



Hewlett Packard
Enterprise

HPE OneView for VMware vCenter User Guide

Abstract

This document contains detailed instructions for configuring and using HPE OneView for VMware vCenter. It is intended for system administrators who are experienced in virtual and physical IT infrastructure administration and understand server virtualization, storage, and networking concepts.

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Overview

Starting with 8.0 release, HPE OneView for VMware vCenter is available as an appliance only. Launch the Administrator Console using the appliance hostname or IP, for example, `https://<ApplianceHostnameOrIP>`. It cannot be installed on Windows Platform. You can migrate the configuration information from the existing Windows platform to the appliance with the help of Migration Tool. For more information about using the Migration Tool, see the *HPE OneView for VMware vCenter Installation Guide*.

- **HPE OneView for VMware vCenter Server Module**

—Adds HPE ProLiant and HPE BladeSystem hardware monitoring into the HPE OneView for VMware vCenter console. Provides server hardware management capabilities, including comprehensive monitoring, firmware update, vSphere/ESXi image deployment, remote control, end-to-end monitoring for Virtual Connect, and power optimization for HPE servers in the VMware environment.

 **IMPORTANT:**

The HPE OneView for VMware vCenter Server Module and the HPE OneView for VMware vCenter Storage Module are no longer a separate installation. However, the HPE OneView for VMware vCenter Server Module services do not activate unless credentials are provided.

- **HPE OneView for VMware vCenter Storage Module**

—Provides storage configuration and status information for mapping VMs, datastores, and hosts to LUNs on Hewlett Packard Enterprise storage systems. The Storage Module enables you to register HPE Storage Systems and use the VASA provider for supported Hewlett Packard Enterprise storage systems, including HPE 3PAR StoreServ systems. Supports provisioning on HPE 3PAR StoreServ, HPE StoreVirtual, and HPE MSA 1040/2040 storage systems. Supported provisioning tasks include creating, expanding, or deleting a datastore, and creating a VM. Displays view-only information for the HPE StoreOnce Backup systems. HPE OneView for VMware vCenter Storage Module deploys the following virtual appliances:

- HPE StoreOnce VSA
- HPE StoreVirtual VSA

For installation instructions, see the *HPE OneView for VMware vCenter Installation Guide*.

Configuring HPE OneView for vCenter

HPE OneView for vCenter is managed as a plug-in in the vCenter Server environment. Several settings can impact the interaction between HPE OneView for vCenter and vCenter Server. The configuration settings are accessed from the client Home Settings page.

To access the Home Settings page:

Procedure

1. Run the vSphere Web Client and access the home page.
2. Under Administration, click the **Management Administration** icon.

The administration tasks differ depending on which client you are using.

❗ IMPORTANT:

- If you have a Proxy-enabled Windows client and a vSphere/ESXi host using iLO or other management software, you must disable or bypass the Proxy Server for the connection between the HPE OneView for vCenter and iLO on the ProLiant server running as a vSphere/ESXi hosts system. For instructions, see **Error Communicating with iLO at VM host**.
- If you are using a Windows firewall, enable the firewall to access the ports used by HPE OneView for vCenter.

vSphere Web Client administration pages

The vSphere Web Client home page provides access to the following administration pages. The page links are provided in the left navigation pane.

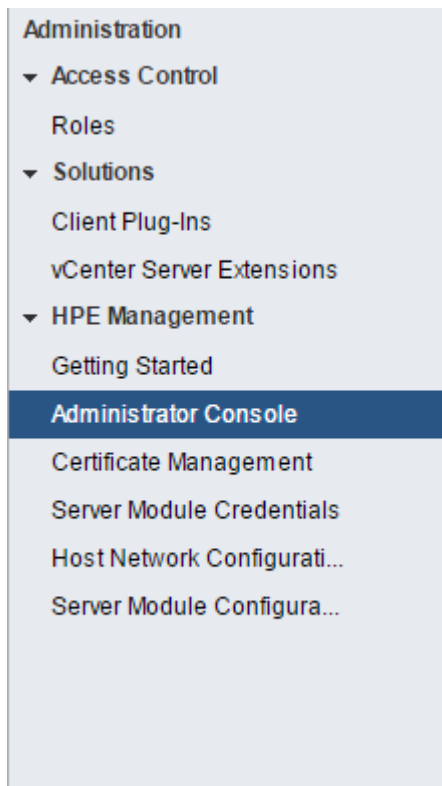


Figure 1: Administration Console

- **Administrator Console**

The HPE OneView for VMware vCenter Administrator Console enables configuration of vCenter server instances and storage systems.

