tr>
<tr>
<td><strong>Select Yes to remove virtual volume expiration time</strong></td>
<td>Confirm whether the current expiration time is to be removed.</td>
</tr>
<tr>
<td><strong>Set Virtual Volume retention time (hours)</strong></td>
<td>Specifies how long the virtual volume is protected against deletion.</td>
</tr>
<tr>
<td><strong>Set Virtual Volume expiration time (hours)</strong></td>
<td>Validity of the virtual volume snapshot.</td>
</tr>
<tr>
<td><strong>User space allocation</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Table Continued*
| Select Yes to remove User CPG space allocation warning percentage | Confirm whether the system provides a warning if the space usage of the virtual volume exceeds the set limit. |
| Set User CPG space allocation warning percentage | Virtual volume space allocation percentage after which the system generates an alert. |
| Select Yes to remove User CPG space allocation limit percentage | Maximum space allocation limit for the virtual volume is to be removed. |
| Set User cpg space allocation limit percentage | Maximum space allocation limit for the virtual volume in percentage. |
| Copy CPG space allocation | |
| Select Yes to remove Copy CPG space allocation warning percentage | Confirm whether the system provides a warning if the space usage of virtual volume snapshot exceeds the set limit. |
| Set Copy CPG space allocation warning percentage | Space allocation percentage for the virtual volume snapshot after which the system generates an alert. |
| Select Yes to remove Copy CPG space allocation limit percentage | Confirm whether the maximum space allocation limit for the virtual volume snapshot is to be removed. |
| Remove Copy CPG space allocation limit percentage | Maximum space allocation limit for the virtual volume snapshot in percentage. |

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Virtual Volume (VV) management > Tune** folder, and double-click the **Tune** folder.

4. Select **Modify Virtual Volume** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Modify Virtual Volume**, and click **Start workflow**.
   - Press Ctrl+R.

   The **Start Workflow : Modify Virtual Volume** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.
6. On the **Virtual Volume Parameters** tab, enter the following settings:

- **General**
- **User space allocation**
- **Copy cpg space allocation**

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

### Renaming virtual volume

#### Field descriptions

**Table 12: Rename Virtual Volume**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Virtual Volume Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Virtual Volume to rename</strong></td>
<td>Name of the virtual volume to be changed. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td><strong>New Virtual Volume name</strong></td>
<td>New name for the virtual volume.</td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Virtual Volume (VV) management > Tune** folder, and double-click the **Tune** folder.

4. Select **Rename Virtual Volume** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Rename Virtual Volume**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Rename Virtual Volume** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Virtual Volume Parameters** tab:
a. In the **Virtual Volume to rename** field, enter the virtual volume name.

b. In the **New Virtual Volume name** field, enter the new name for the virtual volume.

7. Click **Submit**.

You can use **Next** or **Previous** to navigate through the tabs.

**Metadata management**

Metadata management enables to manage the metadata for the virtual volumes.

**Creating virtual volume metadata**

To create metadata for a 3PAR virtual volume, use the Create Virtual Volume Metadata workflow.

**Field descriptions**

**Table 13: Create Virtual Volume Metadata**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>HPE 3PAR StoreServe array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Metadata Parameters</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volume</strong></td>
<td>Name of the virtual volume. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td><strong>Key</strong></td>
<td>Metadata for the virtual volume. For example: You can set the metadata <strong>Key</strong> = Project.</td>
</tr>
<tr>
<td><strong>Value</strong></td>
<td>Metadata for the virtual volume. For example: You can set the metadata <strong>Value</strong> = Project1.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Virtual Volume (VV) management > Metadata management** folder, and double-click the **Metadata management** folder.

4. Select **Create Virtual Volume Metadata** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Create Virtual Volume Metadata**, and click **Start workflow**.
   - Press **Ctrl+R**.

The **Start Workflow : Create Virtual Volume Metadata** window appears.
5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Metadata Parameters** tab, enter the following details:
   a. **Volume**
   b. **Key**
   c. **Value**

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

### Deleting virtual volume metadata

To delete the metadata for a 3PAR virtual volume, use the Delete Virtual Volume Metadata workflow.

#### Field descriptions

**Table 14: Delete Virtual Volume Metadata**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Specifies the name of the HPE 3PAR StoreServ array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Virtual Volume Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Volume</strong></td>
<td>Name of the virtual volume. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td><strong>Key</strong></td>
<td>Metadata for the virtual volume. For example: You can set the metadata <strong>Key</strong> = Project.</td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Virtual Volume (VV) management > Metadata management** folder, and double-click the **Metadata management** folder.

4. Select **Delete Virtual Volume Metadata**, and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Delete Virtual Volume Metadata**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow: Delete Virtual Volume Metadata** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.
6. On the Metadata Parameters tab:
   a. In the Volume field, enter a name for the virtual volume.
   b. In the Key field, enter the key metadata value.

7. Click Submit.
   You can use Next or Previous to navigate through tabs.

The system removes the selected virtual volume metadata.

Modifying virtual volume metadata

To modify metadata for a 3PAR virtual volume, use the Modify Virtual Volume Metadata workflow.

Field descriptions

Table 15: Modify Virtual Volume Metadata

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>HPE 3PAR StoreServe array in which the virtual volume is configured. You can select the HPE 3PAR StoreServe system from the inventory.</td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume</th>
<th>Name of the virtual volume. You can select a virtual volume from the inventory.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key</td>
<td>Metadata for the virtual volume. For example: You can set the metadata Key = Project.</td>
</tr>
<tr>
<td>Value</td>
<td>Metadata for the virtual volume. For example: You can set the metadata Value = Project1.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Virtual Volume (VV) management > Metadata management folder, and double-click the Metadata management folder.

4. Select Modify Virtual Volume Metadata and perform one of the following:
   - Click the Start workflow ( ) icon.
   - Right-click Modify Virtual Volume Metadata, and click Start workflow.
   - Press Ctrl+R.

The Start Workflow : Modify Virtual Volume Metadata window appears.
5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Metadata Parameters** tab, enter the following details:
   
   a. Volume
   
   b. Key
   
   c. Value

7. Click **Submit**.
   
   You can use **Next** or **Previous** to navigate through the tabs.

### Querying virtual volumes

#### Querying all virtual volumes

To get a list of all virtual volumes in an HPE 3PAR StoreServ array, use the Get all Virtual Volumes workflow.

#### Field descriptions

**Table 16: Get all Virtual Volumes**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Virtual Volume (VV) management > Query** folder.

4. To view all configured virtual volumes, select **Get all Virtual Volumes**:
   
   a. Perform one of the following:

      - Click the **Start workflow** icon.
      - Right-click **Get all Virtual Volumes**, and click **Start workflow**.
      - Press **Ctrl+R**.

      The **Start Workflow : Get all Virtual Volumes** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. Click **Submit**.
Querying virtual volume by name

To check whether a specific virtual volume is available in a selected HPE 3PAR StoreServ array, use the Get Virtual Volume by name workflow.

Field descriptions

**Table 17: Get Virtual Volume by name**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Virtual Volume Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Virtual Volume Name</td>
<td>Name of the virtual volume.</td>
</tr>
</tbody>
</table>

Procedure

1. On the [VMware vRealize Orchestrator](#) home page, click the Workflows ( ) tab.
   
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Virtual Volume (VV) management > Query folder.

4. To view a particular volume by name, select Get Virtual Volume by name.
   
   a. Perform one of the following:
      
      • Click the Start workflow ( ) icon.
      
      • Right-click Get Virtual Volume by name, and click Start workflow.
      
      • Press Ctrl+R.

   
   The Start Workflow : Get Virtual Volume by name window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Virtual Volume Parameters tab, enter the virtual volume name.

7. Click Submit.

   If the virtual volume is available in the HPE 3PAR StoreServ system, the system displays the details of the virtual volume.

Querying virtual volume by WWN

Use the Get Virtual Volume by WWN workflow if you know only the WWN of the virtual volume.

Field descriptions
Table 18: Get Virtual Volume by WWN

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Virtual Volume Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Virtual Volume WWN</td>
<td>Virtual volume WWN.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Virtual Volume (VV) management > Query** folder.

4. To view a particular volume by name, select **Get Virtual Volume by WWN**, and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Get Virtual Volume by WWN**, and click **Start workflow**.
   - Press Ctrl+R.

   The **Start Workflow : Get Virtual Volume by WWN** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Virtual Volume Parameters** tab, enter the virtual volume WWN.

7. Click **Submit**.

You can use **Next** or **Previous** to navigate through the tabs.

**Querying virtual volume metadata**

**Field descriptions**

Table 19: Get Virtual Volume Metadata

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Specifies the name of the HPE 3PAR StoreServ array in which the virtual volume metadata is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Metadata Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Volume</td>
<td>Name of the virtual volume. You can select virtual volume from the inventory.</td>
</tr>
</tbody>
</table>
Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Virtual Volume (VV) management > Query** folder.

4. Select **Get Virtual Volume Metadata** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Get Virtual Volume Metadata**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Get Virtual Volume Metadata** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Metadata Parameters** tab, enter the virtual volume name in the **Volume** field. You can select virtual volume from the inventory.

7. Click **Submit**.

Querying all virtual volume metadata

Field descriptions

**Table 20: Get all Virtual Volume Metadata**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Specifies the name of the HPE 3PAR StoreServ array in which the virtual volume metadata is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Metadata Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Key</td>
<td>Metadata for the virtual volume. For example: You can set the metadata <strong>Key = Project</strong>.</td>
</tr>
<tr>
<td>Value</td>
<td>Metadata for the virtual volume. For example: You can set the metadata <strong>Value = Project1</strong>.</td>
</tr>
</tbody>
</table>

Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Virtual Volume (VV) management > Query** folder.

4. Select **Get all Virtual Volume Metadata** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Get all Virtual Volume Metadata**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Get all Virtual Volume Metadata** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Metadata Parameters** tab, enter the following details:
   
   a. **Key**
   b. **Value**

7. Click **Submit**.

**Virtual Volume Set management**

**Adding virtual volumes to virtual volume set**

**Field descriptions**

**Table 21: Add Virtual Volume(s) to Virtual Volume Set**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Virtual Volume Set Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Virtual Volume Set</strong></td>
<td>Name of the virtual volume set to which virtual volumes are added. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td><strong>Virtual Volumes to be added to the Virtual Volume Set</strong></td>
<td>Name of the virtual volume to be added to the virtual volume set.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Virtual Volume Set (VVSET) management** folder.
4. Select **Add Virtual Volume(s) to Virtual Volume Set** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Add Virtual Volume(s) to Virtual Volume Set**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Add Virtual Volume(s) to Virtual Volume Set** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Virtual Volume Set Parameters** tab:

   a. In the **Virtual Volume Set** field, enter the name of the virtual volume set. You can select a virtual volume set from the inventory.

   b. In the **Virtual Volume(s) to be added to the Virtual Volume Set** field, select the virtual volumes to add to the virtual volume set.

7. Click **Submit**.

   You can use **Next** or **Previous** to navigate through the tabs.

---

**Creating virtual volume sets**

To group virtual volumes to a virtual volume set, use the Create Virtual Volume Set workflow.

**Field descriptions**

**Table 22: Create Virtual Volume Set**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Virtual Volume Set Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Virtual Volume Set</strong></td>
<td>Name of the virtual volume set to create. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td><strong>3PAR domain in which the Virtual Volume Set will be created</strong></td>
<td>Domain to which the virtual volume set is added.</td>
</tr>
<tr>
<td><strong>Virtual Volume(s) to be added to the Virtual Volume Set</strong></td>
<td>Name of virtual volumes to add to the virtual volume set.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Virtual Volume Set (VVSET) management folder.

4. Select Create Virtual Volume Set and perform one of the following:

   • Click the Start workflow icon.
   • Right-click Create Virtual Volume Set, and click Start workflow.
   • Press Ctrl+R.

The Start Workflow : Create Virtual Volume Set window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Virtual Volume Set Parameters tab:

   a. In the Virtual Volume Set name field, enter the name for the virtual volume set.
   b. In the 3PAR domain in which the Virtual Volume set will be created field, enter the name of the domain.
   c. In the Virtual Volume(s) to be added to the Virtual Volume set field, select the virtual volumes to add to the virtual volume set.

7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Deleting virtual volume sets

You can delete a virtual volume set only if the virtual volume set is not presented or exported to a host.

Field descriptions

Table 23: Delete Virtual Volume Set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Virtual Volume Set Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Virtual Volume set</td>
<td>Name of the virtual volume set to be deleted. You can select a virtual volume set from the inventory. You can select more than one volume set at a time.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Virtual Volume Set (VVSET) management folder.
4. Select Delete Virtual Volume Set and perform one of the following:

- Click the Start workflow icon.
- Right-click Delete Virtual Volume Set, and click Start workflow.
- Press Ctrl+R.

The Start Workflow : Delete Virtual Volume Set window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Virtual Volume Set Parameters tab, enter the virtual volume set name.

7. Click Submit.

You can use Next or Previous to navigate through tabs.

The system removes the virtual volume set from the HPE 3PAR StoreServ system.

Removing virtual volumes from virtual volume sets

Field descriptions

Table 24: Remove Virtual Volume(s) from the Virtual Volume Set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Virtual Volume Set Parameters</td>
<td></td>
</tr>
<tr>
<td>Virtual Volume set</td>
<td>Name of the virtual volume set. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td>Virtual Volume(s) to be removed from the Virtual Volume Set</td>
<td>Names of the virtual volumes to be removed from the virtual volume set. You can select the virtual volumes from the list of available virtual volumes in the StoreServ system.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.

   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Virtual Volume Set (VVSET) management folder.

4. Select Remove Virtual Volume(s) from the Virtual Volume Set and perform one of the following:
• Click the **Start workflow** icon.

• Right-click **Remove Virtual Volume(s) from the Virtual Volume Set**, and click **Start workflow**.

• Press **Ctrl+R**.

The **Start Workflow : Remove Virtual Volume(s) from the Virtual Volume Set** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Virtual Volume Set Parameters** tab:

   a. In the **Virtual Volume Set** field, enter the name of the virtual volume set.

   b. In the **Virtual Volume(s) to be removed from the Virtual Volume Set** field, select the virtual volumes.

7. Click **Submit**.

   You can use **Next** or **Previous** to navigate through the tabs.

### Querying virtual volume set(s)

#### Querying all virtual volume sets

**Field descriptions**

**Table 25: Get all Virtual Volume Sets**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.

   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Virtual Volume Set (VVSET) management > Query** folder.

4. To view all virtual volume sets in an HPE 3PAR StoreServ array, select **Get all Virtual Volume Sets**.

   a. Perform one of the following:

   • Click the **Start workflow** icon.

   • Right-click **Get all Virtual Volume Sets**, and click **Start workflow**.

   • Press **Ctrl+R**.
The Start Workflow : Get all Virtual Volume Sets window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. Click Submit.

The system lists all virtual volume sets in the selected HPE 3PAR StoreServ array.

Querying virtual volume set by name

To view details of a virtual volume set in an HPE 3PAR StoreServ array, use Get Virtual Volume Set by Name workflow.

Field descriptions

Table 26: Get Virtual Volume Set by Name

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the virtual volume set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Virtual Volume Set</td>
<td>Name of the virtual volume set. You can select a virtual volume set from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.

   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Virtual Volume Set (VVSET) management > Query folder.

4. To view details of a specific virtual volume set, select Get Virtual Volume Set by Name.

   a. Perform one of the following:

      • Click the Start workflow ( ) icon.
      • Right-click Get Virtual Volume Set by Name, and click Start workflow.
      • Press Ctrl+R.

      The Start Workflow : Get Virtual Volume Set by Name window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Virtual Volume Set Parameters tab, enter the name of the virtual volume set.

7. Click Submit.
The system displays the details of the specified virtual volume set in the selected HPE 3PAR StoreServ array.

Host management

Host management workflows allows user to manage host connectivity to 3PAR.

Creating 3PAR host

To present a volume to an external system, you must define a host entry in 3PAR system.

Field descriptions

Table 27: Create 3PAR Host

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Host Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Name of the host</strong></td>
<td>Name of the host.</td>
</tr>
<tr>
<td><strong>ID of the persona to assign to the host</strong></td>
<td>Persona of the host. You can select a persona from the drop-down list.</td>
</tr>
<tr>
<td><strong>The 3PAR Domain in which the host will be created</strong></td>
<td>Domain in which the host is created.</td>
</tr>
<tr>
<td><strong>Select type of path</strong></td>
<td>Type of path. The options are:</td>
</tr>
<tr>
<td></td>
<td>• FC</td>
</tr>
<tr>
<td></td>
<td>• iSCSI</td>
</tr>
<tr>
<td><strong>One or more FC WWN to set for the host</strong></td>
<td>FC WWN for the host. This option is available only if you set the path type as FC.</td>
</tr>
<tr>
<td><strong>One or more iSCSI to set for the host</strong></td>
<td>iSCSI name to set for the host. This option is available only if you set the path type as iSCSI.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Host management folder.

4. Select Create 3PAR Host and perform one of the following:
• Click the **Start workflow** icon.

• Right-click **Create 3PAR Host**, and click **Start workflow**.

• Press Ctrl+R.

The **Start Workflow : Create 3PAR Host** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Host Parameters** tab:

   a. In the **Name of the host** field, enter the host name.

   b. In the **ID of the persona to assign to the host** field, enter the required persona.

   c. In the **3PAR Domain in which the host will be created** field, enter the name of the domain.

   d. From the **Select type of path** list, select a type.

   e. For FC path, in the **One or more FC WWN to set for the host** field, enter FC WWN for host.

   f. For iSCSI name, in the **One or more iSCSI to set for the host** field, enter the iSCSI name to set for the host.

7. Click **Submit**.

   You can use **Next** or **Previous** to navigate through the tabs.

### Adding paths to 3PAR hosts

To add a path to associate a host with the HPE 3PAR StoreServ system, use the Add FC WWN/iSCSI name to 3PAR host workflow.

#### Field descriptions

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Host Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Host</strong></td>
<td>Name of the host. You can select a host from the inventory.</td>
</tr>
<tr>
<td><strong>Select type of path</strong></td>
<td>Type of path. The options are:</td>
</tr>
<tr>
<td></td>
<td>• FC</td>
</tr>
<tr>
<td></td>
<td>• iSCSI</td>
</tr>
<tr>
<td><strong>One or more FC WWN to set for the host</strong></td>
<td>FC WWN for the host. This option is available only if you set the path type as FC.</td>
</tr>
<tr>
<td><strong>One or more iSCSI to set for the host</strong></td>
<td>iSCSI name to set for the host. This option is available only if you set the path type as iSCSI.</td>
</tr>
</tbody>
</table>
Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Host management** folder.

4. Select **Add FC WWN / iSCSI name to 3PAR host** and perform one of the following:
   
   - Click the **Start workflow** icon.
   - Right-click **Add FC WWN / iSCSI name to 3PAR host**, and click **Start workflow**.
   - Press Ctrl+R.

   The **Start Workflow : Add FC WWN/iSCSI name to 3PAR host** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Host Parameters** tab:
   
   a. In the **Host** field, enter the host name.
   b. From the **Select type of path** list, select a path type.
   c. For FC path, in the **One or more FC WWN set for the host** field, enter the iSCSI name or WWN of the host.
   d. For iSCSI path, in the **One or more iSCSI names to set for the host** field, enter the iSCSI name or WWN of the host.

7. Click **Submit**.
   
   You can use **Next** or **Previous** to navigate through the tabs.

Deleting 3PAR host

If at least one volume is exported to a host, you cannot delete that host.

**Field descriptions**

**Table 29: Delete 3PAR Host**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Host Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Host to be deleted from HPE 3PAR StoreServ array</strong></td>
<td>Name of the host to be removed from the selected HPE 3PAR StoreServ array. You can select a host from the inventory.</td>
</tr>
</tbody>
</table>
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Host management folder.

4. Select Delete 3PAR Host and perform one of the following:
   - Click the Start workflow icon.
   - Right-click Delete 3PAR Host, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Delete 3PAR Host window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Host Parameters tab, enter the name of the host to be deleted.

7. Click Submit.

   You can use Next or Previous to navigate through the tabs.

Removing paths from the 3PAR host

With the Remove FC WWN /iSCSI name from 3PAR host workflow, you can remove the FC WWN or iSCSI name from the host in a 3PAR array.

Field descriptions

Table 30: Remove FC WWN /iSCSI name from 3PAR host

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Host Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Host</td>
<td>Name of the host from which the WWN or iSCSI name need be removed. You can select a host from the inventory.</td>
</tr>
<tr>
<td>Select type of path</td>
<td>Type of path. The options are:</td>
</tr>
<tr>
<td></td>
<td>• FC</td>
</tr>
<tr>
<td></td>
<td>• iSCSI</td>
</tr>
<tr>
<td>One or more FC WWN to set for the host</td>
<td>FC WWN of the host to remove. This option is available only if you set the path type as FC.</td>
</tr>
<tr>
<td>One or more iSCSI to set for the host</td>
<td>iSCSI name of the host to remove. This option is available only if you set the path type as iSCSI.</td>
</tr>
</tbody>
</table>
Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Host management** folder.

4. Select **Remove FC WWN /iSCSI name from 3PAR host** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Remove FC WWN /iSCSI name from 3PAR host**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Remove FC WWN /iSCSI name from 3PAR host** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Host Parameters** tab:
   - In the **Host** field, enter the name of the host from which the WWN or iSCSI name need be removed.
   - In the **Select type of path** field, enter the path type.
   - In the **One or more iSCSI names or WWN to remove from the host** field, enter the WWN or iSCSI name of the host to remove.

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

Renaming 3PAR host

Field descriptions

**Table 31: Rename 3PAR Host**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Host to be renamed</strong></td>
<td>Name of the host to be renamed. You can select a host from the inventory.</td>
</tr>
<tr>
<td><strong>New name of the host</strong></td>
<td>New name for the host.</td>
</tr>
</tbody>
</table>
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows (_CHARSET_IMAGE) tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Host management folder.

4. Select Rename 3PAR Host and perform one of the following:

   - Click the Start workflow (_CHARSET_IMAGE) icon.
   - Right-click Rename 3PAR Host, and click Start workflow.
   - Press Ctrl+R.

The Start Workflow : Rename 3PAR Host window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Host Parameters tab:

   a. In the Host to be renamed field, enter the host name to be changed.
   b. In the New name of the host field, enter the new name for the host.

7. Click Submit.

You can use Next or Previous to navigate through the tabs.

Querying hosts

Querying 3PAR hosts by FC WWN

Field descriptions

Table 32: Get 3PAR host by FC WWN

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Host Parameters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>fcWWN</td>
<td>FC WWN of the host to query.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows (_CHARSET_IMAGE) tab.
The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Host management > Query** folder.

4. To view details of a particular host by WWN, select **Get 3PAR host by FC WWN**.
   a. Perform one of the following:
      - Click the **Start workflow** icon.
      - Right-click **Get 3PAR host by FC WWN**, and click **Start workflow**.
      - Press **Ctrl+R**.

      The **Start Workflow : Get 3PAR host by FC WWN** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Host Parameters** tab, enter the FC WWN of the host.

7. Click **Submit**.

   The system displays the details of the host with the provided FC WWN.

### Querying 3PAR host by iSCSI name

**Field descriptions**

**Table 33: Get 3PAR host by iSCSI name**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Host Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>iSCSIName</td>
<td>iSCSI name of the host to query.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Host management > Query** folder.

4. To view a particular host by the iSCSI name, select **Get 3PAR host by iSCSI name**.
   a. Perform one of the following:
• Click the Start workflow icon.

• Right-click Get 3PAR host by iSCSI name, and click Start workflow.

• Press Ctrl+R.

The Start Workflow: Get 3PAR host by iSCSI name window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Host Parameters tab, enter the iSCSI name of the host.

7. Click Submit.

You can use Next or Previous to navigate through the tabs.

Querying 3PAR host by name

Field descriptions

Table 34: Get 3PAR host by name

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Host Parameters</td>
<td></td>
</tr>
<tr>
<td>Name of the 3PAR host</td>
<td>Name of the 3PAR host. You can select a host from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Host management > Query folder.

4. To view a particular host by the name, select Get 3PAR host by name.

   a. Perform one of the following:

   • Click the Start workflow icon.

   • Right-click Get 3PAR host by name, and click Start workflow.

   • Press Ctrl+R.

   The Start Workflow: Get 3PAR host by name window appears.
5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Host Parameters** tab, enter the host name.

7. Click **Submit**.

   The system displays the details of the selected host.