- **Server Module Credentials**

- **Credentials for Platform/Infrastructure Integration**

—This page enables you to identify system credentials. Global credentials and individual credentials can be entered. If you have a server module installed, this page enables you to view, add, delete server passwords and to enter credentials that will allow access to iLO, Onboard Administrator, Virtual Connect, VMware host, and SIM.

- **Credentials for HPE Management Software Integration**

—This page enables you to manage the credentials for HP Smart Update Manager, Insight Control Server Provisioning, Systems Insight Manager, and HPE OneView. You can add credentials for a new HPE OneView instance or delete credentials of an existing entry. If the host or the credentials are invalid, the HPE OneView instance is not added.

- **Certificate Management**

This page enables you to generate a new self-signed certificate for HPE OneView for vCenter or generate a certificate signing request to be signed by a Certificate Authority. You can install a certificate once it is signed.

- **Server Module Configuration**

This page provides configuration information about SIM port, device poll interval, event poll interval, power cost, and Virtual Connect uplink over subscription factor.

Role-based security

HPE OneView for vCenter uses role-based security access. Windows or domain users/groups can be assigned any of the vCenter roles. HPE OneView for vCenter classifies these roles into three categories:

- **Administrator**—The vCenter administrator role maps to this category
- **Read-only**—The vCenter read-only and view-only roles map to this category
- **User**—All other vCenter roles map to this category

An administrator can:

- Run the setup wizard
- Edit the password database
- Use the properties link to edit properties
- Launch Hewlett Packard Enterprise management tools using SSO
- Access the HPE OneView for vCenter Server vSphere Web Client home page

A read-only user can:

- View HPE OneView for vCenter

A user can:

- Launch Hewlett Packard Enterprise management tools, and then log on to use them
- View HPE OneView for vCenter

For information about assigning a user access role, see the *HPE OneView for VMware vCenter Installation Guide*.

Configuring the Server Module for vCenter

After installing the Server Module for vCenter, you can manage Server Module features on the client Home Settings page.

Associating the VMware host to iLO

In order for HPE OneView for vCenter to display management information correctly, the VMware host must be associated with its iLO. The method of iLO association varies, depending on the VMware host configuration.

Automatic association

Automatic host-to-iLO association occurs when HPE OneView for vCenter has HPE ESXi Offline Bundle for VMware ESXi installed on the host and communication credentials are enabled via the Host Properties page or the Server Password Management page.

Manual association

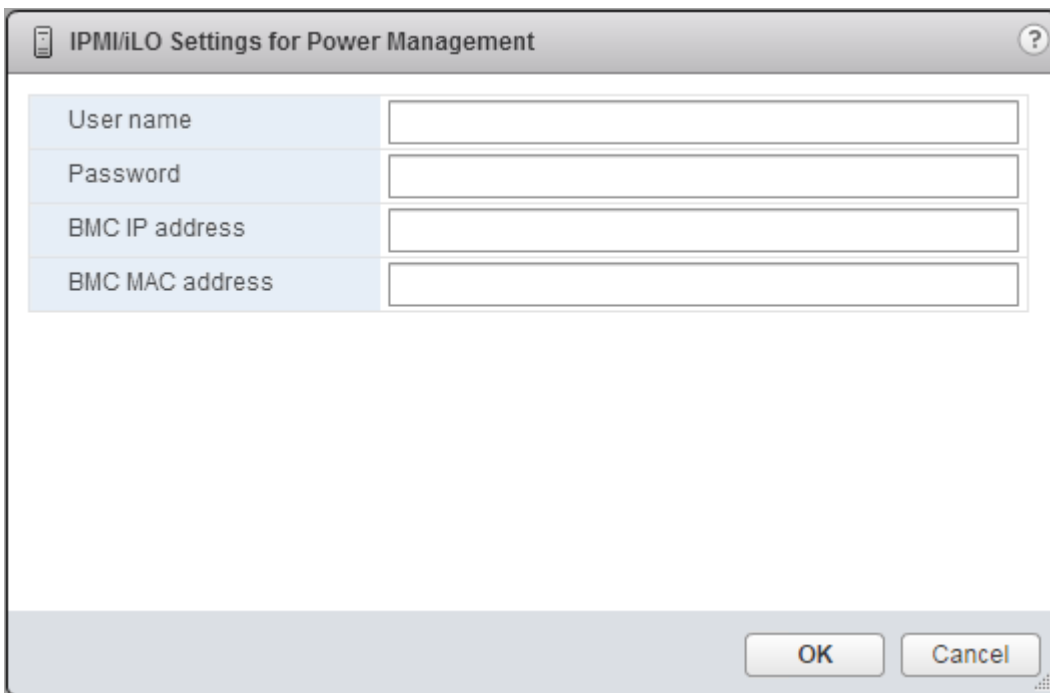
You can manually associate the host to iLO using either the vSphere Web Client VMware Power Management settings or the HPE OneView for vCenter Host Properties page. Manual association is supported in all versions of HPE OneView for vCenter.

Using the VMware Power Management settings

Procedure

1. In the vSphere user interface, click the **Management** tab, and then click **Settings**.
2. Under **System**, click **Power Management**.
3. Click **Edit**. The IPMI/iLO Settings dialog box appears.

The IPMI/iLO Settings for Power Management dialog box appears. See [Figure 2: Edit IPMI/iLO Settings for Power Management dialog box](#) on page 8.




IPMI/iLO Settings for Power Management	
User name	<input type="text"/>
Password	<input type="password"/>
BMC IP address	<input type="text"/>
BMC MAC address	<input type="text"/>

OK Cancel

Figure 2: Edit IPMI/iLO Settings for Power Management dialog box

4. Enter the iLO user name, iLO password, iLO IP address, and iLO MAC address, and then click **OK**.

Using the HPE OneView for vCenter Host Properties page

- Select a host, and then click the **HPE Management** tab.
- Click the **Settings** icon  **Host Properties**.
- Enter the iLO IP address or host name, and a user name and password.

- Select the iLO global settings, or enter the iLO IP address or host name, and a user name and password.
- Select the iLO global settings, or enter the iLO IP address or host name, and a valid user name and password.

Setting Server Module Credentials (vSphere Web Client only)

The Server Module Credentials page enables you to manage the credentials for infrastructure integration and Hewlett Packard Enterprise management software integration.

Credentials for Platform/Infrastructure Integration

This tab enables you to identify system credentials. Global credentials and individual device credentials can be entered.

Global Device Credentials

Procedure

1. Global Device Credentials can be entered for ESXi, Integrated Lights Out (iLO), Onboard Administrator (OA), and Virtual Connect (VC).
2. Use global credentials if your environment uses the same credentials for all or many of the entities in the infrastructure.
3. If credentials have not been defined for an entity's IP/Hostname, the global credential, if defined, is used.


Device Credentials

- Use individual device credentials if your environment uses different credentials for each device. The credentials must be defined for each iLO, OA module, VC module, and VMware host in your environment.
- If global OA and VC credentials are not defined, each OA module and VC module must have an individual credential entry. This includes secondary OA modules and subordinate VC modules.
- You can add or delete credentials configured for the system.

- **Add new credentials**

- Click the **Add** icon 

- **Delete credentials**

- Select the appropriate entry, and then click the **Delete** icon 

Credentials for Management Software Integration

HP Smart Update Manager Credentials

- Enter a valid Hostname/IP Address, Username, and Password.

Insight Control Server Provisioning Credentials

- Enter a valid Hostname/IP Address, Username, and Password.


Systems Insight Manager Credentials

- Enter a valid Hostname/IP Address, Username, and Password.


HPE OneView Controllers

Lists the credentials for all HPE OneView controllers that are configured in the environment. You can perform the following tasks:

- **Add a new HPE OneView controller**

- Click the **Add** icon  If the host or the credentials are invalid, the HPE OneView controller is not added.

- **Delete a HPE OneView instance**

—Select the appropriate instance, and then click the **Delete** icon 

- **Import Credentials**

—To import credentials:

- Create a CSV file containing four fields that include:

- Entity type—
- IP address—
- Username—
- Password—

- A sample CSV file follows:

```
ilo,xx.xx.xx.xx,myusername,mypassword
esx,xx.xx.xx.xx,myusername,mypassword
vcm,xx.xx.xx.xx,myusername,mypassword
esxi,xx.xx.xx.xxx,myusername,mypassword
```

- Select **Upload** on the server credentials page, and then click **Browse** to locate your CSV file. A screen appears with a dialog box. Choose from the following options.