### Querying all 3PAR hosts

**Field descriptions**

**Table 35: Get all 3PAR hosts**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. **On the VMware vRealize Orchestrator** home page, click the **Workflows** tab.

   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Host management > Query** folder.

4. To view all hosts in a 3PAR system, select **Get all 3PAR hosts**.

   a. Perform one of the following:

      - Click the **Start workflow** icon.
      - Right-click **Get all 3PAR hosts**, and click **Start workflow**.
      - Press Ctrl+R.

     The **Start Workflow : Get all 3PAR hosts** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. Click **Submit**.

   The system lists all hosts in the selected HPE 3PAR StoreServ system.

### Host set management

Host set management enables to manage a group of hosts as a host set. This allows the virtual volume/virtual volume set to be exported to the same set of hosts.

### Creating 3PAR host set

**Field Descriptions**
### Table 36: Create 3PAR host set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the host set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Host Set Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Name of the host set</td>
<td>Name of the host set to be created. You can select a host set from the inventory.</td>
</tr>
<tr>
<td>3PAR Domain in which the host set will be created</td>
<td>3PAR domain in which the host set will be created.</td>
</tr>
<tr>
<td>Host(s) to be added to the host set</td>
<td>Name of the hosts to be added to the 3PAR host set. You can select a host from the inventory.</td>
</tr>
</tbody>
</table>

### Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the Host set management folder.
4. Select Create 3PAR host set and perform one of the following:
   - Click the Start workflow icon.
   - Right-click Create 3PAR host set, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow: Create 3PAR host set window appears.
5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.
6. On the Host Set Parameters tab:
   a. In the Name of the host set field, enter a name of the host set.
   b. In the 3PAR Domain in which the host set will be created field, enter the domain name.
   c. In the Host(s) to be added to the host set field, select the hosts to add to the host set.
7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

### Adding 3PAR hosts to host set

#### Field Descriptions
Table 37: Add 3PAR host(s) to host set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the host set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Host Set Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Host set</td>
<td>Name of the host set to which hosts are added. You can select a host set from the inventory.</td>
</tr>
<tr>
<td>Host(s) to be added to the set</td>
<td>Name of the hosts to be added to the host set. You can select a host from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the Host set management folder.
4. Select Add 3PAR host(s) to host set and perform one of the following:
   - Click the Start workflow icon.
   - Right-click Add 3PAR host(s) to host set, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow: Add 3PAR host(s) to host set window appears.
5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.
6. On the Host Set Parameters tab:
   a. In the Host Set field, enter the name of the host set.
   b. In the Host(s) to be added to the host set field, select the hosts to add to the host set.

You can select a host set from the inventory.
7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Deleting 3PAR host set

To delete a 3PAR host set from an HPE 3PAR StoreServ array, use the Delete 3PAR host set workflow.

Field Descriptions
Table 38: Delete 3PAR host set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the host set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Host Set Parameters</td>
<td></td>
</tr>
<tr>
<td><strong>Host set</strong></td>
<td>Name of the host set to be deleted from the array. You can select a host set from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Host set management folder.

4. Select Delete 3PAR host set and perform one of the following:

   • Click the Start workflow icon.
   • Right-click Delete 3PAR host set, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Delete 3PAR host set window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Host Set Parameters tab, enter the name of host set to be deleted.

   You can select a host set from the inventory.

7. Click Submit.

   You can use Next or Previous to navigate through the tabs.

Removing 3PAR hosts from host set

To remove 3PAR hosts from a host set, use Remove 3PAR host(s) from host set workflow.

Field Descriptions

Table 39: Remove 3PAR host(s) from host set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
</tbody>
</table>

Table Continued
**StoreServ Connection**  Name of the HPE 3PAR StoreServ array in which the host set is configured. You can select the HPE 3PAR StoreServ system from the inventory.

**Host Set Parameters**

**Host set from which host(s) need to be deleted**  Name of the host set from which the host is removed. You can select a host set from the inventory.

**Host(s) to be removed from the set**  Name of hosts to be removed from the host set. You can select a host from the inventory.

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **HostSet** folder.

4. Select **Remove 3PAR host(s) from host set** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Remove 3PAR host(s) from host set**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Remove 3PAR host(s) from host set** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Host Set Parameters** tab:
   a. In the **Host set from which hosts need to be deleted** field, enter the name of host set from which host is removed.
      You can select a host set from the inventory.
   b. In the **Host(s) to be removed from the set** field, enter the name of hosts to be removed.

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

**Querying host sets**

**Querying all 3PAR host sets**

To view all 3PAR host sets in an HPE 3PAR StoreServ array, use the Get all 3PAR host sets workflow.

**Field Descriptions**
Table 40: Get all 3PAR host sets

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the host set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Host set management > Query** folder.

4. To view all host sets in an HPE 3PAR StoreServ array, select **Get all 3PAR host sets**.
   a. Perform one of the following:
      - Click the **Start workflow** icon.
      - Right-click **Get all 3PAR host sets**, and click **Start workflow**.
      - Press **Ctrl+R**.

      The **Start Workflow : Get all 3PAR host sets** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. Click **Submit**.
   The system displays all host sets in the selected HPE 3PAR StoreServ array.

**Querying 3PAR host set by name**

**Field Descriptions**

Table 41: Get 3PAR host set by name

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the host set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Host Set Parameters**

| Name of the host set | Displays the details of the specified 3PAR host set in the selected HPE 3PAR StoreServ array.                                                                                           |
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the Host set management > Query folder.
4. To get details of a host set in a 3PAR system by the name of the host set, select Get 3PAR host set by name.
   a. Perform one of the following:
      - Click the Start workflow ( ) icon.
      - Right-click Get 3PAR host set by name, and click Start workflow.
      - Press Ctrl+R.
   The Start Workflow : Get 3PAR host set by name window appears.
5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.
6. On the Host Set Parameters tab, enter the name of the host set.
7. Click Submit.
   The system displays the details of the specified 3PAR host set in the selected HPE 3PAR StoreServ array.

Querying 3PAR host sets by host name

To retrieve a list of host sets to which the specified host belongs, use the Get 3PAR host set by host name workflow.

Field Descriptions

Table 42: Get 3PAR host set by host name

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the host set is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Host Set Parameters</td>
<td></td>
</tr>
<tr>
<td>Host name</td>
<td>Displays the details of the specified 3PAR host set in the selected HPE 3PAR StoreServ array. You can select a host from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Host set management > Query folder.

4. To get the details of host set in a 3PAR system by the name of a host in the set, select Get 3PAR host set by host name.

   a. Perform one of the following:

      • Click the Start workflow (play) icon.
      • Right-click Get 3PAR host set by host name, and click Start workflow.
      • Press Ctrl+R.

      The Start Workflow : Get 3PAR host set by host name window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Host Set Parameters tab, enter the name of the host.

7. Click Submit.

   The system displays the details of the specified 3PAR host set in the selected HPE 3PAR StoreServ array.

**Physical copy management**

**Creating offline physical copy of Virtual Volume**

To create offline physical copy of Virtual Volume use the Create offline physical copy of Virtual Volume workflow.

**Field descriptions**

**Table 43: Create offline physical copy of Virtual Volume**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ</td>
<td>Name of the HPE 3PAR StoreServe array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Copy Parameters</td>
<td></td>
</tr>
<tr>
<td>Virtual Volume</td>
<td>Parameters of the Virtual Volume for creating offline physical copy.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the VMware vRealize Orchestrator home page, click the Workflows (folder) tab.

   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.

3. Navigate to the Physical copy management folder.
4. Select **Create offline physical copy of Virtual Volume** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Create offline physical copy of Virtual Volume**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Create offline physical copy of Virtual Volume** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Copy Parameters** tab, enter the name of the virtual volume physical copy in the **Copy Volume** field.

   You can select a virtual volume physical copy from the inventory.

7. Click **Submit**.

   You can use **Next** or **Previous** to navigate through the tabs.

**Creating online physical copy of Virtual Volume**

To create online physical copy of Virtual Volume use the **Create online physical copy of Virtual Volume** workflow.

**Field descriptions**

**Table 44: Create online physical copy of Virtual Volume**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td><strong>Storeserv</strong> Name of the HPE 3PAR StoreServe array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Copy Parameters**

| Virtual Volume | Parameters of the Virtual Volume for creating online physical copy.                                                                      |

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.

   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

3. Navigate to the **Physical copy management** folder.

4. Select **Create online physical copy of Virtual Volume** and perform one of the following:
• Click the Start workflow icon.

• Right-click Create online physical copy of Virtual Volume, and click Start workflow.

• Press Ctrl+R.

The Create online physical copy of Virtual Volume window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Copy Parameters tab, enter the name of the virtual volume physical copy in the Copy Volume field.

You can select a virtual volume physical copy from the inventory.

7. Click Submit.

You can use Next or Previous to navigate through the tabs.

Creating physical copy of VVSet

Field descriptions

Table 45: Create physical copy of VVSet

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ</strong></td>
<td>Name of the HPE 3PAR StoreServe array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Copy Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Source VV Set</strong></td>
<td>Physical copy of the source VV Set.</td>
</tr>
<tr>
<td><strong>Destination VV Set</strong></td>
<td>Destination for the VV Set physical copy.</td>
</tr>
<tr>
<td><strong>Save snapshot of source Virtual Volumes</strong></td>
<td>Prompts to save the source virtual volume snapshot after completing VV Set copy.</td>
</tr>
<tr>
<td></td>
<td>The options available are:</td>
</tr>
<tr>
<td></td>
<td>• Yes</td>
</tr>
<tr>
<td></td>
<td>• No</td>
</tr>
<tr>
<td></td>
<td>The default setting is No.</td>
</tr>
<tr>
<td><strong>Priority</strong></td>
<td>Priority of the operation.</td>
</tr>
<tr>
<td></td>
<td>The options are:</td>
</tr>
<tr>
<td></td>
<td>• LOW</td>
</tr>
<tr>
<td></td>
<td>• MEDIUM</td>
</tr>
<tr>
<td></td>
<td>• HIGH</td>
</tr>
</tbody>
</table>
Prerequisites
Log in to VMware vRealize Orchestrator.

Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Physical copy management** folder.

4. Select **Create physical copy of VVSet** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Create physical copy of VVSet**, and click **Start workflow**.
   - Press Ctrl+R.

   The **Start Workflow : Create physical copy of VVSet** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Copy Parameters** tab:

   a. In the **Source VV Set** field, enter the name for the source of the VV Set physical copy.
      You can select a source VV Set physical copy from the inventory.

   b. In the **Destination VV Set** field, enter the name for the destination of the VV Set physical copy.
      You can select a destination VV Set physical copy from the inventory.

   c. You can enable or disable the **Save snapshot of source Virtual Volumes** option by selecting **Yes** or **No**.
      The default setting is **No**.

   d. In the **Priority** field, select an appropriate option.

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

Resyncing virtual volume physical copy

Field descriptions

**Table 46: Resync Virtual Volume physical copy**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
</tbody>
</table>

*Table Continued*
StoreServ Connection

Name of the HPE 3PAR StoreServe array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.

Resync Parameters

Copy Volume

Virtual volume physical copy for resync operation.

Prerequisites

Log in to VMware vRealize Orchestrator.

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the Physical copy management folder.
4. Select Resync Virtual Volume physical copy and perform one of the following:
   - Click the Start workflow icon.
   - Right-click Resync Virtual Volume physical copy, and click Start workflow.
   - Press Ctrl+R.

The Start Workflow : Resync Virtual Volume physical copy window appears.
5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.
6. On the Resync Parameters tab, enter the name of the virtual volume physical copy in the Copy Volume field.
   You can select a virtual volume physical copy from the inventory.
7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Resyncing VV Set physical copy

Field descriptions

Table 47: Resync VV Set physical copy

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServe array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

Table Continued
**Resync Parameters**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VV Set copy</td>
<td>Destination for VV Set physical copy</td>
</tr>
<tr>
<td>Priority</td>
<td>Priority of the resync operation.</td>
</tr>
</tbody>
</table>

The options are:
- LOW
- MEDIUM
- HIGH

**Prerequisites**
Log in to VMware vRealize Orchestrator.

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Physical copy management** folder.

4. Select **Resync VV Set physical copy** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Resync VV Set physical copy**, and click **Start workflow**.
   - Press Ctrl+R.

   The **Start Workflow : Resync VV Set physical copy** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Resync Parameters** tab:

   a. In the **VV Set copy** field, enter the name of the destination VV Set physical copy.
      
      You can select a destination VV Set physical copy from the inventory.

   b. In the **Priority** field, select an appropriate option.

7. Click **Submit**.
   
   You can use **Next** or **Previous** to navigate through the tabs.

**Stopping virtual volume physical copy**

**Field descriptions**
Table 48: Stop Virtual Volume physical copy

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServe array in which the virtual volume is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Stop Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Copy Volume</td>
<td>Virtual volume physical copy to stop the copy/resync operation.</td>
</tr>
</tbody>
</table>

Prerequisites
Log in to VMware vRealize Orchestrator.

Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.
2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the **Physical copy management** folder.
4. Select **Stop Virtual Volume physical copy** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Stop Virtual Volume physical copy**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Stop Virtual Volume physical copy** window appears.
5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.
6. On the **Stop Parameters** tab, enter the name of the virtual volume physical copy in the **Copy Volume** field.

   You can select a virtual volume physical copy from the inventory.
7. Click **Submit**.

   You can use **Next** or **Previous** to navigate through the tabs.

**Stopping VV Set physical copy**

**Field descriptions**
Table 49: Stop VV Set physical copy

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServe array in which the VVSet is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Stop Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>VV Set</strong></td>
<td>VV Set physical copy to stop the copy/resync operation. You can select the target VV Set physical copy from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the VMware vRealize Orchestrator home page, click the Workflows ([ ]) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Physical copy management folder.

4. Select **Stop VV Set physical copy** and perform one of the following:
   - Click the **Start workflow ([ ])** icon.
   - Right-click **Stop VV Set physical copy**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Stop VV Set physical copy** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Stop Parameters** tab, enter the name of the VV Set physical copy in the **VV Set** field.
   You can select the target VV Set physical copy from the inventory.

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

**Export management**

**Exporting virtual volume set to host**

Use the Export Virtual Volume Set to host workflow to export a volume set to a host. The system establishes a connection between the volume set and host and assigns a VLUN ID for the connection.

**Field Descriptions**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array to which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Export Parameters</td>
<td></td>
</tr>
<tr>
<td>Virtual Volume Set to export</td>
<td>Name of the virtual volume set to be exported. This setting is mandatory. You can select a virtual volume set from the inventory.</td>
</tr>
<tr>
<td>Auto assign LUN</td>
<td>LUN ID is auto assigned. • Yes — The system assigns a LUN ID for the export operation. • No — You must provide a value for the LUN ID. The default setting is Yes.</td>
</tr>
<tr>
<td>Lun ID</td>
<td>LUN ID. If you set auto-assign for LUN ID and provide a value for the LUN ID, the system assigns a value greater than or equal to the specified LUN ID for the export operation.</td>
</tr>
<tr>
<td>Max for AutoLun</td>
<td>Maximum limit for the LUN ID. The system assigns a value between the provided LUN ID and the maximum LUN value.</td>
</tr>
<tr>
<td>Host to which Virtual Volume Set to be exported</td>
<td>Name of the host to which the virtual volume is to be exported. You can select a host from the inventory.</td>
</tr>
<tr>
<td>System port</td>
<td>System port to which the virtual volume set is to be exported. The system port comprises of node number, slot number, and card port in the 3PAR system, which is provided in the node number: slot number: card Port number format.</td>
</tr>
</tbody>
</table>

**NOTE:** You can provide either the host name or the system port or both.

**Procedure**

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab. The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the Export management folder.
4. Select Export Virtual Volume Set to host and perform one of the following:
   • Click the Start workflow ( ) icon.
   • Right-click Export Virtual Volume Set to host, and click Start workflow.
   • Press Ctrl+R.
   
   The Start Workflow : Export Virtual Volume Set to host window appears.
5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.
6. On the Export Parameters tab, enter the following details:
• Virtual Volume Set to export
• Auto assign LUN
• Lun ID
• Max for AutoLun
• Host to which the Virtual Volume Set to be exported
• System port through which Virtual Volume Set is to be exported

7. Click Submit.
You can use Next or Previous to navigate through the tabs.

Exporting virtual volume set to host set

Use the Export Virtual Volume Set to host set workflow to export a volume set to a host set. The system establishes a connection between the volume set and host set and assigns a VLUN ID for the connection.

Field Description

Table 50: Export Virtual Volume Set to host set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array to which the host is connected. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Export Parameters</td>
<td></td>
</tr>
<tr>
<td>Virtual Volume Set to export</td>
<td>Name of the virtual volume set to be exported. This setting is mandatory. You can select a virtual volume set from the inventory.</td>
</tr>
<tr>
<td>Auto assign LUN</td>
<td>LUN ID is auto assigned.</td>
</tr>
<tr>
<td></td>
<td>• Yes — The system assigns a LUN ID for the export operation.</td>
</tr>
<tr>
<td></td>
<td>• No — You must provide a value for the LUN ID.</td>
</tr>
<tr>
<td></td>
<td>The default setting is Yes.</td>
</tr>
<tr>
<td>Lun ID</td>
<td>LUN ID. If you set auto-assign for LUN ID and provide a value for the LUN ID, the system assigns a value greater the specified LUN ID for the export operation.</td>
</tr>
<tr>
<td>Max for AutoLun</td>
<td>Maximum limit for the LUN ID. The system assigns a value between the provided LUN ID and the maximum LUN value.</td>
</tr>
<tr>
<td>Host Set to which Virtual Volume Set to be exported</td>
<td>Name of the host set to which the virtual volume set is to be exported. You can select a host set from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Export management folder.

4. Select Export Virtual Volume Set to host set and perform one of the following:
   - Click the Start workflow icon.
   - Right-click Export Virtual Volume Set to host set, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Export Virtual Volume Set to host set window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Export Parameters tab, enter the following details:
   - Virtual Volume Set to export
   - Auto assign LUN
   - Lun ID
   - Max for AutoLun
   - Host Set to which Virtual Volume Set to be exported

7. Click Submit.

   You can use Next or Previous to navigate through the tabs.

Exporting virtual volume to host

Use the Export Virtual Volume to host workflow to associate a virtual volume to a host. The system establishes a connection between the virtual volume and host and assigns a VLUN ID for the connection.

Field Description

Table 51: Export Virtual Volume to host

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array to which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Export Parameters</td>
<td></td>
</tr>
<tr>
<td>Virtual Volume to export</td>
<td>Name of the virtual volume to be exported. This setting is mandatory. You can select a virtual volume from the inventory.</td>
</tr>
</tbody>
</table>

Table Continued
## Auto assign LUN

- **Yes** — The system assigns a LUN ID for the export operation.
- **No** — You must provide a value for the LUN ID.

The default setting is **Yes**.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LUN ID</strong></td>
<td>LUN ID. If you set auto-assign for LUN ID and provide a value for the LUN ID, the system assigns a value greater than the specified LUN ID for the export operation.</td>
</tr>
<tr>
<td><strong>Max for AutoLun</strong></td>
<td>Maximum limit for the LUN ID. The system assigns a value between the provided LUN ID and the maximum LUN value.</td>
</tr>
<tr>
<td><strong>Host to which Virtual Volume to be exported</strong></td>
<td>Name of the host to which the virtual volume is to be exported. You can select a host from the inventory.</td>
</tr>
<tr>
<td><strong>System port</strong></td>
<td>System port to which the virtual volume is to be exported. The system port comprises of node number, slot number, and card port in the 3PAR system, which is provided in the Node number: Slot number: card Port number format.</td>
</tr>
</tbody>
</table>

**NOTE:** You can provide either the host name or the system port or both.

### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.

   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Export management** folder.

4. Select **Export Virtual Volume to host** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Export Virtual Volume to host**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Export Virtual Volume to host** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Export Parameters** tab, enter the following details:

   - **Virtual Volume to export**
   - **Auto assign LUN**
   - **Lun ID**
   - **Max for AutoLun**
• Host to which the Virtual Volume to be exported
• System port through which Virtual Volume Set is to be exported

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

### Exporting virtual volume to host set

To associate a virtual volume to a host set, use the Export Virtual Volume to host set workflow. The system establishes a connection between the virtual volume and host set and assigns a VLUN ID for the connection.

#### Field Description

**Table 52: Export Virtual Volume to host set**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array to which the host is connected. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Export Parameters</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>Virtual Volume to export</td>
<td>Name of the virtual volume to be exported. This setting is mandatory. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td>Auto assign LUN</td>
<td>LUN ID is auto assigned.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Yes</strong> — The system assigns a LUN ID for the export operation.</td>
</tr>
<tr>
<td></td>
<td>• <strong>No</strong> — You must provide a value for the LUN ID.</td>
</tr>
<tr>
<td></td>
<td>The default setting is <strong>Yes</strong>.</td>
</tr>
<tr>
<td>Lun ID</td>
<td>LUN ID. If you set auto-assign for LUN ID and provide a value for the LUN ID, the system assigns a value greater the specified LUN ID for the export operation.</td>
</tr>
<tr>
<td>Max for AutoLun</td>
<td>Maximum limit for the LUN ID. The system assigns a value between the provided LUN ID and the maximum LUN value.</td>
</tr>
<tr>
<td>Host Set to which Virtual Volume to be exported</td>
<td>Name of the host set to which the virtual volume is to be exported. You can select a host set from the inventory.</td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows ( )** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Export management** folder.

4. Select **Export Virtual Volume to host set** and perform one of the following:
• Click the **Start workflow** icon.
• Right-click **Export Virtual Volume to host set**, and click **Start workflow**.
• Press **Ctrl+R**.

The **Start Workflow : Export Virtual Volume to host set** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Export Parameters** tab, enter the following details:

   • **Virtual Volume to export**
   • **Auto assign LUN**
   • **Lun ID**
   • **Max for AutoLun**
   • **Host Set to which the volume to be exported**

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

**Unexporting virtual volume from host**

To remove and unexport a VLUN ID associated with a connection between the virtual volume and host in the selected HPE 3PAR StoreServ system, use the Unexport Virtual Volume from host workflow.

**Field Description**

**Table 53: Unexport Virtual Volume from host**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ connection</strong></td>
<td>Name of the 3PAR array to which the host is connected. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unexport Parameters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virtual Volume to unexport</strong></td>
<td>Name of the virtual volume that is to be unexported from the host. This setting is mandatory. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td><strong>Exported LUN value</strong></td>
<td>LUN ID of the virtual volume that is to be unexported.</td>
</tr>
<tr>
<td><strong>Host from which Virtual Volume is to be unexported</strong></td>
<td>Name of the host from which the virtual volume is to be unexported. You can select a host from the inventory.</td>
</tr>
<tr>
<td><strong>System port</strong></td>
<td>System port of the unexported virtual volume. The system port comprises of node number, slot number, and card port in the 3PAR system, which is provided in the Node number: Slot number: card Port number format.</td>
</tr>
</tbody>
</table>

**NOTE:** You can provide either the host name or the system port or both.
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Export management folder.

4. Select Unexport Virtual Volume from host and perform one of the following:

   • Click the Start workflow icon.
   • Right-click Unexport Virtual Volume from host, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Unexport Virtual Volume from host window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Unexport Parameters tab, enter the following details:

   • Virtual Volume to unexport
   • Exported LUN value
   • Host from which Virtual Volume Set is to be unexported
   • System port from which Virtual Volume is to be unexported

7. Click Submit.

   You can use Next or Previous to navigate through the tabs.

Unexporting virtual volume from host set

To remove and unexport a VLUN ID associated with a connection between the virtual volume and host set in the selected HPE 3PAR StoreServ system, use the Unexport Virtual Volume from a host set.

Field Description

Table 54: Unexport Virtual Volume from host set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array to which the host is connected. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Unexport Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Virtual Volume to unexport</td>
<td>Name of the virtual volume that is to be unexported from the host set. This setting is mandatory. You can select a virtual volume from the inventory.</td>
</tr>
</tbody>
</table>

Table Continued
Exported LUN value | LUN ID of the virtual volume that is to be unexported.
--- | ---
Host Set from which Virtual Volume is to be unexported | Name of the host set from which the virtual volume is to be unexported. You can select a host set from the inventory.

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Export management** folder.

4. Select **Unexport Virtual Volume from host set** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Unexport Virtual Volume from host set**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Unexport Virtual Volume from host set** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Unexport Parameters** tab, enter the following details:
   - **Virtual Volume to unexport**
   - **Exported LUN value**
   - **Host Set from which Virtual Volume Set is to be unexported**

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

### Unexporting virtual volume set from host

Use the Unexport Virtual Volume set from a host to unexport a VLUN ID associated with a connection between the virtual volume set and host in the selected HPE 3PAR StoreServ system.

### Field Description

**Table 55: Unexport Virtual Volume set from host**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ connection</strong></td>
<td>Name of the 3PAR array to which the host is connected. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Table Continued**
### Virtual Volume set to unexport

Name of the virtual volume set that is to be unexported from the host. This setting is mandatory. You can select a virtual volume set from the inventory.

### Exported LUN value

LUN ID of the virtual volume set that is to be unexported.

### Host from which Virtual Volume set is to be unexported

Name of the host from which the virtual volume set is to be unexported. You can select a host from the inventory.

### System port

System port of the unexported virtual volume set. The system port comprises of node number, slot number, and card port in the 3PAR system, which is provided in the Node number: Slot number: card Port number format.

**NOTE:** You can provide either the host name or the system port or both.

### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Export management** folder.

4. Select **Unexport Virtual Volume set from host** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Unexport Virtual Volume set from host**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Unexport Virtual Volume set from host** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Unexport Parameters** tab, enter the following details:

   - **Virtual Volume Set to unexport**
   - **Exported LUN value**
   - **Host from which Virtual Volume Set to be exported**
   - **System port from which Virtual Volume Set is to be unexported**

7. Click **Submit**.

   You can use **Next** or **Previous** to navigate through the tabs.

### Unexporting virtual volume set from host set

Use the Unexport Virtual Volume set from a host set workflow to unexport a VLUN ID associated with a connection between the virtual volume set and host set in the selected HPE 3PAR StoreServ system.

### Field Description
Table 56: Unexport Virtual Volume set from host set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array to which the host set is configured. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Unexport Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Virtual Volume Set to unexport</td>
<td>Name of the virtual volume set that is to be unexported from the host set. This setting is mandatory. You can select a virtual volume set from the inventory.</td>
</tr>
<tr>
<td>Exported LUN value</td>
<td>LUN ID of the virtual volume set that is to be unexported.</td>
</tr>
<tr>
<td>Host set from which Virtual Volume set is to be unexported</td>
<td>Name of the host set from which the virtual volume set is to be unexported. You can select a host set from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Export management** folder.

4. Select **Unexport Virtual Volume set from host set** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Unexport Virtual Volume set from host set**, and click **Start workflow**.
   - Press Ctrl+R.

   The **Start Workflow : Unexport Virtual Volume set from host set** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Unexport Parameters** tab, enter the following details:
   - Virtual Volume Set to unexport
   - Exported LUN value
   - Host set from to which Virtual Volume set to be unexported

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

**Querying exported virtual volume**
Querying all exported virtual volumes

To get the list of all VLUN IDs in an HPE 3PAR StoreServ array, use the Get all exported Virtual Volume workflow. The VLUN ID consists of the volume or volume set name, LUN ID, host or host set name, and the port number.

Table Description

Table 57: Get all exported Virtual Volume

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array to which the host set is connected. You can select a 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the Export management > Query folder.
4. To view the VLUN IDs of all exported virtual volumes in an HPE 3PAR StoreServ array, select Get all exported Virtual Volume.
   a. Perform one of the following:
      - Click the Start workflow icon.
      - Right-click Get all exported Virtual Volume, and click Start workflow.
      - Press Ctrl+R.
   The Start Workflow : Get all exported Virtual Volume window appears.

Querying all exports of virtual volume

To query VLUN IDs of a specific Virtual Volume by the name, use the Get all exports of Virtual Volume workflow.

Table Description

Table 58: Get all exports of Virtual Volume
**StoreServ connection**  
Name of the 3PAR array to which the host set is connected. You can select a HPE 3PAR StoreServ system from the inventory.

<table>
<thead>
<tr>
<th><strong>Export Parameters</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virtual Volume</strong></td>
<td>Queries VLUN IDs of a specific Virtual Volume by the name. You can select a virtual volume set from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.  
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Export management > Query** folder.

4. To view all VLUN IDs associated with a specific virtual volume, select **Get all exports of Virtual Volume**.
   a. Perform one of the following:
      - Click the **Start workflow** icon.
      - Right-click **Get all exports of Virtual Volume**, and click **Start workflow**.
      - Press Ctrl+R.

   The **Start Workflow : Get all exports of Virtual Volume** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Export Parameters** tab, enter the exported virtual volume name.

7. Click **Submit**.
   The system lists all VLUNs associated with the virtual volume name.

**Querying exported virtual volume by FC WWN/iSCSI path**

To query VLUN IDs by the FC WWN or iSCSI path of a host, use the Get exported Virtual Volume by FC WWN/iSCSI Path workflow.

**Field Description**

**Table 59: Get exported Virtual Volume by FC WWN/iSCSI Path**

<table>
<thead>
<tr>
<th><strong>Name</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ connection</strong></td>
<td>Name of the 3PAR array to which the host set is connected. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Export Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>FC WWN/iSCSI Path</strong></td>
<td>Queries VLUN IDs by the FC WWN or iSCSI path of a host.</td>
</tr>
</tbody>
</table>
Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Export management > Query** folder.

4. To view all exported virtual volume in an HPE 3PAR StoreServ array by the FC WWN or iSCSI path of the host, select **Get exported Virtual Volume by FC WWN/iSCSI Path**.
   - Perform one of the following:
     - Click the **Start workflow** icon.
     - Right-click **Get exported Virtual Volume by FC WWN/iSCSI Path**, and click **Start workflow**.
     - Press Ctrl+R.

   The **Start Workflow : Get exported Virtual Volume by FC WWN/iSCSI Path** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Export Parameters** tab, enter the FC WWN/iSCSI path to which the virtual volume is exported.

7. Click **Submit**.

   The system displays a list of all VLUN IDs associated with the host or host set with the specified FC WWN or iSCSI path in the selected HPE 3PAR StoreServ array.

### Querying exported virtual volume by host name

To query all VLUN IDs of all connections associated with a specific host, use the Get exported Virtual Volume by host workflow.

**Field Description**

**Table 60: Get exported Virtual Volume by host**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ connection</strong></td>
<td>Name of the 3PAR array to which the host set is configured. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Export Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Host</strong></td>
<td>Queries all VLUN IDs associated with a specific host. You can select a host from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Export management > Query folder.

4. To view all virtual volumes connected to a specific host, select Get exported Virtual Volume by host.
   a. Perform one of the following:
      - Click the Start workflow icon.
      - Right-click Get exported Virtual Volume by host, and click Start workflow.
      - Press Ctrl+R.

   The Start Workflow : Get exported Virtual Volume by host window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Export Parameters tab, enter the host name to which the virtual volume is exported.

7. Click Submit.

   The system lists all VLUN IDs associated with the host name in the selected HPE 3PAR StoreServ array.

**Querying exported virtual volume by WWN**

To query VLUN IDs associated with a virtual volume by the WWN of the virtual volume, use the Get exported Virtual Volume by WWN workflow.

**Field Description**

**Table 61: Get exported Virtual Volume by WWN**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array to which the host set is configured. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Export Parameters</td>
<td></td>
</tr>
<tr>
<td>Virtual Volume WWN</td>
<td>Queries VLUN IDs associated with a virtual volume by the WWN of the virtual volume. You can select a virtual volume from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Export management > Query folder.
4. To view all exported virtual volumes in an HPE 3PAR StoreServ array, select **Get exported Virtual Volume by WWN**.

a. Perform one of the following:

- Click the **Start workflow** icon.
- Right-click **Get exported Virtual Volume by WWN**, and click **Start workflow**.
- Press **Ctrl+R**.

The **Start Workflow : Get exported Virtual Volume by WWN** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Export Parameters** tab, enter the WWN of the exported virtual volume.

7. Click **Submit**.

The system lists all VLUN IDs associated with the specific virtual volume in the selected HPE 3PAR StoreServ array.

### Querying specific exported virtual volume

To get all hosts in a host set associated with a virtual volume, use the Get exported Virtual Volume workflow. The system provides a list of active hosts and inactive hosts.

**Field Description**

**Table 62: Get specific exported Virtual Volume**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>Name of the 3PAR array to which the host set is configured. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Export Parameters</td>
<td></td>
</tr>
<tr>
<td>Volume</td>
<td>Queries active hosts and inactive hosts in a host set associated with a virtual volume. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td>lunID</td>
<td>LUN ID. If you set auto-assign for LUN ID and provide a value for the LUN ID, the system assigns a value greater than or equal to the specified LUN ID for the export operation.</td>
</tr>
<tr>
<td>Host</td>
<td>Name of the host to which the virtual volume is to be exported. You can select a host from the inventory.</td>
</tr>
<tr>
<td>storeserv Port</td>
<td>System port to which the virtual volume set is to be exported. The system port comprises of node number, slot number, and card port in the 3PAR system, which is provided in the Node number: Slot number: card Port number format.</td>
</tr>
</tbody>
</table>

**NOTE:** You can provide either the host name or the system port or both.
Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Export management > Query** folder.

4. To get a specific virtual volume exported in an HPE 3PAR StoreServ array, select **Get specific exported Virtual Volume**.
   
   a. Perform one of the following:
      
      - Click the **Start workflow** icon.
      - Right-click **Get specific exported Virtual Volume**, and click **Start workflow**.
      - Press **Ctrl+R**.

   The **Start Workflow : Get specific exported Virtual Volume** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Export Parameters** tab, enter the following details:
   
   - **Volume** — Name of the exported virtual volume.
   - **lunID** — LUN value for the volume export.
   - **Host** — Name of host to which virtual volume is exported.
   - **storeserv Port** — System port number.

7. Click **Submit**.

Protection

The workflows in Protection allow the user to manage HPE RMC connections, snapshots, datastore backup activities, and related tasks in the VMware vRealize Orchestrator.

Manage RMC Instances

The workflow available in Manage RMC Instances allows the user to manage HPE RMC connections in the VMware vRealize Orchestrator.

It is necessary to import the certificate from the target HPE RMC, before you add a new HPE RMC connection. You can run the **Import RMC certificate from URL** workflow to import the certificate from the HPE RMC.

**NOTE:** The VMware vRealize Orchestrator administrators can manage the certificates by logging on to the Orchestrator Control Center.

Importing RMC certificate from URL

**Field descriptions**
Table 63: Import RMC certificate from URL

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URL</td>
<td>URL or just the host for non HTTPS SSL services.</td>
</tr>
<tr>
<td>ignoreWarnings</td>
<td>An option to select a certificate and add the certificate to a trusted store.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Protection > Manage RMC Instances folder.

4. Select Import RMC certificate from URL and perform one of the following:
   - Click the Start workflow icon.
   - Right-click Import RMC certificate from URL, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Import RMC certificate from URL window appears.

5. In the URL field, enter the URL or the host for the non HTTPS SSL services.

6. In the ignoreWarnings field, click Yes to select a certificate and add the certificate to a trusted store.

7. Click Submit.

   The system displays the HPE RMC certificate added to a trusted store.

Adding RMC Instance

Field descriptions

Table 64: Add RMC Instance

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Name</td>
<td>Name of the HPE RMC connection.</td>
</tr>
<tr>
<td>IP Address or FQDN of the Protection System</td>
<td>The IP or FQDN of the HPE RMC instance.</td>
</tr>
<tr>
<td>Username</td>
<td>HPE RMC instance administrator username.</td>
</tr>
<tr>
<td>Password</td>
<td>HPE RMC instance administrator password.</td>
</tr>
</tbody>
</table>

NOTE: If the RMC configuration changes, you have to remove and add the HPE RMC connection again.
Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Protection > Manage RMC Instances** folder.

4. Select **Add RMC Instance** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Add RMC Instance**, and click **Start workflow**.
   - Press Ctrl+R.

   The **Start Workflow : Add RMC Instance** window appears.

5. In the **Connection Name** field, enter a name for the connection.
   To add the system to the inventory, provide a name for an HPE RMC connection.

6. In the **RMC IP or FQDN** field, enter the IP address or FQDN of the StoreServ connection.

7. In the **Username** field, enter the RMC administrator username.

8. In the **Password** field, enter the RMC administrator password.

9. Click **Submit**.
   The system displays the HPE RMC instance added in the StoreServ inventory at **Inventory > HPE 3PAR StoreServ** folder.

More information
- **Importing RMC certificate from URL** on page 77

Removing RMC Instance

Field descriptions

**Table 65: Remove RMC Instance**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Connection Name</strong></td>
<td>Name of the HPE RMC connection. You can select an HPE RMC connection from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Protection > Manage RMC Instances folder.

4. Select Remove RMC Instance and perform one of the following:

   - Click the Start workflow ( ) icon.
   - Right-click Remove RMC Instance, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Remove RMC Instance window appears.

5. On the Connection tab, select the HPE RMC instance from the inventory.

6. Click Submit.

   The system removes the HPE RMC instance from the inventory.

Manage RMC Data Protection

The workflows in Manage RMC data protection allows you to manage backups, schedules, and snapshots in the VMware vRealize Orchestrator.

Canceling Express protect backup task

Field descriptions

Table 66: Cancel Express Protect Backup Task

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup</td>
<td>Protection backup. You can select a backup object from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.

   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Protection > Manage RMC Data Protection folder.

4. Select Cancel Express Protect Backup Task and perform one of the following:

   - Click the Start workflow ( ) icon.
   - Right-click Cancel Express Protect Backup Task, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Cancel Express Protect Backup Task window appears.
5. In the **Backup** field, select a backup object from the inventory.

6. Click **Submit**.

### Deleting Express protect backup

**Field descriptions**

**Table 67: Delete Express Protect Backup**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup</td>
<td>Protection backup. You can select a backup object from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Protection > Manage RMC Data Protection** folder.

4. Select **Delete Express Protect Backup** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Delete Express Protect Backup**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Delete Express Protect Backup** window appears.

5. In the **Backup** field, select a backup object from the inventory.

6. Click **Submit**.

### Deleting schedules

**Field descriptions**

**Table 68: Delete Schedules**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedules</td>
<td>RMC schedules. You can select an RMC schedule from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to Protection > Manage RMC Data Protection folder.

4. Select **Delete Schedules** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Delete Schedules**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Delete Schedules** window appears.

5. In the **Schedules** field, select an RMC schedule from the inventory.

6. Click **Submit**.

### Deleting snapshot

#### Field descriptions

**Table 69: Delete Snapshot**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snapshot</td>
<td>Protection snapshot. You can select a snapshot from the inventory.</td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Protection > Manage RMC Data Protection** folder.

4. Select **Delete Snapshot** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Delete Snapshot**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Delete Snapshot** window appears.

5. In the **Snapshot** field, select a snapshot from the inventory.

6. Click **Submit**.

### Promoting datastore snapshot

#### Field descriptions
### Table 70: Promote Datastore Snapshot

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snapshot</td>
<td>Protection snapshot. You can select a snapshot from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.
2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to **Protection > Manage RMC Data Protection** folder.
4. Select **Promote Datastore Snapshot** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Promote Datastore Snapshot**, and click **Start workflow**.
   - Press **Ctrl+R**.
   The **Start Workflow : Promote Datastore Snapshot** window appears.
5. In the **Snapshot** field, select a snapshot from the inventory.
6. Click **Submit**.

### Promoting Express protect backup

**Field descriptions**

#### Table 71: Promote Express Protect Backup

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Backup</td>
<td>Name of the backup. You can select a backup from the inventory.</td>
</tr>
<tr>
<td>Restore destination</td>
<td>Destination for restore. You can select from one of the following:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Snapshot</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>Another Volume</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>Parent Volume</strong></td>
</tr>
<tr>
<td>Storage system</td>
<td>Name of the storage system.</td>
</tr>
<tr>
<td>Volume</td>
<td>Name of the virtual volume.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Protection > Manage RMC Data Protection folder.

4. Select Promote Express Protect Backup and perform one of the following:
   - Click the Start workflow ( ) icon.
   - Right-click Promote Express Protect Backup, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Promote Express Protect Backup window appears.

5. In the Common parameters tab:
   a. In the Backup field, enter the name of the backup.
      You can select a backup from the inventory.
   b. In the Restore destination field, enter the destination to perform the restore operation.

6. Click Submit.

**Promoting VM snapshot**

Field descriptions

**Table 72: Promote VM Snapshot**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snapshot</td>
<td>Name of the Protection snapshot. You can select a VM snapshot from the inventory.</td>
</tr>
<tr>
<td>Mount Parameters</td>
<td></td>
</tr>
<tr>
<td>Host System</td>
<td>Name of the ESXi host. You can select a ESXi host from the vCenter inventory.</td>
</tr>
<tr>
<td>Copy Parameters</td>
<td></td>
</tr>
<tr>
<td>Virtual Disk to copy</td>
<td>Name of the virtual disk that you have to copy.</td>
</tr>
<tr>
<td>Target Datastore</td>
<td>Name of the target datastore. You can select the target datastore from the vCenter inventory.</td>
</tr>
<tr>
<td>Virtual Disk target directory</td>
<td>Name of the virtual disk target directory.</td>
</tr>
<tr>
<td>Overwrite Target VMDK File</td>
<td>Enable or disable the overwrite target VMDK file option.</td>
</tr>
<tr>
<td></td>
<td>The options available are:</td>
</tr>
<tr>
<td></td>
<td>• Yes</td>
</tr>
<tr>
<td></td>
<td>• No</td>
</tr>
<tr>
<td></td>
<td>The default setting is No.</td>
</tr>
</tbody>
</table>
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Protection > Manage RMC Data Protection folder.

4. Select Promote VM Snapshot and perform one of the following:
   - Click the Start workflow icon.
   - Right-click Promote VM Snapshot, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow: Promote VM Snapshot window appears.

5. On the Mount Parameters tab:
   a. In the Host System field, enter the name of the ESXi host. You can select a ESXi host from the vCenter inventory.

6. On the Copy Parameters tab:
   a. In the Virtual Disk to copy field, enter the name of the virtual disk that you have to copy.
   b. In the Target Datastore field, enter the name of the target datastore. You can select the target datastore from the vCenter inventory.
   c. In the Virtual Disk target directory field, enter the name of the virtual disk target directory.
   d. You can enable or disable the Overwrite Target VMDK File option by selecting Yes or No. The default setting is No.

7. In the Common Parameters tab, enter the name of the snapshot in the Snapshot field. You can select a snapshot from the vCenter inventory.

8. Click Submit. You can use Next or Previous to navigate through the tabs.

Promoting VVOL VM snapshot

Field descriptions

Table 73: Promote VVOL VM Snapshot

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snapshot</td>
<td>Name of the Protection snapshot. You can select a VVOL VM snapshot from the inventory.</td>
</tr>
</tbody>
</table>
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Protection > Manage RMC Data Protection folder.

4. Select Promote VVOL VM Snapshot and perform one of the following:
   - Click the Start workflow icon.
   - Right-click Promote VVOL VM Snapshot, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Promote VVOL VM Snapshot window appears.

5. In the Snapshot tab, enter the name of the snapshot in the Snapshot field. You can select a snapshot from the vCenter inventory.

6. Click Submit. You can use Next or Previous to navigate through the tabs.

Protecting datastore

Field descriptions

Table 74: Protect Datastore

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Parameters</td>
<td></td>
</tr>
<tr>
<td>vCenter Datastore</td>
<td>Name of the datastore. You can select a datastore from the vCenter inventory.</td>
</tr>
<tr>
<td>RMC Connection</td>
<td>Name of the RMC instance. You can select an RMC instance from the inventory.</td>
</tr>
<tr>
<td>Snapshot Name</td>
<td>Name of the snapshot.</td>
</tr>
<tr>
<td>Continue on VM Error</td>
<td>Continue with the creation of a protection schedule even if there are VM errors. The options available are:</td>
</tr>
<tr>
<td></td>
<td>• Yes</td>
</tr>
<tr>
<td></td>
<td>• No</td>
</tr>
</tbody>
</table>

The default setting is No.

Table Continued
**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Protection > Manage RMC Data Protection** folder.

4. Select **Protect Datastore** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Protect Datastore**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Protect Datastore** window appears.

5. On the **Common Parameters** tab:
   a. In the **vCenter Datastore** field, enter the name of the datastore.
      You can select the datastore from the vCenter inventory.
   b. In the **RMC Connection** field, enter the name of the RMC instance.
      You can select an RMC instance from the inventory.
   c. In the **Snapshot Name** field, enter the name of the snapshot.
   d. You can enable or disable the **Continue on VM error** option by selecting **Yes** or **No**. This option allows you to continue creating a protection schedule even with the VM errors.
      The default setting is **No**.

6. On the **Policies** tab:
   a. In the **Protection Policy** field, enter the name of the protection policy associated with the RMC instance.
      You can select a protection policy from the inventory.
   b. In the **Backup Name** field, enter the name of the backup.

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

---

**Protecting datastore with schedule**

**Field descriptions**
Table 75: Protect Datastore with Schedule

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>vCenter Datastore</td>
<td>Name of the VMWare vCenter datastore. You can select a vCenter datastore from the vCenter inventory.</td>
</tr>
<tr>
<td>vCenter Virtual Machine(s)</td>
<td>Name of the vCenter virtual machine. You can select a vCenter VM from the vCenter inventory.</td>
</tr>
<tr>
<td>RMC Connection</td>
<td>Name of the RMC instance. You can select an RMC instance from the inventory.</td>
</tr>
<tr>
<td>Snapshot Name</td>
<td>Name of the snapshot.</td>
</tr>
<tr>
<td>Continue on VM Error</td>
<td>Continue with the creation of a protection schedule even if there are VM errors.</td>
</tr>
<tr>
<td></td>
<td>The options available are:</td>
</tr>
<tr>
<td></td>
<td>• Yes</td>
</tr>
<tr>
<td></td>
<td>• No</td>
</tr>
<tr>
<td></td>
<td>The default setting is <strong>No</strong>.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policies</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection Policy</td>
<td>Name of the RMC protection policy. You can select a protection policy associated to an RMC instance from the inventory.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Schedule Parameters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule Name</td>
<td>Name of the schedule.</td>
</tr>
<tr>
<td>Backup Name</td>
<td>Name of the backup.</td>
</tr>
<tr>
<td>Description</td>
<td>Schedule description.</td>
</tr>
<tr>
<td>Start Date and Time</td>
<td>Start date and time for the schedule.</td>
</tr>
<tr>
<td>End Date</td>
<td>End date for the schedule.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Frequency for the schedule.</td>
</tr>
<tr>
<td>Recurrence in Minutes</td>
<td>Frequency for the schedule in minutes.</td>
</tr>
<tr>
<td>Recurrence in Hours</td>
<td>Frequency for the schedule in hours.</td>
</tr>
<tr>
<td>Recurrence in Days</td>
<td>Frequency for the schedule in days.</td>
</tr>
<tr>
<td>Weekly frequency recurrence</td>
<td>Weekly frequency for the schedule.</td>
</tr>
<tr>
<td>Monthly frequency recurrence</td>
<td>Monthly frequency for the schedule.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Protection > Manage RMC Data Protection folder.

4. Select Protect Datastore with Schedule and perform one of the following:

   - Click the Start workflow icon.
   - Right-click Protect Datastore with Schedule, and click Start workflow.
   - Press Ctrl+R.

The Start Workflow : Protect Datastore with Schedule window appears.

5. On the Common Parameters tab:

   a. In the vCenter Datastore field, enter the name of the VMWare vCenter datastore.
      You can select a vCenter datastore from the vCenter inventory.
   b. In the vCenter Virtual Machine field, enter the name of the vCenter virtual machine.
      You can select a vCenter VM from the vCenter inventory.
   c. In the RMC Connection field, enter the name of the RMC instance.
      You can select an RMC instance from the inventory.
   d. In the Snapshot Name field, enter the name of the snapshot.
   e. You can enable or disable the Continue on VM error option by selecting Yes or No. This option allows you to continue creating a protection schedule even with the VM errors.
      The default setting is No.

6. On the Policies tab:

   a. In the Protection Policy field, enter the name of the protection policy associated with the RMC instance.
      You can select a protection policy from the inventory.

7. On the Schedule Parameters tab:

   a. In the Schedule Name field, enter the name of the schedule.
   b. In the Backup Name field, enter the name of the backup.
   c. In the Description field, enter the description for the schedule.
   d. In the Start Date and Time field, enter the start date and time of the schedule using the calendar.
   e. In the End Date field, enter the start date and time of the schedule using the calendar.
   f. In the Frequency field, enter the frequency value for the schedule.
   g. In the Recurrence in Minutes field, enter the frequency of the schedule in number of minutes.
   h. In the Recurrence in Hours field, enter the frequency of the schedule in number of hours.
   i. In the Recurrence in Days field, enter the frequency of the schedule in number of days.
j. In the **Weekly frequency recurrence** field, enter the frequency of the schedule in number of weeks.

k. In the **Monthly frequency recurrence** field, enter the frequency of the schedule in number of months.

8. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

### Protecting VMs

**Field descriptions**

**Table 76: Protect VMs**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>vCenter Virtual Machine</td>
<td>Name of the vCenter virtual machine. You can select a virtual machine</td>
</tr>
<tr>
<td></td>
<td>from the vCenter inventory.</td>
</tr>
<tr>
<td>RMC Connection</td>
<td>Name of the RMC instance. You can select an RMC instance from the</td>
</tr>
<tr>
<td></td>
<td>inventory.</td>
</tr>
<tr>
<td>Snapshot Name</td>
<td>Name of the Protection snapshot.</td>
</tr>
<tr>
<td><strong>Policies</strong></td>
<td></td>
</tr>
<tr>
<td>Protection Policy</td>
<td>Name of the RMC protection policy. You can select a protection policy</td>
</tr>
<tr>
<td></td>
<td>associated to an RMC instance from the inventory.</td>
</tr>
<tr>
<td>Backup Name</td>
<td>Name of the backup.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Protection > Manage RMC Data Protection** folder.

4. Select **Protect VMs** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Protect VMs**, and click **Start workflow**.
   - Press Ctrl+R.

   The **Start Workflow : Protect VMs** window appears.

5. On the **Common Parameters** tab:
   a. In the **vCenter Virtual Machine** field, enter the name of the vCenter virtual machine.
      You can select a virtual machine from the vCenter inventory.
   b. In the **RMC Connection** field, enter the name of the RMC instance.
You can select an RMC instance from the inventory.

c. In the **Snapshot Name** field, enter the name of the snapshot.

6. On the **Policies** tab:

   a. In the **Protection Policy** field, enter the name of the protection policy associated with the RMC instance.
      
         You can select a protection policy from the inventory.

   b. In the **Backup Name** field, enter the name of the backup.

7. Click **Submit**.

   You can use **Next** or **Previous** to navigate through the tabs.

### Protecting VMs with schedule

**Field descriptions**

**Table 77: Protect VMs with Schedule**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>vCenter Virtual Machine</td>
<td>Name of the vCenter virtual machine. You can select a virtual machine from</td>
</tr>
<tr>
<td></td>
<td>the vCenter inventory.</td>
</tr>
<tr>
<td>RMC Connection</td>
<td>Name of the RMC instance. You can select an RMC instance from the inventory.</td>
</tr>
<tr>
<td>Snapshot Name</td>
<td>Name of the protection snapshot.</td>
</tr>
<tr>
<td><strong>Policies</strong></td>
<td></td>
</tr>
<tr>
<td>Protection Policy</td>
<td>Name of the RMC protection policy. You can select a protection policy</td>
</tr>
<tr>
<td></td>
<td>associated to an RMC instance from the inventory.</td>
</tr>
<tr>
<td><strong>Schedule Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Schedule name.</td>
</tr>
<tr>
<td>Backup Name</td>
<td>Name of the backup.</td>
</tr>
<tr>
<td>Description</td>
<td>Schedule description.</td>
</tr>
<tr>
<td>Start Date and Time</td>
<td>Start date and time for the schedule.</td>
</tr>
<tr>
<td>End Date</td>
<td>End date for the schedule.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Frequency for the schedule.</td>
</tr>
<tr>
<td>Recurrence in Minutes</td>
<td>Frequency for the schedule in minutes.</td>
</tr>
<tr>
<td>Recurrence in Hours</td>
<td>Frequency for the schedule in hours.</td>
</tr>
<tr>
<td>Recurrence in Days</td>
<td>Frequency for the schedule in days.</td>
</tr>
<tr>
<td>Weekly frequency recurrence</td>
<td>Weekly frequency for the schedule.</td>
</tr>
<tr>
<td>Monthly frequency recurrence</td>
<td>Monthly frequency for the schedule.</td>
</tr>
</tbody>
</table>
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to Protection > Manage RMC Data Protection folder.
4. Select Protect VMs with Schedule and perform one of the following:

   • Click the Start workflow icon.
   • Right-click Protect VMs with Schedule, and click Start workflow.
   • Press Ctrl+R.

The Start Workflow: Protect VMs with Schedule window appears.
5. On the Common Parameters tab:
   a. In the vCenter Virtual Machine field, enter the name of the vCenter virtual machine.
      You can select a vCenter VM from the inventory.
   b. In the RMC Connection field, enter the name of the RMC instance.
      You can select an RMC instance from the inventory.
   c. In the Snapshot Name field, enter the name of the snapshot.
6. On the Policies tab:
   a. In the Protection Policy field, enter the name of the protection policy associated with the RMC instance.
      You can select a protection policy from the inventory.
7. On the Schedule Parameters tab:
   a. In the Name field, enter the name of the schedule.
   b. In the Backup Name field, enter the name of the backup.
   c. In the Description field, enter the description for the schedule.
   d. In the Start Date and Time field, enter the start date and time of the schedule using the calender.
   e. In the End Date field, enter the start date and time of the schedule using the calender.
   f. In the Frequency field, enter the frequency value for the schedule.
   g. In the Recurrence in Minutes field, enter the frequency of the schedule in number of minutes.
   h. In the Recurrence in Hours field, enter the frequency of the schedule in number of hours.
   i. In the Recurrence in Days field, enter the frequency of the schedule in number of days.
j. In the **Weekly frequency recurrence** field, enter the frequency of the schedule in number of weeks.

k. In the **Monthly frequency recurrence** field, enter the frequency of the schedule in number of months.

8. Click **Submit**.
   
   You can use **Next** or **Previous** to navigate through the tabs.

**Refreshing VMWare objects**

**Field descriptions**

**Table 78: Refresh VMWare Objects**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Parameters</strong></td>
<td><strong>RMC Connection</strong> Name of the HPE RMC instance. You can select an HPE RMC instance from the inventory.</td>
</tr>
</tbody>
</table>

**NOTE:** The **Refresh VMWare Objects** workflow refreshes the VMware objects in the HPE RMC instance.

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.

   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Protection > Manage RMC Data Protection** folder.

4. Select **Refresh VMWare Objects** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Refresh VMWare Objects**, and click **Start workflow**.
   - Press Ctrl+R.

   The **Start Workflow: Refresh VMWare Objects** window appears.

5. On the **Common Parameters** tab, enter the name of the RMC instance in the **RMC Connection** field.

6. Click **Submit**.

**Snapshot copy VMDK operation**

**Field descriptions**
Table 79: Snapshot Copy VMDK Operation

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Snapshot</strong></td>
<td>Name of the Protection snapshot. You can select a VM snapshot from the inventory.</td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Virtual Disk to copy</strong></td>
<td>Name of the virtual disk that you have to copy.</td>
</tr>
<tr>
<td><strong>Target</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Target Datastore</strong></td>
<td>Name of the target datastore. You can select a target datastore from the vCenter inventory.</td>
</tr>
<tr>
<td><strong>Virtual Disk target directory</strong></td>
<td>Name of the virtual disk target directory.</td>
</tr>
<tr>
<td><strong>Overwrite Target VMDK File</strong></td>
<td>Enable or disable the overwrite target VMDK file option. The options available are:</td>
</tr>
<tr>
<td></td>
<td>• Yes</td>
</tr>
<tr>
<td></td>
<td>• No</td>
</tr>
<tr>
<td></td>
<td>The default setting is No.</td>
</tr>
</tbody>
</table>

Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows ( )** tab. The folders available in the library appear.
2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to **Protection > Manage RMC Data Protection** folder.
4. Select **Snapshot Copy VMDK Operation** and perform one of the following:
   - Click the **Start workflow ( )** icon.
   - Right-click **Snapshot Copy VMDK Operation**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Snapshot Copy VMDK Operation** window appears.
5. In the **Common Parameters** tab, enter the name of the snapshot in the **Snapshot** field. You can select a VM snapshot from the inventory.
6. In the **Source** tab, enter the name of the virtual disk that you have to copy in the **Virtual Disk to copy** field.
7. On the **Target** tab:
   - In the **Target Datastore** field, enter the name of the target datastore.
You can select the target datastore from the vCenter inventory.

b. In the **Virtual Disk target directory** field, enter the name of the virtual disk target directory.

c. You can enable or disable the **Overwrite Target VMDK File** option by selecting **Yes** or **No**. The default setting is **No**.

8. Click **Submit**.

You can use **Next** or **Previous** to navigate through the tabs.

**Snapshot mount operation**

**Field descriptions**

**Table 80: Snapshot Mount Operation**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Parameters</td>
<td></td>
</tr>
<tr>
<td><strong>Snapshot</strong></td>
<td>Name of the protection snapshot. You can select a snapshot from the inventory.</td>
</tr>
<tr>
<td><strong>Host System</strong></td>
<td>Name of the ESXi host. You can select an ESXi host from the vCenter inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** ( ) tab.
   
The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Protection > Manage RMC Data Protection** folder.

4. Select **Snapshot Mount Operation** and perform one of the following:

   - Click the **Start workflow** ( ) icon.
   - Right-click **Snapshot Mount Operation**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Snapshot Mount Operation** window appears.

5. On the **Common parameters** tab:

   a. In the **Snapshot** field, enter the name of a protection snapshot.
      
      You can select a snapshot from the inventory.

   b. In the **Host System** field, enter the name of the ESXi host.
You can select an ESXi host from the vCenter inventory.

6. Click Submit.

Snapshot unmount operation

Field descriptions

Table 81: Snapshot Unmount Operation

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Parameters</td>
<td></td>
</tr>
<tr>
<td>Snapshot</td>
<td>Name of the protection snapshot. You can select a snapshot from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Protection > Manage RMC Data Protection folder.

4. Select Snapshot Unmount Operation and perform one of the following:
   - Click the Start workflow icon.
   - Right-click Snapshot Unmount Operation, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Snapshot Unmount Operation window appears.

5. In the Common parameters tab, enter the name of a protection snapshot.
   You can select a snapshot from the inventory.

6. Click Submit.

Verifying Express protect backup

Field descriptions

Table 82: Verify Express Protect Backup

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Parameters</td>
<td></td>
</tr>
<tr>
<td>Backup</td>
<td>Name of the backup. You can select a backup from the inventory.</td>
</tr>
</tbody>
</table>
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to Protection > Manage RMC Data Protection folder.
4. Select Verify Express Protect Backup and perform one of the following:
   - Click the Start workflow icon.
   - Right-click Verify Express Protect Backup, and click Start workflow.
   - Press Ctrl+R.

The Start Workflow : Verify Express Protect Backup window appears.
5. In the Common parameters tab, enter the name of the backup.
   You can select a backup from the inventory.
6. Click Submit.

Query

The Query workflow allows the user to get the protection data in the VMware vRealize Orchestrator.

Querying Configured Storage Systems

To validate a list of configured storage systems available in an HPE RMC, use the Get Configured Storage Systems workflow.

Field descriptions

Table 83: Querying Configured Storage Systems

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection Connection</td>
<td>You can select an HPE RMC connection from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
3. Navigate to Protection > Query folder.
4. Select Get Configured Storage Systems and perform one of the following:
Click the **Start workflow** icon.

Right-click **Get Configured Storage Systems**, and click **Start workflow**.

Press **Ctrl+R**.

The **Start Workflow : Get Configured Storage Systems** window appears.

5. In the **Start Workflow : Get Configured Storage Systems** wizard, select an HPE RMC from the inventory.

6. Click **Submit**.

### Querying Configured StoreOnce

To validate a list of Configured StoreOnce available in the HPE RMC, use the Get Configured StoreOnce workflow.

#### Field descriptions

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protection Connection</strong></td>
<td>You can select a configured HPE RMC from the inventory.</td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.

   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

3. Navigate to **Protection > Query** folder.

4. Select **Get Configured StoreOnce** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Get Configured StoreOnce**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Get Configured StoreOnce** window appears.

5. In the **Get Configured StoreOnce** wizard, select an HPE RMC from the inventory.

6. Click **Submit**.

### Querying Datastores Backups

To query for available datastore backups in an HPE RMC, use the Get Datastores Backups workflow.

#### Field descriptions
Table 85: Get Datastores Backups

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>Protected Datastore</td>
<td>You can select a protected datastore from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.  
The folders available in the library appear.
2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
3. Navigate to **Protection > Query** folder.
4. Select **Get Datastores Backups** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Get Datastores Backups**, and click **Start workflow**.
   - Press **Ctrl+R**.

The **Start Workflow: Get Datastores Backups** window appears.
5. In the **Get Datastores Backups** wizard, select a protected datastore from the inventory.
6. Click **Submit**.

Querying Datastore Snapshots

To get a list of all datastore snapshots available in an HPE RMC, use the Get Datastore Snapshots workflow.

Field descriptions

Table 86: Get Datastore Snapshots

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>Protected datastore</td>
<td>You can select a protected datastore from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.  
The folders available in the library appear.
2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
3. Navigate to **Protection > Query** folder.
4. Select **Get Datastore Snapshots** and perform one of the following:
• Click the **Start workflow** ( ) icon.

• Right-click **Get Datastore Snapshots**, and click **Start workflow**.

• Press **Ctrl+R**.

The **Start Workflow : Get Datastore Snapshots** window appears.

5. In the **Start Workflow : Get Datastore Snapshots** wizard, select protected datastore from the inventory.

6. Click **Submit**.

**Querying Managed vCenter**

To validate a list of managed vCenter available in an HPE RMC, use the Get Managed vCenter workflow.

**Field Description**

**Table 87: Get Managed vCenter**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td>You can select a managed HPE RMC from the inventory.</td>
</tr>
<tr>
<td><strong>Protection Connection</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** ( ) tab.

   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

3. Navigate to **Protection > Query** folder.

4. Select **Get Managed vCenter** and perform one of the following:

   • Click the **Start workflow** ( ) icon.

   • Right-click **Get Managed vCenter**, and click **Start workflow**.

   • Press **Ctrl+R**.

   The **Start Workflow : Get Managed vCenter** window appears.

5. In the **Start Workflow : Get Managed vCenter** wizard, select an HPE RMC from the inventory.

6. Click **Submit**.

**Querying Protected Datastores**

To validate a list of Protected Datastores available in an HPE RMC, use the Get Protected Datastores workflow.

**Field Description**
Table 88: Get Protected Datastores

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>You can select a HPE RMC connection from the inventory.</td>
</tr>
<tr>
<td>Protection Connection</td>
<td>You can select a HPE RMC connection from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Protection > Query** folder.

4. Select **Get Protected Datastores** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Get Protected Datastores**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Get Protected Datastores** window appears.

5. In the **Start Workflow : Get Protected Datastores** wizard, select an object from the inventory.

   **NOTE:** If the datastore has any Snapshot or Schedule associated with it, then it is protected.

6. Click **Submit**.

**Querying Protected Virtual Machines**

To validate a list of Protected Virtual Machines available in an HPE 3PAR StoreServ system, use the **Get Protected Virtual Machines** workflow.

**Field Description**

Table 89: Get Protected Virtual Machines

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>You can select a HPE RMC connection from the inventory.</td>
</tr>
<tr>
<td>Protection Connection</td>
<td>You can select a HPE RMC connection from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Protection > Query folder.

4. Select Get Protected Virtual Machines and perform one of the following:
   
   • Click the Start workflow ( ) icon.
   • Right-click Get Protected Virtual Machines, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Get Protected Virtual Machines window appears.

5. In the Start Workflow : Get Protected Virtual Machines wizard, select an object from the inventory.

   NOTE: If the Virtual Machine has any Snapshot or Schedule associated with it, then it is protected.

6. Click Submit.

Querying Virtual Machine Backups

To get a list of backups for the virtual machines available in HPE RMC, use the Get Virtual Machine Backups workflow.

Field Description

Table 90: Get Virtual Machine Backups

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>Protected Virtual Machine</td>
<td>You can select a protected virtual machine from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Protection > Query folder.

4. Select Get Virtual Machine Backups and perform one of the following:
   
   • Click the Start workflow ( ) icon.
   • Right-click Get Virtual Machine Backups, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Get Virtual Machine Backups window appears.
5. In the **Start Workflow : Get Virtual Machine Backups** wizard, select an object from the inventory.

6. Click **Submit**.

**Querying Virtual Machine Snapshots**

To get a list of Snapshots for virtual machines available in an HPE RMC, use the Get Virtual Machine Snapshots workflow.

**Field descriptions**

**Table 91: Get Virtual Machine Snapshots**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>Protected virtual machine</td>
<td>You can select a protected virtual machine from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to **Protection > Query** folder.

4. Select **Get Virtual Machine Snapshots** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Get Virtual Machine Snapshots**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Get Virtual Machine Snapshots** window appears.

5. In the **Start Workflow : Get Virtual Machine Snapshots** wizard, select an object from the inventory.

6. Click **Submit**.

**Querying task**

The task details obtained by using the Querying task workflow.

**Field Description**

**Table 92: Querying task**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>Task ID</td>
<td>Enter the task ID.</td>
</tr>
</tbody>
</table>
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to Protection > Query folder.

4. Select Querying task and perform one of the following:

   - Click the Start workflow icon.
   - Right-click Querying task, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Querying task window appears.

5. In the Start Workflow : Querying task wizard, enter the task ID.

6. Click Submit.

Snapshot management

A snapshot is a point-in-time virtual copy of a base volume. The base volume is the original volume that is copied to the snapshot. Unlike a physical copy, which is a duplicate of a volume, a virtual copy only records changes to the base volume. You can use a snapshot to get an earlier state of the original virtual volume to be recreated by starting with the current state of the virtual copy and rolling back the changes that have been after creating the virtual copy.

When a snapshot is created, data is mapped indirectly with data in the parent volume. When a block is written to the parent, the original block is copied from the parent to the snapshot data space and the snapshot points to this data space.

Creating snapshot of virtual volume set

Field Descriptions

Table 93: Create snapshot of Virtual Volume Set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which we are creating the snapshot for the virtual volume set. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Snapshot Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Virtual Volume Set</td>
<td>Name of the virtual volume set for which the snapshot is generated once the workflow is completed. You can select a virtual volume set from the inventory.</td>
</tr>
</tbody>
</table>

Table Continued
### Snapshot name pattern
Naming pattern of the snapshot. The options are:
- **VolumeName_And_Time_Stamp**
- **VolumeName_And_Count**
- **VolumeName_And_Time_in_Seconds_Since_Epoc h**
- **Custom**

### Access Permissions
Access permission for the snapshot. The options are:
- **Read and Write** — You can modify the snapshot or restore data on a different host. The default setting is read and write.
- **Read only** — You cannot modify the snapshot.

### Expiration time
Duration for which the snapshot is available. You can set maximum 43,800 hours or 1,825 days. You can access the snapshot for the specified time period, after which the snapshot expires and is no longer available in the system.

### Expiration time unit
Time unit of the expiration time. The options are:
- **Hours**
- **Days**

### Retention time
Time duration during which the snapshot is protected against deletion.

### Retention time unit
Time unit of the retention time. The options are:
- **Hours**
- **Days**

### Name of the virtual volume set to which the system adds your created snaps
Name of the virtual volume set to which the system adds the created snapshot. If the virtual volume set does not exist, the system creates the virtual volume set.

### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Snapshot management > Virtual Volume Set(VVSET)** folder, and double-click the **Virtual Volume Set(VVSET)** folder.

4. Select **Create snapshot of Virtual Volume Set** and perform one of the following:
• Click the Start workflow ( ) icon.
• Right-click Create snapshot of Virtual Volume Set, and click Start workflow.
• Press Ctrl+R.

The Start Workflow : Create snapshot of Virtual Volume Set window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Volume Snapshot Parameters tab:
   a. In the Virtual Volume Set field, enter the name of virtual volume set for which you have to create the snapshot.
   b. In the Snapshot name pattern field, enter the name pattern for the snapshot.
   c. In the Access permissions field, select appropriate setting.
   d. In the Expiration time field, enter the time by which the snapshot expires.
   e. In the Expiration time unit field, enter the expiration time unit.
   f. In the Retention time field, enter the time period during which deleting the snapshot is disabled.
   g. In the Retention time unit field, enter the retention time unit.
   h. In the Name of the Virtual Volume set field, enter a name for the virtual volume set.
      If the virtual volume set does not exist, the system creates a virtual volume set to save the snapshot.

7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Restoring snapshot of virtual volume set

Field Descriptions

Table 94: Restore snapshot of Virtual Volume Set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the snapshot for the virtual volume set is created. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

Table Continued
Virtual Volume Set

Name of the virtual volume set snapshot to be restored. You can select a virtual volume set snapshot from the virtual volumes sets available in the inventory.

Task priority

Priority of the restoration. The options are:

- Medium
- High
- Low

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Snapshot management > Virtual Volume Set(VVS) folder, and double-click the Virtual Volume Set(VVS) folder.

4. Select Restore snapshot of Virtual Volume Set and perform one of the following:
   - Click the Start workflow ( ) icon.
   - Right-click Restore snapshot of Virtual Volume Set, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Restore snapshot of Virtual Volume Set window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Snapshot Parameters tab:
   - In the Virtual Volume Set field, enter the name of snapshot for the virtual volume set.
   - In the Task priority field, select an appropriate option.

7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Creating snapshot of virtual volume

Field Descriptions

Table 95: Create snapshot of Virtual Volume

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
</tbody>
</table>

Table Continued
### StoreServ Connection

Name of the HPE 3PAR StoreServ array in which we are creating the snapshot. You can select the HPE 3PAR StoreServ system from the inventory.

### Snapshot Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Volume</td>
<td>Name of the virtual volume for which we are generating the snapshot. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td>Snapshot name</td>
<td>Name of the snapshot. You can use maximum 31 alphanumeric characters and special characters, such as hyphens, periods, and underscore, to name the snapshot. The names must not start with a hyphen.</td>
</tr>
<tr>
<td>Access Permissions</td>
<td>Access permission for the snapshot. The options are:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Read and Write</strong> — You can modify the snapshot or restore data on a different host. The default setting is read and write.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Read only</strong> — You cannot modify the snapshot.</td>
</tr>
<tr>
<td>Expiration time</td>
<td>Duration for which the snapshot is available. You can set maximum 43,800 hours or 1,825 days. You can access the snapshot for the specified time period, after which the snapshot expires and is no longer available in the system.</td>
</tr>
<tr>
<td>Expiration time unit</td>
<td>Time unit of the expiration time. The options are:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Hours</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>Days</strong></td>
</tr>
<tr>
<td>Retention time</td>
<td>Time duration during which the snapshots are protected against deletion.</td>
</tr>
<tr>
<td>Retention time unit</td>
<td>Time unit of the retention time. The options are:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Hours</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>Days</strong></td>
</tr>
</tbody>
</table>

### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.
2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the **Snapshot management > Virtual Volume(VV)** folder, and double-click the **Virtual Volume(VV)** folder.
4. Select **Create snapshot of Virtual Volume** and perform one of the following:
• Click the Start workflow icon.
• Right-click Create snapshot of Virtual Volume, and click Start workflow.
• Press Ctrl+R.

The Start Workflow : Create snapshot of Virtual Volume window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Snapshot Parameters tab:
   a. In the Virtual Volume field, enter the name of virtual volume for which you have to create the snapshot. You can select a virtual volume from the inventory.
   b. In the Snapshot name field, enter a name for the snapshot.
   c. In the Access permissions field, select an appropriate setting.
   d. In the Expiration time field, enter the time by which the volume expires.
   e. In the Expiration time unit field, enter a unit for the expiration time.
   f. In the Retention time field, enter the time period during which deletion of snapshot is disabled.
   g. In the Retention time unit field, enter a unit for the retention time.

7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Creating snapshots of virtual volumes

To create a snapshot of volume group, use the Create snapshot(s) of Virtual Volume(s) workflow.

Field Description

<table>
<thead>
<tr>
<th>Table 96: Create snapshot(s) of Virtual Volume(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
</tr>
<tr>
<td><strong>Connection</strong></td>
</tr>
<tr>
<td>StoreServ Connection</td>
</tr>
<tr>
<td><strong>Snapshot Parameters</strong></td>
</tr>
<tr>
<td>Virtual Volumes and optional Snapshots name</td>
</tr>
</tbody>
</table>

Table Continued
### Access Permissions

Access permission for the snapshot. The options are:

- **Read and Write** — You can modify the snapshot or restore data on a different host. The default setting is read and write.
- **Read only** — You cannot modify the snapshot.