- Select
- Select

To access the Server Module Credentials page:

- Run the vSphere Web Client and access the home page.
- Under Administration, click the **Management Administration** icon.
- Select **Server Module Credentials** in the left pane.

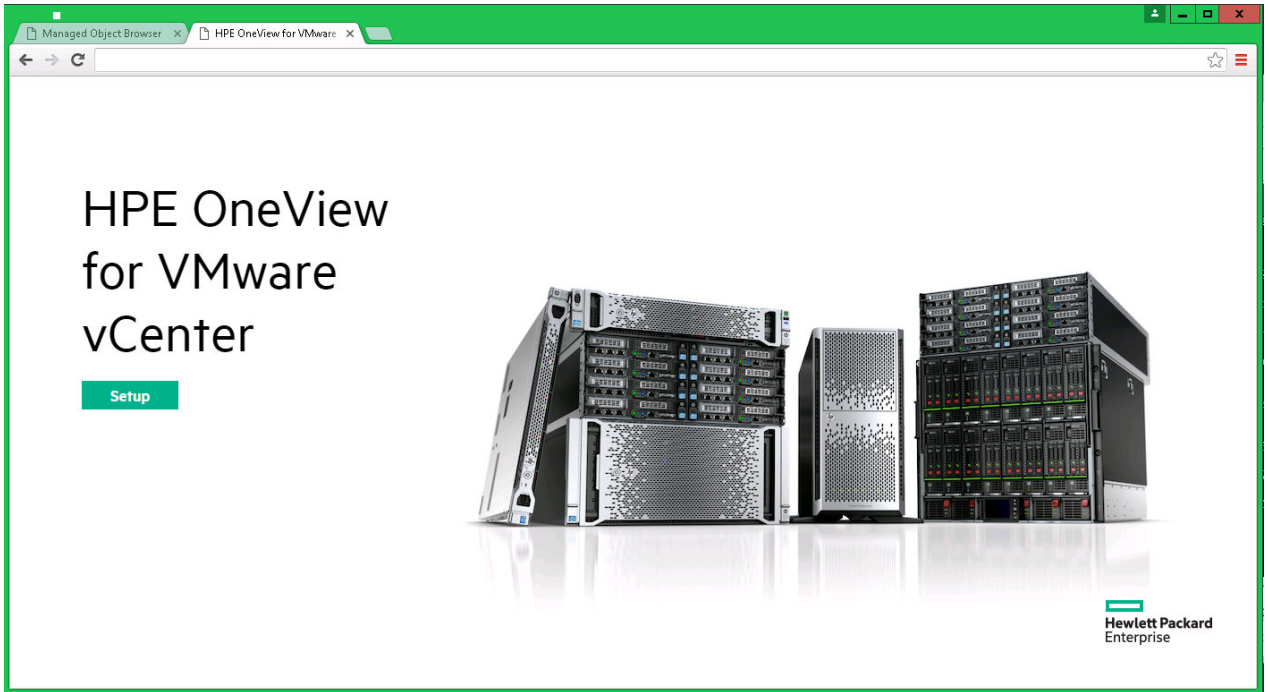
Configuring vCenters and Storage Systems

After the appliance is deployed and running, use the HPE OneView for VMware vCenter Administrator Console to configure storage systems and management servers.