### Expiration time

Duration for which the snapshot is available. You can set maximum 43,800 hours or 1,825 days. You can access the snapshot for the specified time period, after which the snapshot expires and is no longer available in the system.

### Expiration time unit

Time unit of the expiration time. The options are:

- Hours
- Days

### Retention time

Time duration during which the snapshots are protected against deletion.

### Retention time unit

Time unit of the retention time. The options are:

- Hours
- Days

### Name of the volume set

Name of the virtual volume set to which the snapshots are added. If you specify the name, the system adds the snapshots to that virtual volume set. If the virtual volume set does not exist, it is created with the specified name.

### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Snapshot management > Virtual Volume(VV)** folder, and double-click the **Virtual Volume(VV)** folder.

4. Select **Create snapshot(s) of Virtual Volume(s)** and perform one of the following:
• Click the Start workflow icon.
• Right-click Create snapshot(s) of Virtual Volume(s), and click Start workflow.
• Press Ctrl+R.

The Start Workflow : Create snapshot(s) of Virtual Volume(s) window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Snapshot Parameters tab:
   a. In the Volume names and optional Snap names field, enter the names of virtual volumes and snapshots.
   b. In the Expiration time field, enter the time by which the snapshots expire.
   c. In the Access permissions field, select an appropriate setting.
   d. In the Expiration time unit field, enter a unit for the expiration time.
   e. In the Retention time field, enter the time period during which deletion of snapshots is disabled.
   f. In the Retention time unit field, enter a unit for the retention time.
   g. In the Name of the volume set field, enter the name of the virtual volume set in which snapshots for the virtual volumes are created.
      If the virtual volume set does not exist, the system creates a new virtual volume set with the time stamp.

7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Deleting snapshot of virtual volume

To delete a snapshot of a volume, use the Delete Volume Snapshot workflow.

Field Descriptions

Table 97: Delete snapshot of Virtual Volume

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ array in which the snapshot for the virtual volume is created. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Snapshot Parameters</td>
<td></td>
</tr>
<tr>
<td>Snapshot</td>
<td>Name of the snapshot to delete. You can select a snapshot from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Snapshot management > Virtual Volume(VV)** folder, and double-click the **Virtual Volume(VV)** folder.

4. Select **Delete snapshot of Virtual Volume** and Perform one of the following:
   - Click the **Start workflow** ( ) icon.
   - Right-click **Delete snapshot of Virtual Volume**, and click **Start workflow**.
   - Press **Ctrl+R**.

The **Start Workflow : Delete snapshot of Virtual Volume** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Snapshot Parameters** tab, enter the snapshot name.

7. Click **Submit**.

   You can use **Next** or **Previous** to navigate through the tabs.

### Restoring snapshot of virtual volume

#### Field Descriptions

#### Table 98: Restore snapshot of Virtual Volume

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the snapshot for the virtual</td>
</tr>
<tr>
<td></td>
<td>volume is created. You can select the HPE 3PAR StoreServ system from the</td>
</tr>
<tr>
<td></td>
<td>inventory.</td>
</tr>
<tr>
<td><strong>Snapshot Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Snapshot</strong></td>
<td>Name of the snapshot to be restored. You can select a snapshot from the</td>
</tr>
<tr>
<td></td>
<td>inventory.</td>
</tr>
<tr>
<td><strong>Task Priority</strong></td>
<td>Priority of the restoration. The options are:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Medium</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>High</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>Low</strong></td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** ( ) tab.
   
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Snapshot management > Virtual Volume(VV)** folder, and double-click the **Virtual Volume(VV)** folder.

4. Select **Restore snapshot of Virtual Volume** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Restore snapshot of Virtual Volume**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Restore snapshot of Virtual Volume** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Snapshot Parameters** tab:
   a. In the **Snapshot** field, enter the name of snapshot for the volume.
   b. In the **Task Priority** field, select an appropriate option.

7. Click **Submit**.

   You can use **Next** or **Previous** to navigate through the tabs.

### Querying snapshot

#### Querying all snapshots by virtual volume

**Field Descriptions**

**Table 99: Get all snapshot(s) by Virtual Volume**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the snapshot for the virtual volume is created. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Snapshot Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Virtual Volume</strong></td>
<td>Virtual volume name. You can select a virtual volume from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.

   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Snapshot > Volume > Query** folder, and double-click the **Volume** folder.
4. Select Get all snapshot(s) by Virtual Volume and perform one of the following:

- Click the Start workflow icon.
- Right-click Get all snapshot(s) by Virtual Volume, and click Start workflow.
- Press Ctrl+R.

The Start Workflow : Get all snapshot(s) by Virtual Volume window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Parameters tab, enter the virtual volume name.

7. Click Submit.

You can use Next or Previous to navigate through the tabs.

**VASA management**

**Creating storage container**

**Field Descriptions**

**Table 100: Create Storage Container**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ connection. You can select an HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Storage Container Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Storage Container name (VVSet with the same name will be created and then converted to Storage Container)</td>
<td>Name of the storage container to be created.</td>
</tr>
<tr>
<td>3PAR Domain in which the Storage Container will be created</td>
<td>3PAR domain in which the storage container will be created.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the VASA management folder.

4. Select Create Storage Container and perform one of the following:
• Click the Start workflow ( ) icon.
• Right-click Create Storage Container, and click Start workflow.
• Press Ctrl+R.

The Start Workflow : Create Storage Container window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Storage Container Parameters tab:
   a. In the Storage Container name field, enter a name for the storage container.
   b. In the 3PAR Domain in which the Storage Container will be created field, enter the domain name.

7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Deleting Storage Container

To delete a storage container from an HPE 3PAR StoreServ array, use the Delete Storage Container workflow.

Field Descriptions

Table 101: Delete Storage Container

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ connection. You can select an HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Storage Container Parameters</td>
<td></td>
</tr>
<tr>
<td>Storage Container</td>
<td>Name of the storage container (virtual volume set converted to storage container) to be deleted from the array. You can select a storage container from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the VASA management folder.

4. Select Delete Storage Container and perform one of the following:
• Click the **Start workflow** icon.
• Right-click **Delete Storage Container**, and click **Start workflow**.
• Press **Ctrl+R**.

The **Start Workflow : Delete Storage Container** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Storage Container Parameters** tab, enter the name of storage container to be deleted.
   You can select a storage container from the inventory.

7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

**Migrating Datastore VMs with storage vMotion**

To migrate all virtual machines from the selected datastore with storage vMotion, use the Migrate Datastore VMs with storage vMotion workflow.

**Field descriptions**

**Table 102: Migrate Datastore VMs with storage vMotion**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Parameter</strong></td>
<td></td>
</tr>
<tr>
<td><strong>vCenter Datastore</strong></td>
<td>Name of the vCenter datastore. You can select a datastore from the vCenter inventory.</td>
</tr>
<tr>
<td><strong>Datastore to locate</strong></td>
<td>Target datastore to which the VM is migrated.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **VASA management** folder.

4. Select **Migrate Datastore VMs with storage vMotion** and perform one of the following:
   
   • Click the **Start workflow** icon.
   • Right-click **Migrate Datastore VMs with storage vMotion**, and click **Start workflow**.
   • Press **Ctrl+R**.

   The **Start Workflow : Migrate Datastore VMs with storage vMotion** window appears.

5. On the **Common Parameter** tab, enter the following details:
a. **vCenter Datastore**: Name of the vCenter datastore

b. **Datastore to locate**: Target datastore name

6. Click **Submit**.

### Mounting VVOL Datastore

**Field descriptions**

**Table 103: Mount VVOL Datastore**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ connection. You can select an HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>vCenter cluster</strong></td>
<td>Name of the vCenter cluster. You can select a cluster from the inventory.</td>
</tr>
<tr>
<td><strong>Mount Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Storage Container</strong></td>
<td>Name of the storage container.</td>
</tr>
<tr>
<td><strong>VVOL Datastore Name</strong></td>
<td>Name of the VVOL datastore.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **VASA management** folder.

4. Select **Mount VVOL Datastore** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Mount VVOL Datastore**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Mount VVOL Datastore** window appears.

5. On the **Connection** tab, do the following:

   a. In the **StoreServ Connection** field, enter the 3PAR StoreServ connection in which the 3PAR virtual volume is configured.

   b. In the **vCenter cluster** field, enter the cluster in which the VVOL datastore is mounted.

6. On the **Mount Parameters** tab:
a. In the **Storage Container** field, enter the name of the storage container.

b. In the **VVOL Datastore Name** field, enter the name of the VVOL datastore to be mounted.

7. Click **Submit**.

You can use **Next** or **Previous** to navigate through the tabs.

---

**Registering VASA Provider**

To register StoreServ VASA provider in vCenter, use the Register VASA Provider workflow.

**Field descriptions**

**Table 104: Register VASA Provider**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ array in which the host is configured. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Register Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>vCenter</strong></td>
<td>Name of the vCenter connection.</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>Name of the VASA provider.</td>
</tr>
<tr>
<td><strong>User</strong></td>
<td>User name of the VASA provider.</td>
</tr>
<tr>
<td><strong>Password</strong></td>
<td>Password of the VASA provider</td>
</tr>
<tr>
<td><strong>Certificate (If certificate is not provided the VASA provider certificate will be used)</strong></td>
<td>You can use a self-signed certificate, or a certificate from the 3PAR array is selected.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.

   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **VASA management** folder.

4. Select **Register VASA Provider** and perform one of the following:
   
   - Click the **Start workflow** icon.
   - Right-click **Register VASA Provider**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Register VASA Provider** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Register Parameters** tab:
To start VASA on the selected HPE 3PAR StoreServ array, use the Start VASA workflow.

### Field descriptions

**Table 105: Start VASA**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>Name of the HPE 3PAR StoreServ connection. You can select an HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

3. Navigate to the **VASA management** folder.

4. Select **Start VASA** and perform one of the following:
   
   - Click the **Start workflow** icon.
   - Right-click **Start VASA**, and click **Start workflow**.
   - Press Ctrl+R.

   The **Start Workflow : Start VASA** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. The **VASA Status** field displays the status of VASA as start.

7. Click **Submit**.
   
   You can use **Next** or **Previous** to navigate through the tabs.
Stopping VASA

To stop VASA on the selected HPE 3PAR StoreServ array, use the Stop VASA workflow.

Field descriptions

Table 106: Stop VASA

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>Name of the HPE 3PAR StoreServ connection. You can select an HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
3. Navigate to the VASA management folder.
4. Select Stop VASA and perform one of the following:

   • Click the Start workflow icon.
   • Right-click Stop VASA, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Stop VASA window appears.
5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.
6. The VASA Status field displays the status of VASA as stop.
7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Unmounting VVOL Datastore

Field Descriptions

Table 107: Unmount VVOL Datastore

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>vCenter Datastore</td>
<td>Name of the VVOL datastore. You can select a VVOL datastore from the vCenter inventory.</td>
</tr>
<tr>
<td>vCenter Cluster</td>
<td>Name of the cluster. You can select a cluster from the inventory.</td>
</tr>
</tbody>
</table>
Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **VASA management** folder.

4. Select **Unmount VVOL Datastore** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Unmount VVOL Datastore**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Unmount VVOL Datastore** window appears.

5. On the **Common parameters** tab:
   a. In the **vCenter Datastore** field, select the VVol datastore from the inventory.
   b. In the **vCenter Cluster** field, enter the name of the cluster from which the datastore has to be unmounted.

6. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.

Unregistering VASA Provider

Field descriptions

**Table 108: Unregister VASA Provider**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common parameters</strong></td>
<td></td>
</tr>
<tr>
<td>vCenter</td>
<td>Name of the vCenter connection.</td>
</tr>
<tr>
<td>Name</td>
<td>Name of the VASA provider.</td>
</tr>
</tbody>
</table>

Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **VASA management** folder.

4. Select **Unregister VASA Provider** and perform one of the following:
• Click the Start workflow icon.
• Right-click Unregister VASA Provider, and click Start workflow.
• Press Ctrl+R.

The Start Workflow : Unregister VASA Provider window appears.

5. On the Common parameters tab:
   a. In the vCenter field, select the vCenter from the inventory
   b. In the Name field, enter name of the VASA provider.

6. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Querying VASA

Querying VASA status

Field Descriptions

Table 109: Get VASA status

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ connection. You can select an HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the VASA management folder.
4. Select Get VASA status and perform one of the following:

   • Click the Start workflow icon.
   • Right-click Get VASA status, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Get VASA status window appears.
5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.
6. The **VASA Status** field displays the status of VASA.

7. Click **Submit**.

   You can use **Next** or **Previous** to navigate through the tabs.

**Quality of Service (QoS) management**

The HPE 3PAR Priority Optimization software provides quality of service rules to manage and control the input/output (I/O) capacity of an HPE 3PAR StoreServ Storage system across multiple workloads.

You can define QoS rules for file system input/output operations per second (IOPS), bandwidth, and latency. You can set a QoS rule for only one target object. The smallest target object to which a QoS rule can be applied is a virtual volume set (VVset).

IOPS is a common performance measurement used to benchmark computer storage. This value indicates the number of host I/O requests that the array receives per second. You must provide this value as a whole number, such as 50,000 IOPS.

**Quality of Service (QoS) for system**

**Creating QoS rule for system**

To create a QoS rule for a system, use the Create QoS Rule for system workflow. The system applies this rule to all objects in the system for which no QoS rule is defined.

**Field Descriptions**

**Table 110: Create QoS rule for system**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ connection</strong></td>
<td>Name of the 3PAR array. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>QoS Target Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Enable QoS rule for the target</strong></td>
<td>Enable the QoS rule for the system. A QoS rule that is created becomes active immediately. You can use the following options to change the settings:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Yes</strong> — The system creates the QoS rule and applies to all objects in the system.</td>
</tr>
<tr>
<td></td>
<td>• <strong>No</strong> — The system creates and saves the rule, but does not apply to the objects in the system.</td>
</tr>
<tr>
<td><strong>Priority</strong></td>
<td>Priority of the operations in the system. The options are:</td>
</tr>
<tr>
<td></td>
<td>• <strong>LOW</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>NORMAL</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>HIGH</strong></td>
</tr>
<tr>
<td></td>
<td>Use high priority for critical applications and low priority less critical applications.</td>
</tr>
<tr>
<td><strong>IOPS Limits</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th><strong>IOPS minimum goal</strong></th>
<th>Minimum number of I/O operations that the system must perform in a second. You must set IOPS maximum limit if you set the minimum goal. This setting specifies the minimum number of read and write operations in a second.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IOPS maximum limit</strong></td>
<td>Maximum number of I/O operations that can be run per second. This setting specifies the maximum number of read and write operations that can be performed in a second. You can provide an integer value between 0 and $2^{31}-1$ depending on the configuration.</td>
</tr>
</tbody>
</table>
| **I/O minimum goal** | Minimum number of I/O operations that the system must perform. If you set:  
  - 1 — The I/O minimum goal is zero and is disabled.  
  - 2 — The I/O minimum goal has no limit. |
| **I/O maximum limit** | Maximum number of I/O operations that the system can perform. You must set the I/O maximum limit if you set the minimum limit. If you set:  
  - 1 — The I/O maximum limit setting is disabled.  
  - 2 — The I/O maximum limit is enabled, but not set. |
| **Bandwidth Limits** |  
| **Bandwidth rate minimum goal in KB/s** | Minimum bytes-per-second transfer rate for the system. If bandwidth falls below the minimum goal, the system does not reduce bandwidth for the virtual volumes associated with the policy. |
| **Bandwidth rate maximum limit in KB/s** | Maximum bytes-per-second transfer rate for the system. You can set this value as an integer between 0 and $2^{63}-1$ in KB/second depending on the system configuration. |
| **Bandwidth minimum goal** | Minimum bandwidth with which the system must perform. If you set:  
  - 1 — The bandwidth minimum goal setting is disabled.  
  - 2 — The bandwidth minimum goal has no limit. |
| **Bandwidth maximum limit** | Maximum bandwidth with which the system can perform. If you set:  
  - 1 — The bandwidth maximum limit setting is disabled.  
  - 2 — The bandwidth maximum limit is enabled, but not set. |
| **Latency** |  
| **Default Latency** | Selects the default latency.  
  The options are:  
  - **Yes** — Sets the default latency.  
  - **No** — Enables options to provide latency goals in milliseconds and microseconds. |
| **Latency goal in microseconds** | Latency goal per microsecond. |
| **Latency goal in milliseconds** | Latency goal per millisecond. |
NOTE: The 3PAR Priority Optimization software sets the values for IOPS and bandwidth in QoS rules in absolute numbers, not in percentages.

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Quality of Service management > System folder, and double-click the System folder.

4. Select Create QoS rule for system and do one of the following:

   • Click the Start workflow icon.
   • Right-click Create QoS rule for system, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow: Create QoS rule for system window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the QoS Target Parameters tab, do the following:

   • In the Enable QoS rule for the target field, select an appropriate option.
   • From the Priority list, select a priority.

7. On the IOPS Limits tab, enter the following settings:

   • IOPS minimum goal
   • IOPS maximum limit
   • I/O minimum goal
   • I/O maximum limit

8. On the Bandwidth Limits tab, enter the following settings:

   • Bandwidth rate minimum goal in KB/s
   • Bandwidth rate maximum limit in KB/s
   • Bandwidth minimum goal
   • Bandwidth maximum limit

9. On the Latency tab, enter the following settings:
• Default Latency
• Latency goal in microseconds
• Latency goal in milliseconds

10. Click **Submit**.

You can use **Next** or **Previous** to navigate through the tabs.

### Deleting QoS rule for system

To delete existing rules for a system in the selected HPE 3PAR StoreServ system, use the delete QoS Rule for system workflow. You need not disable a QoS rule to remove an active QoS rule.

#### Field Descriptions

**Table 111: Delete QoS rule for system**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the 3PAR array from which the QoS rule needs to be deleted. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.

   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Quality of Service management > System** folder, and double-click the **System** folder.

4. Select **Delete QoS rule for system** and perform one of the following:
   
   • Click the **Start workflow** icon.
   
   • Right-click **Delete QoS rule for system**, and click **Start workflow**.
   
   • Press **Ctrl+R**.

   The **Start Workflow : Delete QoS rule for system** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. Click **Submit**.

### Modifying QoS rule for system

#### Field Descriptions
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>QoS Target Parameters</td>
<td></td>
</tr>
</tbody>
</table>
| Enable QoS rule for the target | Enable the QoS rule for the system. A QoS rule that is created becomes active immediately. You can use the following options to change the settings:  
  • Yes — The system creates the QoS rule and applies to all objects in the system.  
  • No — The system creates and saves the rule, but does not apply to the objects in the system. |
| Priority                    | Priority of the operations in the system. The options are:  
  • LOW  
  • NORMAL  
  • HIGH |
| IOPS Limits                 |                                                                             |
| IOPS minimum goal           | Minimum number of I/O operations that the system must perform in a second. You must set IOPS maximum limit if you set the minimum goal. This setting specifies the minimum number of read and write operations in a second. |
| IOPS maximum limit          | Maximum number of I/O operations that can be run per second. This setting specifies the maximum number of read and write operations that can be performed in a second. You can provide an integer value between 0 and $2^{31-1}$ depending on the configuration. |
| I/O minimum goal            | Minimum number of I/O operations that the system must perform. If you set:  
  • 1 — The I/O minimum goal is zero and is disabled.  
  • 2 — The I/O minimum goal has no limit. |
| I/O maximum limit           | Maximum number of I/O operations that the system can perform. You must set the I/O maximum limit if you set the minimum limit. If you set:  
  • 1 — The I/O maximum limit setting is disabled.  
  • 2 — The I/O maximum limit is enabled, but not set. |
| Bandwidth Limits            |                                                                             |
| Bandwidth rate minimum goal in KB/s | Minimum bytes-per-second transfer rate for the system. |
| Bandwidth rate maximum limit in KB/s | Maximum bytes-per-second transfer rate for the system. You can set this value as an integer between 0 and $2^{63-1}$ in KB/second depending on the system configuration. |
Bandwidth minimum goal

Minimum bandwidth with which the system must perform. If you set:

- 1 — The bandwidth minimum goal setting is disabled.
- 2 — The bandwidth minimum goal has no limit.

Bandwidth maximum limit

Maximum bandwidth with which the system can perform. If you set:

- 1 — The bandwidth maximum limit setting is disabled.
- 2 — The bandwidth maximum limit is enabled, but not set.

Latency

Default Latency

Select default latency.

The options are:

- Yes — Sets the default latency.
- No — Enables options to provide latency goals in milliseconds and microseconds.

Latency goal in microseconds

Latency goal per microsecond.

Latency goal in milliseconds

Latency goal per millisecond.

NOTE: The 3PAR Priority Optimization software sets the values for IOPS and bandwidth in QoS rules in absolute numbers, not in percentages.

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.

   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Quality of Service management > System folder, and double-click the System folder.

4. Select Modify QoS rule for system and perform one of the following:

   - Click the Start workflow ( ) icon.
   - Right-click Modify QoS rule for system, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Modify QoS rule for system window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Qos Target Parameters tab, change the following settings as required:
7. On the **IOPS Limits** tab, change the following settings as required:
   - IOPS minimum goal
   - IOPS maximum limit
   - I/O minimum goal
   - I/O maximum limit

8. On the **Bandwidth Limits** tab, change the following settings as required:
   - Bandwidth rate minimum goal in KB/s
   - Bandwidth rate maximum limit in KB/s
   - Bandwidth minimum goal
   - Bandwidth maximum limit

9. On the **Latency** tab, change the following settings as required:
   - Default Latency
   - Latency goal in microseconds
   - Latency goal in milliseconds

10. Click **Submit**.
    You can use **Next** or **Previous** to navigate through the tabs.

### Quality of Service (QoS) for virtual volume sets

#### Creating QoS rule for virtual volume set

To create QoS rules for a virtual volume set, use the Create QoS rule for Virtual Volume Set workflow.

**Field Descriptions**

**Table 113: Create QoS rule for Virtual Volume Set**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array in which the virtual volume set is configured. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>QoS Target Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Virtual Volume Set</td>
<td>Name of the virtual volume set.</td>
</tr>
</tbody>
</table>
Enable QoS rule for the target

Enable the QoS rule for the virtual volume set. A QoS rule that is created becomes active immediately. You can use the following options to change the settings:

- Yes — The system creates the QoS rule and applies to the virtual volume set.
- No — The system creates and saves the rule, but does not apply to the virtual volume set.

Priority

Priority of the operations in the virtual volume set. The options are:

- LOW
- NORMAL
- HIGH

Use high priority for critical applications and lower priority less critical applications.

IOPS Limits

<table>
<thead>
<tr>
<th>IOPS minimum goal</th>
<th>Minimum number of I/O operations that the virtual volume set must perform in a second. You must set IOPS maximum limit if you set the minimum goal. This setting specifies the minimum number of read and write operations in a second.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOPS maximum limit</td>
<td>Maximum number of I/O operations that can be run per second. This setting specifies the maximum number of read and write operations that can be performed in a second.</td>
</tr>
</tbody>
</table>

I/O minimum goal

Minimum number of I/O operations that the virtual volume set must perform. If you set:

- 1 — The I/O minimum goal setting is disabled.
- 2 — The I/O minimum goal has no limit.

I/O maximum limit

Maximum number of I/O operations that the virtual volume set can perform. You must set the I/O maximum limit if you set the minimum limit. If you set:

- 1 — The I/O maximum limit setting is disabled.
- 2 — The I/O maximum limit is enabled, but not set.

Bandwidth Limits

<table>
<thead>
<tr>
<th>Bandwidth rate minimum goal in KB/s</th>
<th>Minimum bytes-per-second transfer rate for the virtual volume set.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandwidth rate maximum limit in KB/s</td>
<td>Maximum bytes-per-second transfer rate for the virtual volume set. You can set this value as an integer between 0 and $2^{63}-1$ in KB/second depending on the system configuration.</td>
</tr>
</tbody>
</table>
| Bandwidth minimum goal | Minimum bandwidth with which the virtual volume set must perform. If you set:
- 1 — The bandwidth minimum goal setting is disabled.
- 2 — The bandwidth minimum goal has no limit. |
**Bandwidth maximum limit**

Maximum bandwidth with which the virtual volume set can perform. If you set:

- **1** — The bandwidth maximum limit setting is disabled.
- **2** — The bandwidth maximum limit is enabled, but not set.

**Latency**

**Default Latency**

Selects the default latency.