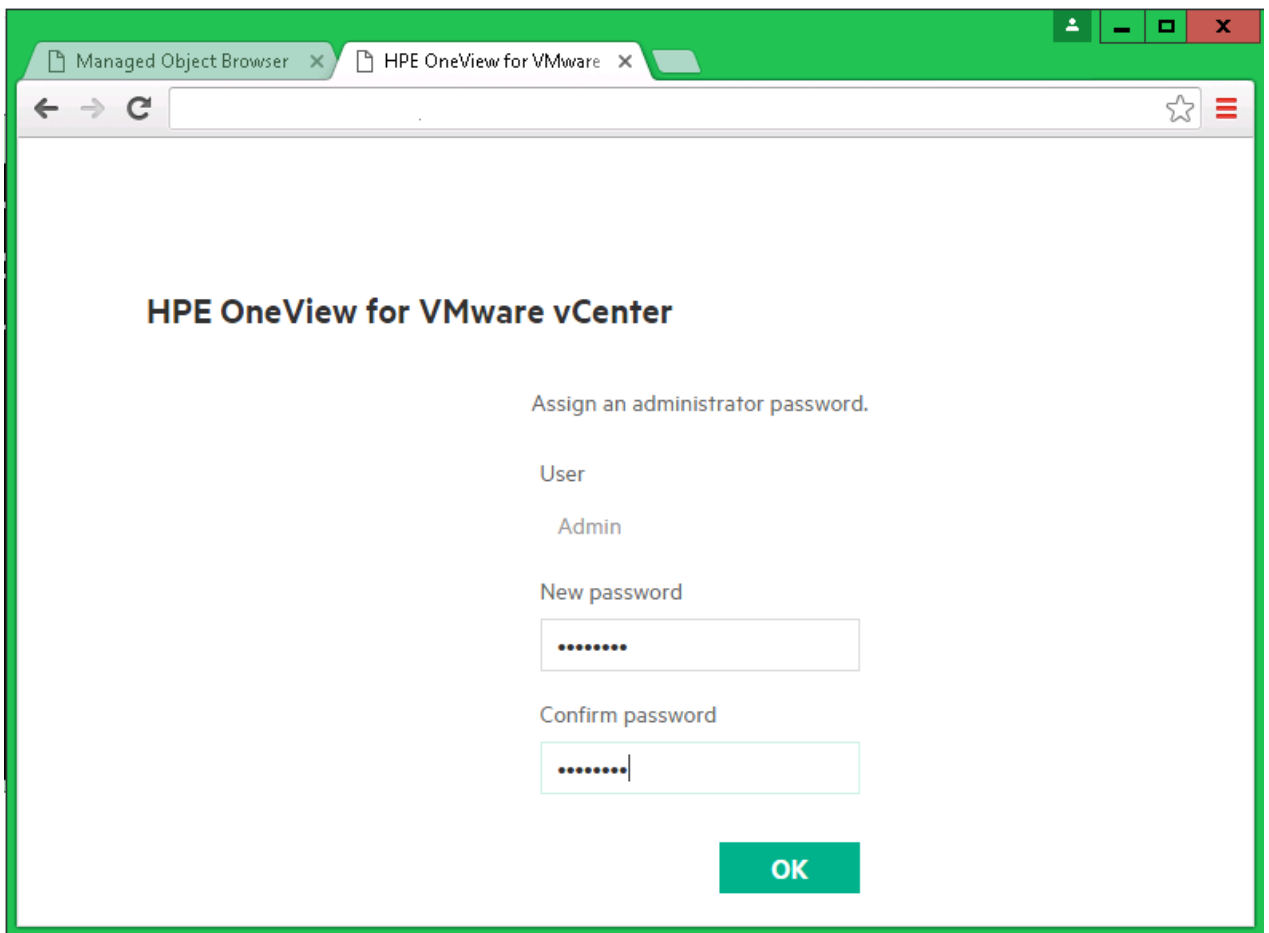
HPE OneView for VMware vCenter Administrator Console