The options are:

- **Yes** — Sets the default latency.
- **No** — Enables options to provide latency goals in milliseconds and microseconds.

**Latency goal in microseconds**

Latency goal per microsecond.

**Latency goal in milliseconds**

Latency goal per millisecond.

**NOTE:** The 3PAR Priority Optimization software sets the values for IOPS and bandwidth in QoS rules in absolute numbers, not in percentages.

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   
The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Quality of Service management > Virtual Volume Set (VVSET)** folder, and double-click the **Virtual Volume Set (VVSET)** folder.

4. Select **Create QoS rule for Virtual Volume Set** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Create QoS rule for Virtual Volume Set**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Create QoS rule for Virtual Volume Set** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Qos Target Parameters** tab, enter the following settings:

   - **Virtual Volume Set**
   - **Enable QoS rule for the target**
   - **Priority**

7. On the **IOPS Limits** tab, enter the following settings:
8. On the **Bandwidth Limits** tab, enter the following settings:
   - Bandwidth rate minimum goal in KB/s
   - Bandwidth rate maximum limit in KB/s
   - Bandwidth minimum goal
   - Bandwidth maximum limit

9. On the **Latency** tab, enter the following settings:
   - Default Latency
   - Latency goal in microseconds
   - Latency goal in milliseconds

10. Click **Submit**.
    You can use **Next** or **Previous** to navigate through the tabs.

### Deleting QoS rule for virtual volume set

To delete an existing rule for a virtual volume set in a selected HPE 3PAR StoreServ system, use the **Delete QoS Rule for Virtual Volume Set** workflow. You need not disable a QoS rule to remove an active rule.

#### Field Descriptions

**Table 114: Delete QoS rule for Virtual Volume Set**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ connection</strong></td>
<td>Name of the 3PAR array in which the virtual volume set is configured. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>QoS Target Parameter</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Virtual Volume Set</strong></td>
<td>Name of the virtual volume set. You can select a virtual volume set from the inventory.</td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows ( )** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the Quality of Service management > Virtual Volume Set (VVSET) folder, and double-click the Virtual Volume Set (VVSET) folder.

4. Select Delete QoS rule for Virtual Volume Set and perform one of the following:

   - Click the Start workflow ( ) icon.
   - Right-click Delete QoS rule for Virtual Volume Set, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Create QoS rule for Virtual Volume Set window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the QoS Target Parameters tab, enter the virtual volume set name to delete.

7. Click Submit.

Modifying QoS rule for virtual volume set

Field Descriptions

Table 115: Modify QoS rule for Virtual Volume Set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array in which the virtual volume set is configured. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>QoS Target Parameters</td>
<td></td>
</tr>
<tr>
<td>Enable QoS rule for the target</td>
<td>Enable the QoS rule for the virtual volume set. A QoS rule that is created becomes active immediately. You can use the following options to change the settings:</td>
</tr>
<tr>
<td></td>
<td>• Yes — The system creates the QoS rule and applies to the virtual volume set.</td>
</tr>
<tr>
<td></td>
<td>• No — The system creates and saves the rule, but does not apply to the virtual volume set.</td>
</tr>
<tr>
<td>Priority</td>
<td>Priority of the operations in the virtual volume set. The options are:</td>
</tr>
<tr>
<td></td>
<td>• LOW</td>
</tr>
<tr>
<td></td>
<td>• NORMAL</td>
</tr>
<tr>
<td></td>
<td>• HIGH</td>
</tr>
<tr>
<td>IOPS Limits</td>
<td></td>
</tr>
<tr>
<td>IOPS minimum goal</td>
<td>Minimum number of I/O operations that the virtual volume set must perform in a second. You must set IOPS maximum limit if you set the minimum goal. This setting specifies the minimum number of read and write operations in a second.</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th><strong>IOPS maximum limit</strong></th>
<th>Maximum number of I/O operations that can be run per second. This setting specifies the maximum number of read and write operations that can be performed in a second.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I/O minimum goal</strong></td>
<td>Minimum number of I/O operations that the virtual volume set must perform. If you set:</td>
</tr>
<tr>
<td></td>
<td>• 1 — The I/O minimum goal setting is disabled.</td>
</tr>
<tr>
<td></td>
<td>• 2 — The I/O minimum goal has no limit.</td>
</tr>
<tr>
<td><strong>I/O maximum limit</strong></td>
<td>Maximum number of I/O operations that the virtual volume set can perform. You must set the I/O maximum limit if you set the minimum limit. If you set:</td>
</tr>
<tr>
<td></td>
<td>• 1 — The I/O maximum limit setting is disabled.</td>
</tr>
<tr>
<td></td>
<td>• 2 — The I/O maximum limit is enabled, but not set.</td>
</tr>
</tbody>
</table>

**Bandwidth Limits**

<table>
<thead>
<tr>
<th><strong>Bandwidth rate minimum goal in KB/s</strong></th>
<th>Minimum bytes-per-second transfer rate for the virtual volume set.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bandwidth rate maximum limit in KB/s</strong></td>
<td>Maximum bytes-per-second transfer rate for the virtual volume set. You can set this value as an integer between 0 and $2^{63-1}$ in KB/second depending on the system configuration.</td>
</tr>
<tr>
<td><strong>Bandwidth minimum goal</strong></td>
<td>Minimum bandwidth with which the virtual volume set must perform. If you set:</td>
</tr>
<tr>
<td></td>
<td>• 1 — The bandwidth minimum goal setting is disabled.</td>
</tr>
<tr>
<td></td>
<td>• 2 — The bandwidth minimum goal has no limit.</td>
</tr>
<tr>
<td><strong>Bandwidth maximum limit</strong></td>
<td>Maximum bandwidth with which the virtual volume set can perform. If you set:</td>
</tr>
<tr>
<td></td>
<td>• 1 — The bandwidth maximum limit setting is disabled.</td>
</tr>
<tr>
<td></td>
<td>• 2 — The bandwidth maximum limit is enabled, but not set.</td>
</tr>
</tbody>
</table>

**Latency**

<table>
<thead>
<tr>
<th><strong>Default Latency</strong></th>
<th>Selects the default latency.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The options are:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Yes</strong> — Sets the default latency.</td>
</tr>
<tr>
<td></td>
<td>• <strong>No</strong> — Enables options to provide latency goals in milliseconds and microseconds.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Latency goal in microseconds</strong></th>
<th>Latency goal per microsecond.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Latency goal in milliseconds</strong></td>
<td>Latency goal per millisecond.</td>
</tr>
</tbody>
</table>

**NOTE:** The 3PAR Priority Optimization software sets the values for IOPS and bandwidth in QoS rules in absolute numbers, not in percentages.
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.

The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.

All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Quality of Service management > Virtual Volume Set (VVSET) folder, and double-click the Virtual Volume Set (VVSET) folder.

4. Select Modify QoS rule for Virtual Volume Set and perform one of the following:

   • Click the Start workflow ( ) icon.
   • Right-click Modify QoS rule for Virtual Volume Set, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Modify QoS rule for Virtual Volume Set Set window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the Qos Target Parameters tab, change the following settings as required:

   • Virtual Volume Set
   • Enable QoS rule for the target
   • Priority

7. On the IOPS Limits tab, change the following settings as required:

   • IOPS minimum goal
   • IOPS maximum limit
   • I/O minimum goal
   • I/O maximum limit

8. On the Bandwidth Limits tab, change the following settings as required:

   • Bandwidth rate minimum goal in KB/s
   • Bandwidth rate maximum limit in KB/s
   • Bandwidth minimum goal
   • Bandwidth maximum limit

9. On the Latency tab, change the following settings as required:
- Default Latency
- Latency goal in microseconds
- Latency goal in milliseconds

10. Click Submit.
    You can use Next or Previous to navigate through the tabs.

### Querying Quality of Service (QoS) rules

### Querying all QoS rules

#### Field Descriptions

**Table 116: Get all QoS rules**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>Name of the 3PAR array. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Quality of Service management > Query** folder, and double-click the **Query** folder.

4. Select **Get all QoS rules** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Get all QoS rules**, and click **Start workflow**.
   - Press Ctrl+R.

   The **Start Workflow : Get all QoS rules** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. Click **Submit**.
   You can use Next or Previous to navigate through the tabs.

### Querying QoS rules by virtual volume set

#### Field Descriptions
Table 117: Get QoS rules by Virtual Volume Set

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array in which the virtual volume set is configured. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Qos Target Parameters**

| Virtual Volume Set          | Name of the specific virtual volume set. You can select a virtual volume set from the inventory.                                       |

**Procedure**

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the Quality of Service management > Query folder, and double-click the Query folder.
4. Select Get QoS rules by Virtual Volume Set and do one of the following:
   - Click the Start workflow icon.
   - Right-click Get QoS rules by Virtual Volume Set, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Get QoS rules by Virtual Volume Set window appears.
5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.
6. On the QoS Target tab, enter the volume set name.
7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

**Querying QoS rules for system**

**Field Descriptions**

Table 118: Get QoS rules for system

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ connection</td>
<td>Name of the 3PAR array. You can select a HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Quality of Service management > Query folder, and double-click the Query folder.

4. Select Get QoS rules for system and perform one of the following:

   - Click the Start workflow icon.
   - Right-click Get QoS rules for system, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Get QoS rules for system window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. Click Submit.

   You can use Next or Previous to navigate through the tabs.

Remote Copy management

HPE 3PAR Remote Copy software is a data replication solution for HPE 3PAR StoreServ Storage systems. Data can be replicated to remote locations which allows the protection and sharing of data. Remote Copy when combined with appropriate clustering technology, services, and processes, can serve as the foundation for a Disaster Recovery solution.

Some of the terms used in the workflows and queries of remote copy management are described below:

Remote Copy groups

A Remote Copy group is a group of one or more virtual volumes to be replicated to another system. Because the volumes in a Remote Copy group are related, Remote Copy ensures that the data in the virtual volumes within the group maintain write consistency. Remote Copy operations are performed on the Remote Copy group rather than individual volumes.

For example, when you start or stop Remote Copy, operations are started and stopped for the whole Remote Copy group.

Remote Copy links

Remote Copy links establish communication between storage systems. When you create target definitions for a system during setup, define a minimum of one pair of links for each secondary system. For redundancy, configure more than one communication network between storage systems. Replication can then continue even if one of the networks fails.

When you create a link, it becomes both a sending and receiving link for the port specified in the command.

Remote Copy targets

When you set up HPE 3PAR Remote Copy, you configure the secondary system as the target of the primary system, and the primary system as the target of the secondary system.

For example, in a Remote Copy configuration composed of System1 and System2, the target system for System1 is System2, and the target system for System2 is System1.

In Remote Copy, "target" has a special meaning. A primary or primary-rev system sends data for a Remote Copy group using a particular target on a secondary system. The "target" specified indicates which physical...
links and replication mode are used to send the data. A target can have only one replication mode. Creating targets on both systems in the Remote Copy configuration:

- Links the systems.
- Allows for data flow in either direction, depending on the configuration and on temporary situations such as downtime or failure and disaster recovery.

Creating a Remote Copy Group

To create a Remote Copy group in the selected HPE 3PAR StoreServ array, use the 'Create Remote Copy Group' workflow.

Field descriptions

Table 119: Create Remote Copy Group

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Remote Copy group parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Name of remote copy group</td>
<td>Specifies the name of the Remote Copy group to create.</td>
</tr>
<tr>
<td>3PAR domain in which remote copy group will be created</td>
<td>Specifies the domain in which to create the Remote Copy group.</td>
</tr>
<tr>
<td><strong>Source system parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Source user CPG</td>
<td>Specifies the local user CPG used for auto-created volumes.</td>
</tr>
<tr>
<td>Source copy CPG</td>
<td>Specifies the local snap CPG used for auto-created volumes.</td>
</tr>
<tr>
<td><strong>Target system parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Target StoreServ connection</td>
<td>Name of the HPE 3PAR Target StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Mode</td>
<td>Specifies the volume group mode.</td>
</tr>
<tr>
<td></td>
<td>• SYNC</td>
</tr>
<tr>
<td></td>
<td>• PERIODIC</td>
</tr>
<tr>
<td></td>
<td>• ASYNC</td>
</tr>
<tr>
<td>Target copy CPG</td>
<td>Specifies the copy CPG used for auto-created target volumes.</td>
</tr>
</tbody>
</table>
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the Remote Copy management folder.

4. Select Create Remote Copy Group and do one of the following:

   • Click the Start workflow ( ) icon.
   • Right-click Create Remote Copy Group, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Create Remote Copy Group window appears.

5. Do the following:
   a. Specify the Connection.
   b. Specify the Remote copy group parameters.
   c. Specify the Source system parameters.
   d. Specify the Target system parameters.

6. Click Submit.

Adding a volume to a Remote Copy Group

To add a volume to a Remote Copy group in the selected HPE 3PAR StoreServ array, use the 'Add volume to Remote Copy Group' workflow.

Field descriptions

Table 120: Add volume to Remote Copy Group

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Remote Copy group parameter</td>
<td></td>
</tr>
<tr>
<td>Remote copy group name</td>
<td>Name of the Remote copy group.</td>
</tr>
</tbody>
</table>
### Volume Auto Creation

If `volumeAutoCreation` is set to true, the secondary volumes should be created automatically on the target using the CPG associated with the Remote Copy group on that target.

This cannot be set to true if the snapshot name is specified.

### Skip Initial Sync

If `skipInitialSync` is set to true, the volume should skip the initial sync. This is for the admission of volumes that have been presynced with the target volume.

This cannot be set to true if the snapshot name is specified.

### Source system parameters

| Source Volume       | Specifies the name of the existing virtual volume to be admitted to an existing Remote Copy group. |

### Target system parameters

<table>
<thead>
<tr>
<th>Target StoreServ Connection</th>
<th>Name of the HPE 3PAR Target StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target volume name</td>
<td>The target name associated with this group.</td>
</tr>
</tbody>
</table>

### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the **Remote Copy management** folder.

4. Select **Add Volume to Remote Copy Group** and do one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Add Volume to Remote Copy Group**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Add Volume to Remote Copy Group** window appears.

5. Do the following:

   a. Specify the **Connection**.

   b. Specify the **Remote Copy group parameters**.
c. Specify the Source system parameters.

d. Specify the Target system parameters.

6. Click Submit.

Modifying a Remote Copy Group

To modify a Remote Copy group in the selected HPE 3PAR StoreServ array, use the 'Modify Remote Copy Group' workflow.

Field descriptions

Table 121: Modify Remote Copy Group

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Remote Copy group parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Name of remote copy group</td>
<td>Name of the remote copy group.</td>
</tr>
<tr>
<td><strong>Source system parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Enable Copy CPG</td>
<td>Delete (true) or add (false) sourceCopyCPG and targetCopyCPG of the Remote Copy group.</td>
</tr>
<tr>
<td>Enable UserCPG</td>
<td>Delete (true) or add (false) sourceUserCPG and targetUserCPG of the Remote Copy group.</td>
</tr>
<tr>
<td>Source copy CPG</td>
<td>Specifies the local snap CPG for use by auto-created volumes.</td>
</tr>
<tr>
<td>Source user CPG</td>
<td>Specifies the local user CPG for use by auto-created volumes.</td>
</tr>
<tr>
<td><strong>Target system parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Target StoreServ connection</td>
<td>Name of the HPE 3PAR Target StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Target copy CPG</td>
<td>Specifies the snap CPG on the target for use by auto-created volumes.</td>
</tr>
<tr>
<td>Target user CPG</td>
<td>Specifies the user CPG on the target for use by auto-created volumes.</td>
</tr>
</tbody>
</table>
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the Remote Copy management folder.

4. Select Modify Remote Copy Group and do one of the following:

   • Click the Start workflow ( ) icon.
   • Right-click Modify Remote Copy Group, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Modify Remote Copy Group window appears.

5. Do the following:

   a. Specify the Connection.
   b. Specify the Remote copy group parameters.
   c. Specify the Source system parameters.
   d. Specify the Target system parameters.

6. Click Submit.

Modifying a Remote Copy Group Target

To modify a remote copy group target in the selected HPE 3PAR StoreServ array, use the 'Modify Remote Copy Group Target' workflow.

Field descriptions

Table 122: Modify Remote Copy Group Target

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Remote Copy group parameters</td>
<td></td>
</tr>
<tr>
<td>Name of remote copy group</td>
<td>Name of the remote copy group.</td>
</tr>
<tr>
<td>Target system parameters</td>
<td></td>
</tr>
</tbody>
</table>

Table Continued
### Target StoreServ Connection

Name of the HPE 3PAR Target StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.

### Set of modification parameters

(Any one can be set)

- **Policies**: The policies to be assigned to the group.
- **Mode**: Volume group mode.
- **Period**: Specifies that asynchronous periodic mode groups should be periodically synchronized to the Sync Period. Range is 300-31622400 seconds (1 yr).
- **Frequency**: Specifies the interval in seconds at which Remote Copy takes coordinated snapshots. Range is 300-31622400 seconds (1 year). Applicable only for 'Async' mode.

### Group Policy

**autoRecover**

If the Remote Copy is stopped as a result of the links going down, the group can be automatically restarted after the links come back up. (WSAPI 1.5 and later).

**overPeriodAlert**

If synchronization of a periodic Remote Copy group takes longer to complete than its synchronization period, an alert is generated. (WSAPI 1.5 and later).

**autoFailover**

Automatic failover on a Remote Copy group. (WSAPI 1.5 and later).

**pathManagement**

Path management on a Remote Copy group. (WSAPI 1.5 and later)

### Mode

Specifies the volume group mode.

- **SYNC**
- **PERIODIC**
- **ASYNC**

### Period

**Sync Period**

Specifies that asynchronous periodic mode groups should be periodically synchronized to the \(<\text{period_value}\>\). Range is 300 – 31622400 secs (1 yr).

**Enable Sync Period**

Enables (true) or disables (false) the \(\text{syncPeriod}\) reset time. If false, and \(\text{syncPeriod}\) value is positive, then set.

### Frequency

Table Continued
Snap Frequency  Specifies the interval in seconds at which Remote Copy takes coordinated snapshots. Range is 300–31622400 seconds (1 year). Applicable only for Async mode.

Enable Snap Frequency  Enables (true) or disables (false) the snapFrequency interval. If false, and the snapFrequency value is positive, then the snapFrequency value is set.

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the Remote Copy management folder.

4. Select Modify Remote Copy Group Target and do one of the following:

   • Click the Start workflow ( ) icon.
   • Right-click Modify Remote Copy Group Target, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Modify Remote Copy Group Target window appears.

5. On the Connection tab, Select the HPE 3PAR StoreServ array from the inventory.

6. On the Remote copy group parameters tab, enter the name of the remote copy group.

7. On the Target system parameters tab:

   a. In the Target StoreServ Connection field, enter the name of the Target StoreServ Connection.
   b. In the Set of modification parameters field, select the parameter name.
   c. In the Group policy field, enter the policy.

8. Click Submit.

Modifying a Remote Copy Target

To modify a Remote Copy target in the selected HPE 3PAR StoreServ array, use the 'Modify Remote Copy Target' workflow.

Field descriptions

Table 123: Modify Remote Copy Target

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
</tbody>
</table>

Table Continued
StoreServ Connection  Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.

Target system parameters  
Target StoreServ Connection  Name of the HPE 3PAR Target StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.

mirrorConfig  Enable or disable mirrorConfig policy.

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the Remote Copy management folder.

4. Select Modify Remote Copy Target and do one of the following:

   • Click the Start workflow icon.
   • Right-click Modify Remote Copy Target, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Modify Remote Copy Target window appears.

5. Do the following:

   a. Specify the Connection.
   b. Specify the Target system parameters.

6. Click Submit.

Starting a Remote Copy Group

To start a Remote Copy group in the selected HPE 3PAR StoreServ array, use the ‘Start Remote Copy Group’ workflow.

Field descriptions

Table 124: Start Remote Copy Group

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
</tbody>
</table>

Table Continued
**StoreServ Connection**

Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.

**Remote copy group parameters**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote copy group name</td>
<td>Name of the Remote copy group.</td>
</tr>
<tr>
<td>Skip initial sync</td>
<td>If true (Yes), the volume should skip the initial synchronization and sets the volumes to a synchronized state. The default setting is false (No).</td>
</tr>
</tbody>
</table>

**Target system parameters**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StoreServ target connection</td>
<td>Name of the HPE 3PAR Target StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the **Remote Copy management** folder.

4. Select **Start Remote Copy Group** and do one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Start Remote Copy Group**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Start Remote Copy Group** window appears.

5. Do the following:

   a. Specify the **Connection**.

   b. Specify the **Remote copy group parameters**.

   c. Specify the **Target system parameters**.

6. Click **Submit**.

**Synchronizing a Remote Copy Group**

To synchronize a Remote Copy group in the selected HPE 3PAR StoreServ array, use the 'Sync Remote Copy Group' workflow.

**Field descriptions**
Table 125: Sync Remote Copy Group

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

Remote Copy group parameters

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote copy group name</td>
<td>Name of the remote copy group.</td>
</tr>
<tr>
<td>Full sync</td>
<td>Enables (true) or disables (false) forcing a full synchronization of the Remote Copy group, even if the volumes are already synchronized. Applies only to volume groups in synchronous mode, and can be used to re-synchronize volumes that have become inconsistent.</td>
</tr>
</tbody>
</table>

Target system parameters

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StoreServ target connection</td>
<td>Name of the HPE 3PAR Target StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the Remote Copy management folder.

4. Select Sync Remote Copy Group and do one of the following:

   - Click the Start workflow ( ) icon.
   - Right-click Sync Remote Copy Group, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Sync Remote Copy Group window appears.

5. Do the following:
   a. Specify the Connection.
   b. Specify the Remote copy group parameters.
   c. Specify the Target system parameters.

6. Click Submit.
Stopping a Remote Copy Group

To stop a Remote Copy group in the selected HPE 3PAR StoreServ array, use the 'Stop Remote Copy Group' workflow.

Field descriptions

Table 126: Stop Remote Copy Group

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Remote Copy group parameter</td>
<td></td>
</tr>
<tr>
<td>Remote copy group name</td>
<td>Name of the remote copy group.</td>
</tr>
<tr>
<td>No Snapshot</td>
<td>If true (yes), this option turns off creation of snapshots in synchronous and periodic modes, and deletes the current synchronization snapshots. The default setting is false (no).</td>
</tr>
<tr>
<td>Target system parameters</td>
<td></td>
</tr>
<tr>
<td>StoreServ target connection</td>
<td>Name of the HPE 3PAR Target StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Double-click the Remote Copy management folder.
4. Select Stop Remote Copy Group and do one of the following:
   - Click the Start workflow ( ) icon.
   - Right-click Stop Remote Copy Group, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Stop Remote Copy Group window appears.
5. Do the following:
a. Specify the **Connection**.

b. Specify the **Remote copy group parameters**.

c. Specify the **Target system parameters**.

6. Click **Submit**.

**Recovering a Remote Copy Group**

To recover a Remote Copy group from the selected HPE 3PAR StoreServ array, use the 'Recover Remote Copy Group' workflow.

**Field descriptions**

**Table 127: Recover Remote Copy Group**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Remote Copy group parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Remote Copy Group Name</strong></td>
<td>Name of the Remote Copy Group.</td>
</tr>
<tr>
<td><strong>Target StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR Target StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Recover Remote Copy Group parameters</strong></td>
<td></td>
</tr>
</tbody>
</table>
### Action

Specifies the action to be taken on the specified group.

- **REVERSE_GROUP**: Changes the current direction of the Remote Copy groups. (WSAPI 1.4.2 with 3PAR OS 3.2.1 MU2).

- **FAILOVER_GROUP**: Changes the secondary groups to primary groups on the active system. (WSAPI 1.4.2 with 3PAR OS 3.2.1 MU2).

- **SWITCHOVER_GROUP**: Migrates the Remote Copy group from the primary system to the secondary system without impacting I/O. (WSAPI 1.4.2 with 3PAR OS 3.2.1 MU2).

- **RECOVER_GROUP**: Changes the primary Remote Copy group on the backup system to the secondary Remote Copy group. (WSAPI 1.4.2 with 3PAR OS 3.2.1 MU2).

- **RESTORE_GROUP**: Changes all Remote Copy groups to their natural direction and starts them. (WSAPI 1.4.2 with 3PAR OS 3.2.1 MU2).

- **OVERRIDE_GROUP**: Overrides the failsafe state that is applied to the Remote Copy group.

- **CLX_DR**: Performs the Disaster Recovery operation using Cluster Extension.