Procedure

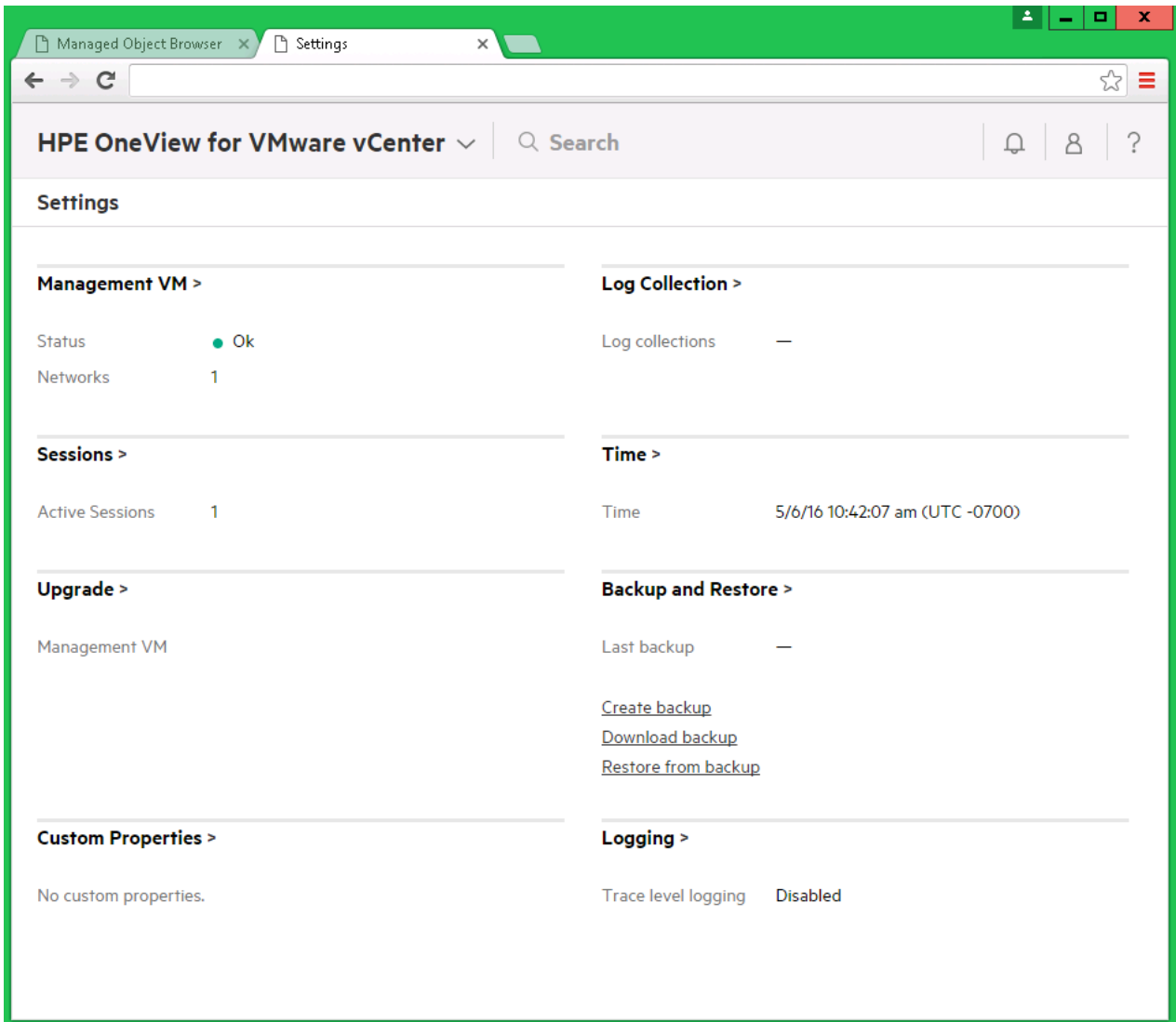
1. Launch the Administrator Console from `https://<ApplianceHostnameOrIP>`.
2. Here, the <applianceHostname> must be a Fully Qualified Domain Name (FQDN), registered in the DNS server, when deploying HPE OneView for VMware vCenter appliance. For more information, see *HPE OneView for VMware vCenter Installation Guide*.



3. Click **Setup**.



4. Assign a password.



5. The Settings page is displayed from where you can perform any of the following tasks:
- Management VM section can be used to configure the network and DNS settings.
 - Trigger Log collection required for logging a support call for the product
 - Find information about all active sessions (deployment, provisioning, and so on) in the appliance
 - Upgrade the appliance to subsequent releases
 - Initiate Backup/Restore of the configuration data about the servers, enclosures, and storage systems in the HPE OneView for VMware vCenter plug-in
 - Define custom properties that can be used for debugging, as suggested by the support personnel
 - Enable Trace-level logging, if required by the support personnel

Using Migration Tool

NOTE:

Skip the migration section if you have either not used HPE OneView for VMware vCenter on Windows platform or do not want to migrate the configuration data from Windows to the appliance.

To migrate the configuration data from Windows to the appliance, you must have the backup file generated by Migration tool along with the password used to encrypt it.

To import data:

Procedure

1. Click **Restore from backup** in the **Backup and Restore** section on the main page of the Administrator Console.
2. Click **Upload file** on the **Restore from backup** page to upload the export file that was created by the migration tool.
3. The export details such as Creation date, filename, and export version is displayed after the tool uploads the file.
4. Provide the password on the **Restore from backup** page that was specified in the Migration tool, at the time of export.
5. Click **Restore**.

After the migration completes successfully, the information about the server, storage, and the vCenter(s) will be available on the HPE OneView for VMware vCenter appliance. You can proceed to configuring the HPE OneView for VMware vCenter appliance.

NOTE:

Restore the configuration on the freshly installed HPE OneView for VMware vCenter appliance, prior to adding vCenter or Storage Systems to HPE OneView for VMware vCenter. In case, you are unable to restore the vCenter certificate, edit the vCenter information and accept the certificate to complete vCenter configurations on the new appliance.

Configuring HPE OneView for VMware vCenter

This section provides information about how to maintain the configuration data for vCenters and HPE storage systems in the HPE OneView for VMware vCenter appliance.

- [Configuring vCenters](#) on page 13
- [Configuring Storage System](#) on page 17

NOTE:

You must have a super user role or Administrator privileges to use all the functionality provided by HPE OneView for vCenter.

Configuring vCenters

This section is about configuring and managing vCenters in the HPE OneView for VMware vCenter environment. You can use the Actions drop down menu to manage (Add, Edit, and Delete) the vCenters currently configured in the environment.

Adding vCenter(s)

Procedure

1. From the main menu of the Administrator Console, select **vCenters**.

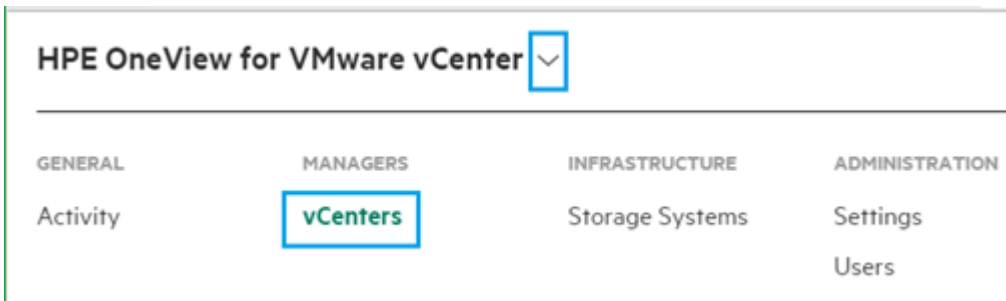


Figure 3: vCenter

2. This lists information about vCenter(s) currently configured in the environment, especially if you have imported the data using the Migration tool.
3. From **vCenters** screen, click **+ Add vCenter** from the master pane or select **Add** from the Actions menu.