### Skip Promote

If true, the snapshots of the groups that are switched from secondary to primary are not promoted to the base volume. Valid for FAILOVER and REVERSE operations only.

The default setting is false.

### Skip Start

If true, groups are not started after role reversal is completed. Valid for only FAILOVER, RECOVER, and RESTORE operations. The default is false.

### Skip Sync

If true, the groups are not synchronized after role reversal is completed. Valid for FAILOVER, RECOVER, and RESTORE operations only. The default setting is false.

### Discard New Data

If true and the group has multiple targets, don't check other targets of the group to see if newer data should be pushed from them. Valid for FAILOVER operation only. The default setting is false.

### No Snapshot

If true, the snapshots are not taken of the groups that are switched from secondary to primary. Valid for FAILOVER, REVERSE, and RESTORE operations. The default setting is false.

*Table Continued*
<table>
<thead>
<tr>
<th><strong>Stop Groups</strong></th>
<th>If true, the groups are stopped before performing the reverse operation. Valid for REVERSE operation only. The default setting is false.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Local Groups Direction</strong></td>
<td>If true, the group’s direction is changed only on the system where the operation is run. Valid for REVERSE operation only. The default setting is false.</td>
</tr>
<tr>
<td><strong>Disaster Recovery Remote Copy Group Parameters</strong></td>
<td>There are two options available:</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>• <strong>Sync</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>recovery</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Sync</strong>: Initiates synchronization of the primary and secondary Remote Copy group volumes, regardless of the valid replication roles (Primary/Secondary, Primary-Rev/ Secondary-Rev, and Primary/ Primary-Rev), modes (synchronous, asynchronous periodic, asynchronous streaming) or group/volume status (New, Started, Stopped, and so on).</td>
</tr>
<tr>
<td></td>
<td><strong>recovery</strong>: Initiates a complete recovery operation for the Remote Copy group in both planned migration and disaster scenarios. Execute this operation on any array for the Remote Copy group volume, regardless of the valid replication roles (Primary/ Secondary, Primary-Rev/ Secondary-Rev, and Primary/ Primary-Rev), modes (synchronous, asynchronous periodic, asynchronous streaming) or group/volume status (New, Started, Stopped, and so on).</td>
</tr>
<tr>
<td><strong>Skip Failover On Link Down</strong></td>
<td>If true, the recovery operation does not perform role reversal and the operation fails. Defaults to false, which performs the role reversal. Applies to the recovery operation only, and used when Remote Copy links are down.</td>
</tr>
</tbody>
</table>

*Table Continued*
<p>| <strong>Force As Primary</strong> | Enables (true) or disables (false), forcing the Remote Copy group role to become primary. If true, forces the Remote Copy group role to become primary, even if that group does not contain the latest data. If false, follows the Cluster Extension disaster recovery process and determines whether to return success or failure. After executing this operation successfully, be sure to execute a recovery operation with Force As Secondary set to true on the other array. Using this parameter incorrectly can lead to inconsistent data between primary and secondary volumes. Use Force As Primary only when the recovery operation fails to change the role of the requested remote copy volume group to primary for valid reasons. Applies to the recovery operation only. If you use both Force As Primary and Skip Failover on Link Down, the Force As Primary parameter takes precedence. |
| <strong>Force As Secondary</strong> | Enables (true) or disables (false), forcing the Remote Copy group role to become Secondary. Use this option after successful execution of the recovery operation with the forceAsPrimary option on the other array. If true, forces the Remote Copy group role to become secondary, regardless of its current role. If false (default), follows the Cluster Extension disaster recovery process and determines whether to return success or failure. Applies to the recovery operation only. |
| <strong>Skip Sync Before Recovery</strong> | Enables (true) or disables (false), skipping data synchronization before performing the role reversal. If true, the recovery operation does not perform the data synchronization from Primary to Secondary volumes before performing the role reversal. Used when the only operation required is role reversal. Manually complete any data synchronization required, and then initiate the recovery operation. Defaults to false, which completes data synchronization of the Remote Copy group before performing the role reversal. Applies to recovery operation, and used when Remote Copy links are up. |
| <strong>Skip Start Disaster</strong> | Enables (true) or disables (false), skipping data synchronization before performing the role reversal. If true, the recovery operation does not perform the data synchronization from Primary to Secondary volumes before performing the role reversal. Used when the only operation required is role reversal. Manually complete any data synchronization required, and then initiate the recovery operation. Defaults to false, which completes data synchronization of the Remote Copy group before performing the role reversal. Applies to recovery operation, and used when Remote Copy links are up. |</p>
<table>
<thead>
<tr>
<th>Operation Timeout</th>
<th>Specify the range. The available range is between 2-43200 seconds.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skip Wait On Sync</td>
<td>Enables (true) or disables (false), skipping the wait time for synchronizing the primary and secondary Remote Copy group volumes. Defaults to false, which waits for data synchronization to complete before proceeding. Applies to sync operation.</td>
</tr>
<tr>
<td>Alert Message</td>
<td>Specify the alert message.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the **Remote Copy management** folder.

4. Select **Recover Remote Copy Group** and do one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Recover Remote Copy Group**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Recover Remote Copy Group** window appears.

5. Do the following:

   a. Specify the **Connection**.
   b. Specify the **Remote Copy Group parameters**.
   c. Specify the **Recover Remote Copy Group parameters**.

6. Click **Submit**.

**Creating a coordinated snapshot of a single volume or all volumes of a Remote Copy Group**

To create a coordinated snapshot of a single or all volumes of a Remote Copy group in the selected HPE 3PAR StoreServ array, use the 'Create Coordinated Remote Copy Group Volume(s) snapshot' workflow.

**Field descriptions**
Table 128: Create Coordinated Remote Copy Group Volume(s) snapshot

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td><strong>Connection</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Remote Copy group parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Name of remote copy group</strong></td>
<td>Name of the remote copy group.</td>
</tr>
<tr>
<td><strong>Coordinated snapshot parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Create coordinated snapshots of all volumes</strong></td>
<td>• Enables (true) snapshots of all volumes of the Remote Copy Group will be created.</td>
</tr>
<tr>
<td></td>
<td>• Disables (false) snapshot of the selected volume of the Remote Copy Group will be created.</td>
</tr>
<tr>
<td><strong>StoreServ Volume</strong></td>
<td>Specifies the virtual volume of the selected remote copy.</td>
</tr>
<tr>
<td><strong>Name for the Snapshot</strong></td>
<td>Specifies a snapshot VV name up to 31 characters in length.</td>
</tr>
<tr>
<td><strong>Comment</strong></td>
<td>Specifies any additional information up to 511 characters for the volume.</td>
</tr>
<tr>
<td><strong>Expiration hours</strong></td>
<td>Specifies the relative time from the current time when volume expires. Positive integer and in the range of 1 - 43,800 hours (1825 days).</td>
</tr>
<tr>
<td><strong>Retention hours</strong></td>
<td>Specifies the amount of time, relative to the current time, that the volume is retained. Positive integer in the range of 1 - 43,800 hours (1825 days).</td>
</tr>
<tr>
<td><strong>skipBlock</strong></td>
<td>Enables (true) or disables (false) whether the storage system blocks host i/o to the parent virtual volume during the creation of a read-only snapshot. Defaults to false.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.
2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.
3. Double-click the **Remote Copy management** folder.
4. Select **Create Coordinated Remote Copy Group Volume(s) snapshot** and do one of the following:
• Click the **Start workflow** icon.

• Right-click **Create Coordinated Remote Copy Group Volume(s) snapshot**, and click **Start workflow**.

• Press **Ctrl+R**.

The **Start Workflow : Create Coordinated Remote Copy Group Volume(s) snapshot** window appears.

5. Do the following:
   
   a. Specify the **Connection**.
   
   b. Specify the **Remote copy group parameters**.
   
   c. Specify the **Coordinated snapshot parameters**.

6. Click **Submit**.

**Deleting volumes from a Remote Copy Group**

To delete a volume from a Remote Copy group in the selected HPE 3PAR StoreServ array, use the 'Delete Volume from Remote Copy Group' workflow.

**Field descriptions**

**Table 129: Delete Volume from Remote Copy Group**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td><strong>StoreServ Connection</strong> Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Remote Copy group parameters</strong></td>
<td><strong>Remote Copy group name</strong> Name of the Remote Copy group.</td>
</tr>
<tr>
<td><strong>Volume</strong></td>
<td>Specifies the name of the existing virtual volume to be admitted to an existing Remote Copy group.</td>
</tr>
<tr>
<td><strong>Remove Secondary Volume</strong></td>
<td>Enables (true) or disables (false) deletion of the remote volume on the secondary array from the system. Defaults to false.</td>
</tr>
<tr>
<td><strong>Keep Snap Volume</strong></td>
<td>Enables (true) or disables (false) retention of the local volume re-synchronization snapshot. Defaults to false.</td>
</tr>
</tbody>
</table>

**NOTE:** Do not use this parameter with 'Keep Snap Volume'.

**NOTE:** Do not use this parameter with 'Remove Secondary Volume'.
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the Remote Copy management folder.

4. Select Delete Volume from Remote Copy Group and do one of the following:
   - Click the Start workflow icon.
   - Right-click Delete Volume from Remote Copy Group, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Delete Volume from Remote Copy Group window appears.

5. Do the following:
   a. Specify the Connection.
   b. Specify the Remote copy group parameters.

6. Click Submit.

Deleting a Remote Copy Group

To delete a Remote Copy group from the selected HPE 3PAR StoreServ array, use the 'Delete Remote Copy Group' workflow.

Field descriptions

Table 130: Delete Remote Copy Group

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Remote Copy group parameters</td>
<td></td>
</tr>
<tr>
<td>Remote Copy group name</td>
<td>Name of the Remote Copy group.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.
3. Double-click the **Remote Copy management** folder.

4. Select **Delete Remote Copy Group** and do one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Delete Remote Copy Group**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Delete Remote Copy Group** window appears.

5. Do the following:

   a. Specify the **Connection**.
   b. Specify the **Remote Copy group parameters**.

6. Click **Submit**.

**Querying Remote Copy groups**

**Querying Remote Copy overall information**

To inquire the details of a Remote Copy in the selected HPE 3PAR StoreServ array, use the ‘Get Remote Copy Overall Info’ query.

**Field Description**

**Table 131: Get Remote Copy Overall Info**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   - The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   - All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Remote Copy management > Query** folder.

4. Select **Get Remote Copy Overall Info**.
   a. Perform one of the following:
• Click the **Start workflow** icon.
• Right-click **Get Remote Copy Overall Info**, and click **Start workflow**.
• Press **Ctrl+R**.

The **Start Workflow : Get Remote Copy Overall Info** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. Click **Submit**.

**Querying all Remote Copy Groups**

To inquire the details of all Remote Copy groups in the selected HPE 3PAR StoreServ array, use the 'Get all Remote Copy Groups' query.

**Field Description**

**Table 132: Get all Remote Copy Groups**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Remote Copy management > Query** folder.

4. Select **Get all Remote Copy Groups**.

   a. Perform one of the following:

      • Click the **Start workflow** icon.
      • Right-click **Get all Remote Copy Groups**, and click **Start workflow**.
      • Press **Ctrl+R**.

      The **Start Workflow : Get all Remote Copy Groups** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. Click **Submit**.
Querying Remote Copy Group Targets

To inquire the details of all Remote Copy group targets in the selected HPE 3PAR StoreServ array, use the 'Get all Remote Copy Group Targets' query.

**Field Description**

**Table 133: Get all Remote Copy Group Targets**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Remote Copy Group Targets</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Remote Copy group name</strong></td>
<td>Name of the Remote Copy group.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the VMware vRealize Orchestrator home page, click the **Workflows** tab.
   
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Remote Copy management > Query** folder.

4. Select **Get all Remote Copy Group Targets**.

   a. Perform one of the following:

      - Click the **Start workflow** icon.
      - Right-click **Get all Remote Copy Group Targets**, and click **Start workflow**.
      - Press Ctrl+R.

      The **Start Workflow : Get all Remote Copy Group Targets** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. In the **Remote Copy Group Target parameters** tab, specify the Remote copy group name.

7. Click **Submit**.

**Querying Remote Copy Links**

To inquire the details of all Remote Copy links in the selected HPE 3PAR StoreServ array, use the 'Get all Remote Copy Links' query.

**Field Description**
Table 134: Get all Remote Copy Links

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
   The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the Remote Copy management > Query folder.
4. Select Get all Remote Copy Links.
   a. Perform one of the following:
      - Click the Start workflow icon.
      - Right-click Get all Remote Copy Links, and click Start workflow.
      - Press Ctrl+R.
   The Start Workflow : Get all Remote Copy Links window appears.
5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.
6. Click Submit.

Querying Remote Copy Targets

To inquire the details of all Remote Copy targets in the selected HPE 3PAR StoreServ array, use the ‘Get all Remote Copy Targets’ query.

Field Description

Table 135: Get all Remote Copy Targets

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.
The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Remote Copy management > Query folder.

4. Select Get all Remote Copy Targets.
   
a. Perform one of the following:
   
   • Click the Start workflow (play) icon.
   • Right-click Get all Remote Copy Targets, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Get all Remote Copy Targets window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. Click Submit.

**Querying Remote Copy Groups by name**

To inquire the details of all Remote Copy groups in the selected HPE 3PAR StoreServ array by name, use the 'Get Remote Copy Group by name' query.

**Field Description**

**Table 136: Get Remote Copy Group by name**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Remote Copy group name</td>
<td>Name of the Remote Copy group.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the VMware vRealize Orchestrator home page, click the Workflows (play) tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Remote Copy management > Query folder.

4. Select Get Remote Copy Group by name.
   
a. Perform one of the following:
Click the Start workflow icon.

Right-click Get Remote Copy Group by name, and click Start workflow.

Press Ctrl+R.

The Start Workflow : Get Remote Copy Group by name window appears.

5. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.

6. In the Remote Copy group parameters tab, specify the Remote Copy group name.

7. Click Submit.

Querying Remote Copy Groups by filter

To inquire the details of Remote Copy groups in the selected HPE 3PAR StoreServ array based on filter criteria, use the 'Get Remote Copy Groups by filter' query.

Field Description

Table 137: Get Remote Copy Groups by filter

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Remote Copy Group parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Remote Copy Group filter</strong></td>
<td>Remote Copy group name or pattern with wild card (**). E.g. mycopygroup*, <em>rctest, rcopy_pattern</em></td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab.

   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.

   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Remote Copy management > Query folder.


   a. Perform one of the following:

   - Click the Start workflow icon.
   - Right-click Get Remote Copy Groups by filter, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Get Remote Copy Groups by filter window appears.
5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. Specify the **Remote Copy group parameters**.

7. Click **Submit**.

### Querying Remote Copy Group Target by name

To inquire the details of Remote Copy group targets in the selected HPE 3PAR StoreServ array based on name, use the ‘Get Remote Copy Group Target by name’ query.

#### Field Description

**Table 138: Get Remote Copy Group Target by name**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Remote Copy Group Target parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Remote Copy group name</strong></td>
<td>Name of the Remote Copy group.</td>
</tr>
<tr>
<td><strong>Target StoreServ connection</strong></td>
<td>Name of the HPE 3PAR Target StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Remote Copy management > Query** folder.

4. Select **Get Remote Copy Group Target by name**.

   a. Perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Get Remote Copy Group Target by name**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Get Remote Copy Group Target by name** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.
6. In the **Remote Copy group parameters** tab, specify the **Remote Copy group name** and the **Target StoreServ connection**.

7. Click **Submit**.

### Querying Remote Copy Group Volume by name

To inquire the details of Remote Copy group volumes in the selected HPE 3PAR StoreServ array based on name, use the ‘Get Remote Copy Group Volume by name’ query.

#### Field Description

**Table 139: Get Remote Copy Group Volume by name**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><em>StoreServ Connection</em></td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
</tbody>
</table>

**Remote Copy group parameters**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remote Copy group name</strong></td>
<td>Name of the Remote Copy group.</td>
</tr>
<tr>
<td><strong>Remote Copy group volume name</strong></td>
<td>Name of the Remote Copy group volume.</td>
</tr>
</tbody>
</table>

#### Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Remote Copy management > Query** folder.

4. Select **Get Remote Copy Group Volume by name**.

   a. Perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Get Remote Copy Group Volume by name**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Get Remote Copy Group Volume by name** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. In the **Remote Copy group parameters** tab, specify the parameters.

7. Click **Submit**.
Querying Remote Copy Group Volumes

To inquire the details of all Remote Copy group volumes in the selected HPE 3PAR StoreServ array, use the 'Get Remote Copy Group Volumes' query.

Field Description

Table 140: Get Remote Copy Group Volumes

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td>Remote Copy Group name</td>
<td>Name of the Remote Copy group.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows (️) tab. The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the Remote Copy management > Query folder.
   a. Perform one of the following:
      - Click the Start workflow (️) icon.
      - Right-click Get Remote Copy Group Volumes, and click Start workflow.
      - Press Ctrl+R.

      The Start Workflow : Get Remote Copy Group Volumes window appears.
6. On the Connection tab, select the HPE 3PAR StoreServ array from the inventory.
7. In the Remote Copy Group parameters tab, specify the Remote Copy group name.
8. Click Submit.

Querying Remote Copy Link by name

To inquire the details of a Remote Copy link in the selected HPE 3PAR StoreServ array based on name, use the 'Get Remote Copy Link by name' query.

Field Description
Table 141: Get Remote Copy Link by name

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Remote Copy link parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Remote Copy link name</td>
<td>Name of the Remote Copy link.</td>
</tr>
</tbody>
</table>

**Procedure**

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.
2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.
3. Navigate to the **Remote Copy management > Query** folder.
4. Select **Get Remote Copy Link by name**.
   a. Perform one of the following:
      - Click the **Start workflow** icon.
      - Right-click **Get Remote Copy Link by name**, and click **Start workflow**.
      - Press **Ctrl+R**.
      The **Start Workflow : Get Remote Copy Link by name** window appears.
6. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.
7. In the **Remote Copy link parameters** tab, specify the **Remote Copy link name**.
8. Click **Submit**.

**Querying Remote Copy Target by name**

To inquire the details of Remote Copy targets in the selected HPE 3PAR StoreServ array based on name, use the ‘Get Remote Copy Target by name’ query.

**Field Description**

Table 142: Get Remote Copy Target by name

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table Continued
**StoreServ Connection**
Name of the HPE 3PAR Source StoreServe array. You can select the HPE 3PAR StoreServ system from the inventory.

**Remote Copy target parameters**

| Remote Copy target name | Name of the Remote Copy target. |

**Procedure**

1. On the VMware vRealize Orchestrator home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Remote Copy management > Query** folder.

4. Select **Get Remote Copy Target by name**.
   
   a. Perform one of the following:
      
      - Click the **Start workflow** icon.
      - Right-click **Get Remote Copy Target by name**, and click **Start workflow**.
      - Press **Ctrl+R**.

      The **Start Workflow : Get Remote Copy Target by name** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. In the **Remote Copy target parameters** tab, specify the **Remote Copy target name**.

7. Click **Submit**.

**Datastore management**
You can use the datastore management workflows to manage the VMware datastores created from 3PAR volumes.

**Metadata management**
Metadata management enables to manage the metadata for the datastore.

**Creating datastore metadata**
To create metadata for datastore, use the Create Datastore Metadata workflow.

**Field descriptions**
Table 143: Create Datastore Metadata

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create metadata for datastore</td>
<td>Name of the vCenter datastore. You can select a datastore from the vCenter inventory.</td>
</tr>
<tr>
<td>Key</td>
<td>Metadata for the datastore. For example: You can set the metadata Key = Project.</td>
</tr>
<tr>
<td>Value</td>
<td>Metadata for the datastore. For example: You can set the metadata Value = Project1.</td>
</tr>
</tbody>
</table>

Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Datastore management > Metadata management** folder, and double-click the **Metadata management** folder.

4. Select **Create Datastore Metadata** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Create Datastore Metadata**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Create Datastore Metadata** window appears.

5. On the **Create metadata for datastore** tab, enter the following details:

   a. VMFS Datastore
   b. Key
   c. Value

6. Click **Submit**.

Deleting datastore metadata

To delete metadata for a datastore, use the Delete Datastore Metadata workflow.

Field descriptions
Table 144: Delete Datastore Metadata

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delete metadata for datastore</td>
<td></td>
</tr>
<tr>
<td>VMFS Datastore</td>
<td>Name of the vCenter datastore. You can select a datastore from the vCenter inventory.</td>
</tr>
<tr>
<td>Key</td>
<td>Metadata for the datastore.</td>
</tr>
<tr>
<td></td>
<td>For example: Metadata Key = Project.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab. The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Datastore management > Metadata management folder, and double-click the Metadata management folder.

4. Select Delete Datastore Metadata, and perform one of the following:
   - Click the Start workflow ( ) icon.
   - Right-click Delete Datastore Metadata, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow: Delete Datastore Metadata window appears.

5. On the Delete metadata for datastore tab, enter the following details:
   a. VMFS Datastore
   b. Key

6. Click Submit.

   The system removes the selected datastore metadata.

Querying datastore metadata

Field descriptions

Table 145: Get Datastore Metadata

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get metadata for datastore</td>
<td></td>
</tr>
<tr>
<td>VMFS Datastore</td>
<td>Name of the vCenter datastore. You can select a datastore from the inventory.</td>
</tr>
</tbody>
</table>
Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the Datastore management > Metadata management folder, and double-click the Metadata management folder.

4. Select Get Datastore Metadata and perform one of the following:

   • Click the Start workflow ( ) icon.
   • Right-click Get Datastore Metadata, and click Start workflow.
   • Press Ctrl+R.

   The Start Workflow : Get Datastore Metadata window appears.

5. On the Get metadata for datastore tab, enter the vCenter datastore name in the VMFS Datastore field.
   You can select a vCenter datastore from the inventory.

6. Click Submit.

Modifying datastore metadata

To modify metadata for a datastore, use the Modify Datastore Metadata workflow.

Field descriptions

Table 146: Modify Datastore Metadata

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modify metadata for datastore</td>
<td></td>
</tr>
<tr>
<td>VMFS Datastore</td>
<td>Name of the vCenter datastore. You can select a datastore from the vCenter inventory.</td>
</tr>
<tr>
<td>Key</td>
<td>Metadata for the datastore.</td>
</tr>
<tr>
<td></td>
<td>For example: Metadata Key = Project.</td>
</tr>
<tr>
<td>Value</td>
<td>Metadata for the datastore.</td>
</tr>
<tr>
<td></td>
<td>For example: You can modify the metadata Value = Project1 to Value = Project2.</td>
</tr>
</tbody>
</table>

**NOTE:** In a key value pair you can modify only the value, not the key.

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.

3. Navigate to the **Datastore management > Metadata management** folder, and double-click the **Metadata management** folder.

4. Select **Modify Datastore Metadata** and perform one of the following:

   - Click the **Start workflow** icon.
   - Right-click **Modify Datastore Metadata**, and click **Start workflow**.
   - Press **Ctrl+R**.

   The **Start Workflow : Modify Datastore Metadata** window appears.

5. On the **Modify metadata for datastore** tab, enter the following details:

   a. **VMFS Datastore**
   b. **Key**
   c. **Value**

6. Click **Submit**.

**Creating 3PAR datastore**

To create a VMFS datastore corresponding to a 3PAR virtual volume, run the Create 3PAR datastore workflow. When you run this workflow, the system queries and verifies the 3PAR hosts in vCenter cluster, creates a virtual volume, exports the virtual volume to the host set, and creates a VMFS datastore. This composite workflow combines 3PAR StoreServ workflows with vCenter operations and creates a VMFS datastore.

**Field descriptions**

**Table 147: Create 3PAR Datastore**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>StoreServ Connection</strong></td>
<td>Name of the HPE 3PAR StoreServ connection. You can select an HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>vCenter cluster to provision VMFS Datastore</strong></td>
<td>Name of the cluster. You can select a cluster from the inventory.</td>
</tr>
<tr>
<td><strong>Create Datastore Parameters</strong></td>
<td></td>
</tr>
<tr>
<td><strong>New Datastore Name</strong></td>
<td>Name of the datastore. You can use maximum 31 alphanumeric characters including hyphen, and an en dash to name a datastore. The name must start and end with a letter or number.</td>
</tr>
<tr>
<td><strong>Enter Datastore Size</strong></td>
<td>The required storage space for the datastore.</td>
</tr>
</tbody>
</table>

*Table Continued*
Unit for the storage space. The options are:
- MiB
- GiB
- TiB

Provision Type
Select any listed provisioning type. There are three provisioning types available:
- Thin
- ThinDedupe
- Full

*NOTE:* The compression is not supported for full provisioning.

<table>
<thead>
<tr>
<th>CPG Name</th>
<th>Name of CPG for the virtual volume. You can select a CPG from the inventory.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copy CPG</td>
<td>Name of the copy CPG. You can select a copy CPG from the inventory.</td>
</tr>
<tr>
<td>Host set</td>
<td>Name of the host group. The host set must contain all the hosts of the cluster. You can select a host set from the inventory.</td>
</tr>
<tr>
<td>Compression</td>
<td>Enable or disable compression. This option is available from WSAPI 1.6 release.</td>
</tr>
<tr>
<td>Protection Parameters</td>
<td></td>
</tr>
<tr>
<td>Enable Protection</td>
<td>Enables to backup or protect the created datastore.</td>
</tr>
<tr>
<td></td>
<td>The options available are:</td>
</tr>
<tr>
<td></td>
<td>• Yes</td>
</tr>
<tr>
<td></td>
<td>• No</td>
</tr>
<tr>
<td></td>
<td>The default setting is <strong>No</strong>.</td>
</tr>
<tr>
<td>RMC Connection</td>
<td>Name of the RMC instance.</td>
</tr>
<tr>
<td>Protection Policy</td>
<td>Name of the RMC protection policy.</td>
</tr>
<tr>
<td>Schedule Name</td>
<td>Name of the schedule.</td>
</tr>
<tr>
<td>Backup Name</td>
<td>Name of the backup.</td>
</tr>
<tr>
<td>Snapshot Name</td>
<td>Name of the snapshot.</td>
</tr>
<tr>
<td>Description</td>
<td>Schedule description.</td>
</tr>
<tr>
<td>Start Date and Time</td>
<td>Start date and time for the schedule.</td>
</tr>
<tr>
<td>End Date</td>
<td>End date for the schedule.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Frequency for the schedule.</td>
</tr>
</tbody>
</table>

*Table Continued*
Recurrence in Minutes | Frequency for the schedule in minutes.
Recurrence in Hours | Frequency for the schedule in hours.
Recurrence in Days | Frequency for the schedule in days.
Weekly frequency recurrence | Weekly frequency for the schedule
Monthly frequency recurrence | Monthly frequency for the schedule
Continue on VM Error | Continue with the creation of a protection schedule even if there are VM errors.

The options available are:
- Yes
- No

The default setting is No.

NOTE: The virtual volume and datastore name remains the same.

Prerequisites

- Verify that for each cluster member host, a host entry is present in 3PAR.
- Verify that all cluster member hosts are added to a host set in 3PAR.

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows tab. The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Double-click the Datastore management folder.
4. Select Create 3PAR Datastore and do one of the following:
   - Click the Start workflow icon.
   - Right-click Create 3PAR Datastore, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Create 3PAR Datastore window appears.
5. On the Connection tab, do the following:
   a. In the StoreServ Connection field, enter the 3PAR StoreServ connection in which the 3PAR virtual volume is configured.
   b. In the vCenter cluster to provision VMFS Datastore field, enter the cluster in which the VMFS datastore is created.
6. On the Create Datastore Parameters tab:
a. In the **New Datastore Name** field, enter a name for the datastore.

b. In the **Enter Datastore Size** field, enter the required storage space for the datastore.

c. From the **Unit** list, select a unit for storage space.

d. In the **Provision Type** field, enter the provision type for the datastore.

e. In the **CPG Name** field, enter the CPG for the datastore.
   You can select a CPG from the inventory.

f. In the **Copy CPG** field, enter the copy CPG for the datastore.
   You can select a copy CPG from the inventory.

g. In the **Host set** field, enter the host group name.

7. On the **Protection Parameters** tab:

   a. In the **Enable Protection** field, enter the name of the schedule.
   
   b. You can enable or disable the **Enable Protection** option by selecting **Yes** or **No**. This option allows to backup or protect the created datastore.
      
      The default setting is **No**.

   c. In the **RMC Connection** field, enter the name of the RMC instance.

      You can select an RMC instance from the inventory.

   d. In the **Protection Policy** field, enter the name of the RMC protection policy.

      You can select an RMC protection policy from the inventory.

   e. In the **Schedule Name** field, enter the name of the schedule.

   f. In the **Backup Name** field, enter the name of the backup storage system.

   g. In the **Snapshot Name** field, enter the name of the snapshot.

   h. In the **Description** field, enter the description for the schedule.

   i. In the **Start Date and Time** field, enter the start date and time of the schedule using the calender.

   j. In the **End Date** field, enter the start date and time of the schedule using the calender.

   k. In the **Frequency** field, enter the frequency value for the schedule.

   l. In the **Recurrence in Minutes** field, enter the frequency of the schedule in number of minutes.

   m. In the **Recurrence in Hours** field, enter the frequency of the schedule in number of hours.

   n. In the **Recurrence in Days** field, enter the frequency of the schedule in number of days.

   o. In the **Weekly frequency recurrence** field, enter the frequency of the schedule in number of weeks.

   p. In the **Monthly frequency recurrence** field, enter the frequency of the schedule in number of months.

   q. You can enable or disable the **Continue on VM error** option by selecting **Yes** or **No**. This option allows you to continue creating a protection schedule even with the VM errors.
      
      The default setting is **No**.

8. Click **Submit**.
Creating 3PAR snapshot for datastore

To create a snapshot for the VMFS datastore, use the Create 3PAR snapshot for datastore workflow.

Field descriptions

Table 148: Create 3PAR snapshot for Datastore

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Snapshot for datastore</td>
<td>Name of the datastore for which snapshot needs to be created. You can select a datastore from the inventory.</td>
</tr>
<tr>
<td>VMFS Datastore</td>
<td>Name of the snapshot. You can use maximum 31 alphanumeric characters including hyphen, period, and underscore. The name must not start with a hyphen.</td>
</tr>
<tr>
<td>Snapshot name</td>
<td>Name of CPG for the snapshot. SnapCPG is set only if it is not set previously, otherwise this field is ignored. You can select a CPG from the inventory.</td>
</tr>
<tr>
<td>snapCPG</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: The snapshot of the datastore creates a snapshot of the underlying 3PAR virtual volume.

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab. The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Double-click the Datastore management folder.
4. Select Create 3PAR snapshot for Datastore and do one of the following:
   - Click the Start workflow ( ) icon.
   - Right-click Create 3PAR snapshot for Datastore, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Create 3PAR snapshot for Datastore window appears.
5. On the Create Snapshot for Datastore tab, do the following:
In the VMFS Datastore field, enter the datastore name for which snapshot needs to be created.

b. In the Snapshot name field, enter a name for the snapshot.

c. In the snapCPG field, enter the name of CPG for the snapshot.

6. Click Submit.

Deleting 3PAR datastore

To delete a datastore from vCenter cluster, use the Delete 3PAR datastore workflow. When you delete a datastore from the cluster, the system deletes the associated 3PAR virtual volume and the snapshot virtual volumes. However, the host set is not deleted.

Field description

Table 149: Delete 3PAR Datastore

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>vCenter Datastore</td>
<td>Name of the datastore to delete from the inventory. You can select a datastore from the inventory.</td>
</tr>
</tbody>
</table>

NOTE: You might have to delete the virtual machines on the specified datastore manually as they are displayed as inactive.

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows (-workflows) tab.
   - The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   - All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the Datastore management folder.

4. Select Delete 3PAR Datastore and do one of the following:
   - Click the Start workflow (-play) icon.
   - Right-click Delete 3PAR Datastore, and click Start workflow.
   - Press Ctrl+R.

   The Start Workflow : Delete 3PAR Datastore window appears.

5. In the vCenter Datastore field, enter the name of the datastore to delete from the inventory.

6. Click Submit.

Expanding VMFS datastore

To add additional storage space to the datastore, use the Expand VMFS datastore workflow.

Field descriptions
Table 150: Expand VMFS Datastore

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose a host</td>
<td></td>
</tr>
<tr>
<td><strong>Datastore on which the VMFS will be expanded</strong></td>
<td>Name of the datastore for the virtual volume. You can select a datastore from the inventory.</td>
</tr>
<tr>
<td><strong>Expand datastore by</strong></td>
<td>Additional storage required for the datastore.</td>
</tr>
<tr>
<td><strong>Size Unit</strong></td>
<td>Unit for the storage space. The options are:</td>
</tr>
<tr>
<td></td>
<td>• MiB</td>
</tr>
<tr>
<td></td>
<td>• GiB</td>
</tr>
<tr>
<td></td>
<td>• TiB</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab. The folders available in the library appear.
2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ. All workflow options available in HPE 3PAR StoreServ appear.
3. Double-click the Datastore management folder.
4. Select Expand VMFS Datastore and perform one of the following:
   - Click the Start workflow ( ) icon.
   - Right-click Expand VMFS Datastore, and click Start workflow.
   - Press Ctrl+R.

The Start Workflow : Expand VMFS Datastore window appears.

5. On the Choose a host tab, do the following:
   a. In the Datastore on which the VMFS will be expanded field, select the datastore for the virtual volume.
   b. In the Expand datastore by field, enter the additional storage space required for the virtual volume.
   c. In the Size Unit field, select the unit for the storage space.

6. Click Submit.

Mounting VMFS datastore from volume

To export and mount a 3PAR volume on a specified VMware cluster as a datastore, use the Mount VMFS datastore from volume workflow. The 3PAR volume can be mounted as a datastore only if the virtual volume has the supported VMware file system.

Field descriptions
Table 151: Mount VMFS Datastore from Volume

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ connection in which the 3PAR virtual volume is configured. You can select an HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Mount Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>vCenter cluster to mount the Volume</td>
<td>Cluster name to which the virtual volume is exported and mounted. You can select a cluster from the inventory.</td>
</tr>
<tr>
<td>Volume</td>
<td>Name of the virtual volume to mount. You can select a virtual volume from the inventory.</td>
</tr>
<tr>
<td>Host set</td>
<td>Name of the host group. You can select a host set from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab. The folders available in the library appear.
2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**. All workflow options available in HPE 3PAR StoreServ appear.
3. Double-click the **Datastore management** folder.
4. Select **Mount VMFS Datastore from Volume** and perform one of the following:
   - Click the **Start workflow** icon.
   - Right-click **Mount VMFS Datastore from Volume**, and click **Start workflow**.
   - Press **Ctrl+R**.
   
   The **Start Workflow: Mount VMFS Datastore from Volume** window appears.
5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.
6. On the **Mount parameters** tab, perform the following:
   a. In the **vCenter cluster to mount the Volume** field, enter the cluster name to which the virtual volume is exported and mounted.
   b. In the **Volume** field, enter the name of the virtual volume to mount.
   c. In the **Host set** field, enter the host group name.
7. Click **Submit**.
   You can use **Next** or **Previous** to navigate through the tabs.
Mounting VMFS datastore from snapshot

To export and mount a snapshot of a datastore on a specified VMware cluster, use the Mount VMFS datastore from snapshot workflow.

Field descriptions

Table 152: Mount VMFS Datastore from snapshot

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>StoreServ Connection</td>
<td>Name of the HPE 3PAR StoreServ connection in which the 3PAR virtual volume is configured. You can select an HPE 3PAR StoreServ system from the inventory.</td>
</tr>
<tr>
<td><strong>Mount Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>vCenter cluster to mount Snapshot</td>
<td>Cluster name to which the snapshot is exported and mounted. You can select a cluster from the inventory.</td>
</tr>
<tr>
<td>Snapshot</td>
<td>Name of the snapshot to mount. You can select a snapshot from the inventory.</td>
</tr>
<tr>
<td>Host set</td>
<td>Name of the host group. The host set must contain all the hosts of the cluster. You can select a host set from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the **VMware vRealize Orchestrator** home page, click the **Workflows** tab.
   The folders available in the library appear.

2. Navigate to the **HPE Storage > 3PAR StoreServ** folder and double-click **3PAR StoreServ**.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the **Datastore management** folder.

4. Select **Mount VMFS Datastore from snapshot** and perform one of the following:

   • Click the **Start workflow** icon.
   • Right-click **Mount VMFS Datastore from snapshot**, and click **Start workflow**.
   • Press **Ctrl+R**.

   The **Start Workflow : Mount VMFS Datastore from snapshot** window appears.

5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Mount parameters** tab, perform the following:
a. In the vCenter cluster to mount Snapshot field, enter the cluster name to which the snapshot has to be exported and mounted.

b. In the Snapshot field, enter the name of the snapshot to mount.

c. In the Host set field, enter the host group name.

7. Click Submit.
   You can use Next or Previous to navigate through the tabs.

Restoring VMFS datastore from snapshot

To restore a datastore from its snapshot, use the Restore VMFS Datastore from snapshot workflow.

Field descriptions

Table 153: Restore VMFS Datastore from snapshot

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common parameters</strong></td>
<td></td>
</tr>
<tr>
<td>VMFS datastore to restore</td>
<td>Name of the datastore to restore from the snapshot. You can select a datastore from the inventory.</td>
</tr>
<tr>
<td>Snapshot</td>
<td>Name the name of the snapshot. You can select a snapshot from the inventory.</td>
</tr>
<tr>
<td>Task Priority</td>
<td>Priority of the restoration. The options are:</td>
</tr>
<tr>
<td></td>
<td>• Medium</td>
</tr>
<tr>
<td></td>
<td>• High</td>
</tr>
<tr>
<td></td>
<td>• Low</td>
</tr>
<tr>
<td></td>
<td>You must select a priority when the restoration starts.</td>
</tr>
<tr>
<td>Take snapshot before restore, the snapshot will have a retention time of 24 hours.</td>
<td>Select Yes to take snapshot before restore, else select No.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the Datastore management folder.

4. Select Restore VMFS Datastore from snapshot and Perform one of the following:
• Click the Start workflow ( ) icon.
• Right-click Restore VMFS Datastore from snapshot, and click Start workflow.
• Press Ctrl+R.

The Start Workflow : Restore VMFS Datastore from snapshot window appears.

5. On the Common parameters tab, do the following:
   a. In the VMFS datastore to restore field, enter the name of the datastore to restore from the snapshot.
   b. In the Snapshot field, enter the name of the snapshot.
   c. From the Task Priority list, select a priority for the task.
   d. Click Yes for the Take snapshot before restore, the snapshot will have a retention time of 24 hours. field

6. Click Submit.

Unmounting 3PAR datastore

To unmount the datastore and unexport the underlying 3PAR volume from the hosts in the cluster, use the Unmount 3PAR datastore workflow.

Field descriptions

Table 154: Unmount 3PAR Datastore

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unmount Datastore</td>
<td></td>
</tr>
<tr>
<td>Datastore</td>
<td>Name of the vCenter datastore. You can select a datastore from the inventory.</td>
</tr>
</tbody>
</table>

Procedure

1. On the VMware vRealize Orchestrator home page, click the Workflows ( ) tab.
   The folders available in the library appear.

2. Navigate to the HPE Storage > 3PAR StoreServ folder and double-click 3PAR StoreServ.
   All workflow options available in HPE 3PAR StoreServ appear.

3. Double-click the Datastore management folder.

4. Select Unmount 3PAR Datastore and perform one of the following:
   a. Click the Start workflow ( ) icon.
   b. Right-click Unmount 3PAR Datastore, and click Start workflow.
   c. Press Ctrl+R.

The Start Workflow : Unmount 3PAR Datastore window appears.
5. On the **Connection** tab, select the HPE 3PAR StoreServ array from the inventory.

6. On the **Unmount Datastore** tab, perform the following:
   
   a. In the **Datastore** field, enter the name of the vCenter datastore.

7. **Click Submit.**
   
   You can use **Next** or **Previous** to navigate through the tabs.
Troubleshooting

Unavailability of HPE 3PAR plugin for vRO in the UI

Symptom
The workflows in HPE 3PAR plugin for vRO are not available in the vRO client user interface even after successful installation of the 3PAR plugin.

Action
1. After you log in to VMware vRealize Orchestrator click Orchestrator Control Center.
2. Select the Startup Options in the Manage menu and click RESTART.

Unavailability of StoreServ connection in the vRO inventory

Symptom
Even after the successful execution of Add 3PAR Connection workflow the corresponding StoreServ connection is not available in the vRO inventory.

Action
1. Go to the Inventory tab of the vRO client user interface.
2. Right click on the HPE 3PAR StoreServ object and click Reload.

Unavailability of virtual volume, host, snapshot, and CPGs in the vRO inventory

Symptom
The inventory items such as virtual volumes, hosts, snapshots, and CPGs which are created on the array using applications such as SSMC, 3PAR CLI are not available in the vRO inventory.

Action
1. Refresh the cache.
   HPE 3PAR plugin for vRO maintains a cache of inventory objects from the 3PAR array. This cache is refreshed at a regular interval of 15 minutes. Thus items created using other applications are available after the next cache refresh and not immediately.
2. Restart of the orchestrator server service if refreshing the cache does not work.

Delay in expanding virtual volume tree in the vRO inventory

Symptom
The 3PAR plug in has a delay in displaying the volumes under the virtual volume tree in the vRO inventory.
Cause
The time required to list the volumes (or any other inventory objects) depends on the number of volumes in the array. For an array with 30,000 volumes this delay can be as high as 6 minutes.
Support and other resources

Support

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:
  http://www.hpe.com/info/assistance
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:
  http://www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates:
  Hewlett Packard Enterprise Support Center
  www.hpe.com/support/hpesc
  Hewlett Packard Enterprise Support Center: Software downloads
  www.hpe.com/support/downloads
  Software Depot
  www.hpe.com/support/softwaredepot
- To subscribe to eNewsletters and alerts:
  www.hpe.com/support/e-updates
- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center More Information on Access to Support Materials page:
  www.hpe.com/support/AccessToSupportMaterials
IMPORTANT: Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Passport set up with relevant entitlements.

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:
http://www.hpe.com/support/selfrepair

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

If your product includes additional remote support details, use search to locate that information.

Remote support and Proactive Care information
HPE Get Connected
  www.hpe.com/services/getconnected
HPE Proactive Care services
  www.hpe.com/services/proactivecare
HPE Proactive Care service: Supported products list
  www.hpe.com/services/proactivecaresupportedproducts
HPE Proactive Care advanced service: Supported products list
  www.hpe.com/services/proactivecareadvancedsupportedproducts

Proactive Care customer information
Proactive Care central
  www.hpe.com/services/proactivecarecentral
Proactive Care service activation
  www.hpe.com/services/proactivecarecentralgetstarted

Warranty information

To view the warranty information for your product, see the links provided below:

HPE ProLiant and IA-32 Servers and Options
  www.hpe.com/support/ProLiantServers-Warranties
HPE Enterprise and Cloudline Servers
  www.hpe.com/support/EnterpriseServers-Warranties
HPE Storage Products
  www.hpe.com/support/Storage-Warranties
HPE Networking Products
  www.hpe.com/support/Networking-Warranties
Regulatory information

To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

www.hpe.com/info/environment

Documentation feedback

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Other resources

HPE 3PAR documentation

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<td>Locating 3PAR documents</td>
<td>The HPE 3PAR StoreServ Storage site: <a href="http://www.hpe.com/info/3par">http://www.hpe.com/info/3par</a></td>
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<tr>
<td></td>
<td>To access 3PAR documents, click the Support link for your product.</td>
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<tr>
<td>Storage concepts and terminology</td>
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<td>HPE 3PAR Management Console User’s Guide</td>
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<td>HPE 3PAR Command Line Interface Administrator’s Manual</td>
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<td>HPE 3PAR System Reporter Software User’s Guide</td>
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<td>Installing and maintaining the Host Explorer agent in order to manage host configuration and connectivity information</td>
<td>HPE 3PAR Host Explorer User’s Guide</td>
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<td>Creating applications compliant with the Common Information Model (CIM) to manage 3PAR storage systems</td>
<td>HPE 3PAR CIM API Programming Reference</td>
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<td>Migrating data from one 3PAR storage system to another</td>
<td>3PAR-to-3PAR Storage Peer Motion Guide</td>
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<td>Configuring the Secure Service Custodian server in order to monitor and control 3PAR storage systems</td>
<td>HPE 3PAR Secure Service Custodian Configuration Utility Reference</td>
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<tr>
<td>Using the CLI to configure and manage HPE 3PAR Remote Copy</td>
<td>HPE 3PAR Remote Copy Software User’s Guide</td>
</tr>
<tr>
<td>Updating 3PAR operating systems</td>
<td>HPE 3PAR Upgrade Pre-Planning Guide</td>
</tr>
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<td>Identifying storage system components, troubleshooting information, and detailed alert information</td>
<td>HPE 3PAR F-Class, T-Class, and StoreServ 10000 Storage Troubleshooting Guide</td>
</tr>
<tr>
<td>Installing, configuring, and maintaining the HPE 3PAR Policy Server</td>
<td>HPE 3PAR Policy Server Installation and Setup Guide</td>
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**Planning for HPE 3PAR storage system setup**

Hardware specifications, installation considerations, power requirements, networking options, and cabling information for 3PAR storage systems
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<td>HPE 3PAR StoreServ 8000 Storage Site Planning Manual</td>
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<td></td>
<td>HPE 3PAR StoreServ 10000 Storage Third-Party Rack Physical Planning Manual</td>
</tr>
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<td></td>
<td>HPE 3PAR Storeserv 20000 Storage Site Planning Manual</td>
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</tbody>
</table>

### Installing and maintaining HPE 3PAR 7200, 7400, and 7450 storage systems

| Installing 7200, 7400, and 7450 storage systems and initializing the Service Processor | HPE 3PAR StoreServ 7000 Storage Installation Guide |
| | HPE 3PAR StoreServ 7450 Storage Installation Guide |
| | HPE 3PAR StoreServ 7000 Storage SmartStart Software User’s Guide |
| Maintaining, servicing, and upgrading 7200, 7400, and 7450 storage systems | HPE 3PAR StoreServ 7000 Storage Service Guide |
| | HPE 3PAR StoreServ 7450 Storage Service Guide |
| Troubleshooting 7200, 7400, and 7450 storage systems | HPE 3PAR StoreServ 7000 Storage Troubleshooting Guide |
| | HPE 3PAR StoreServ 7450 Storage Troubleshooting Guide |
| Maintaining the Service Processor | HPE 3PAR Service Processor Software User Guide |
| | HPE 3PAR Service Processor Onsite Customer Care (SPOCC) User's Guide |

### HPE 3PAR host application solutions

| Backing up Oracle databases and using backups for disaster recovery | HPE 3PAR Recovery Manager Software for Oracle User's Guide |

*Table Continued*
For information about: | See:
--- | ---
Backing up Exchange databases and using backups for disaster recovery | HPE 3PAR Recovery Manager Software for Microsoft Exchange 2007 and 2010 User's Guide

Backing up SQL databases and using backups for disaster recovery | HPE 3PAR Recovery Manager Software for Microsoft SQL Server User’s Guide

Backing up VMware databases and using backups for disaster recovery | HPE 3PAR Management Plug-in and Recovery Manager Software for VMware vSphere User's Guide

Installing and using the HPE 3PAR VSS (Volume Shadow Copy Service) Provider software for Microsoft Windows | HPE 3PAR VSS Provider Software for Microsoft Windows User's Guide

Best practices for setting up the Storage Replication Adapter for VMware vCenter | HPE 3PAR Storage Replication Adapter for VMware vCenter Site Recovery Manager Implementation Guide

Troubleshooting the Storage Replication Adapter for VMware vCenter Site Recovery Manager | HPE 3PAR Storage Replication Adapter for VMware vCenter Site Recovery Manager Troubleshooting Guide

Installing and using vSphere Storage APIs for Array Integration (VAAI) plug-in software for VMware vSphere | HPE 3PAR VAAI Plug-in Software for VMware vSphere User's Guide

**VMware vRealize Orchestrator documentation**

For more information on VMware vRealize Orchestrator, see the following documents at vRealize Orchestrator documentation:

- Installing and Configuring VMware vRealize Orchestrator
- Using the VMware vRealize Orchestrator Client
- Using VMware vRealize Orchestrator Plug-Ins

**Websites**

Hewlett Packard Enterprise Information Library  
[www.hpe.com/info/EIL](http://www.hpe.com/info/EIL)

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix  
[www.hpe.com/storage/spock](http://www.hpe.com/storage/spock)

Storage white papers and analyst reports  
[www.hpe.com/storage/whitepapers](http://www.hpe.com/storage/whitepapers)

VMware sites  