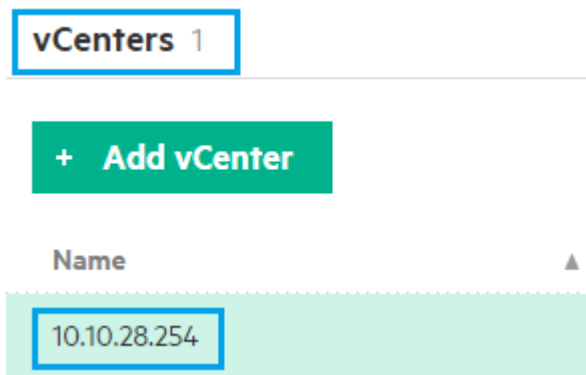


Figure 4: Add vCenter

4. Provide the following details in the Add vCenter dialog box

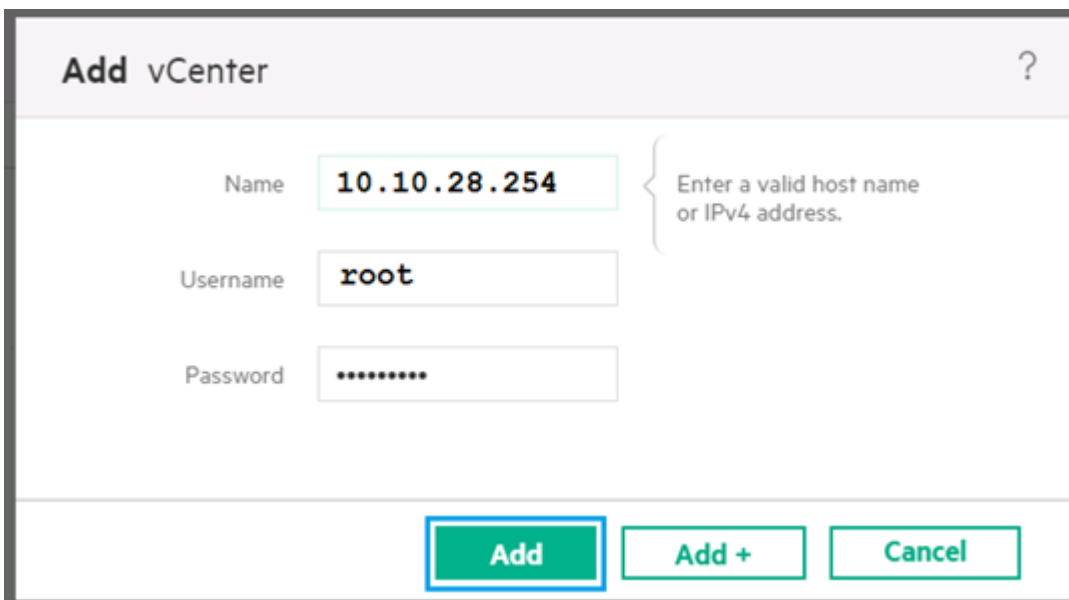
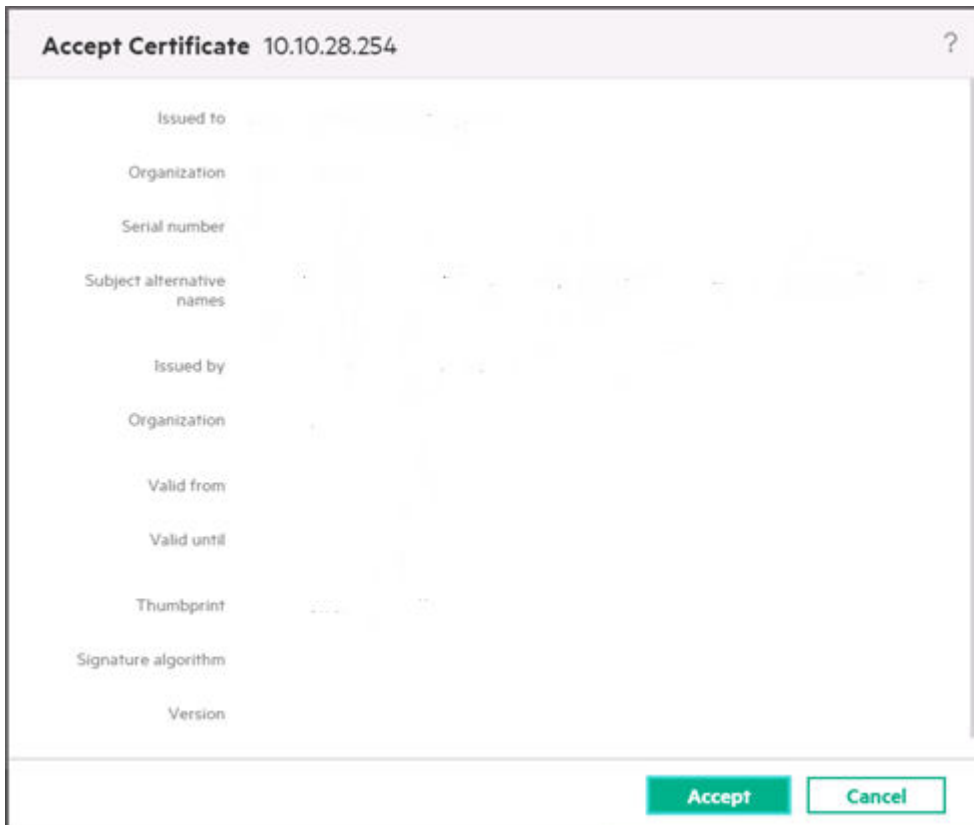


Figure 5: vCenter details

- **Name**

- Specify a valid host name or an IPv4 address.
 - **Username**
 - Specify a valid user name.
 - **Password**
 - Specify a valid password.
5. Click **Add**.
-
- NOTE: Add +**
enables you to add another vCenter in the same dialog box.
-
6. The screen displaying the SSL certificate details appears.



7. Review the details and click **Accept**.

Editing vCenter details

Procedure

1. Select one of the vCenters configured in HPE OneView for VMware vCenter.



Figure 6: Edit vCenter

- From the Actions menu, select **Edit**.

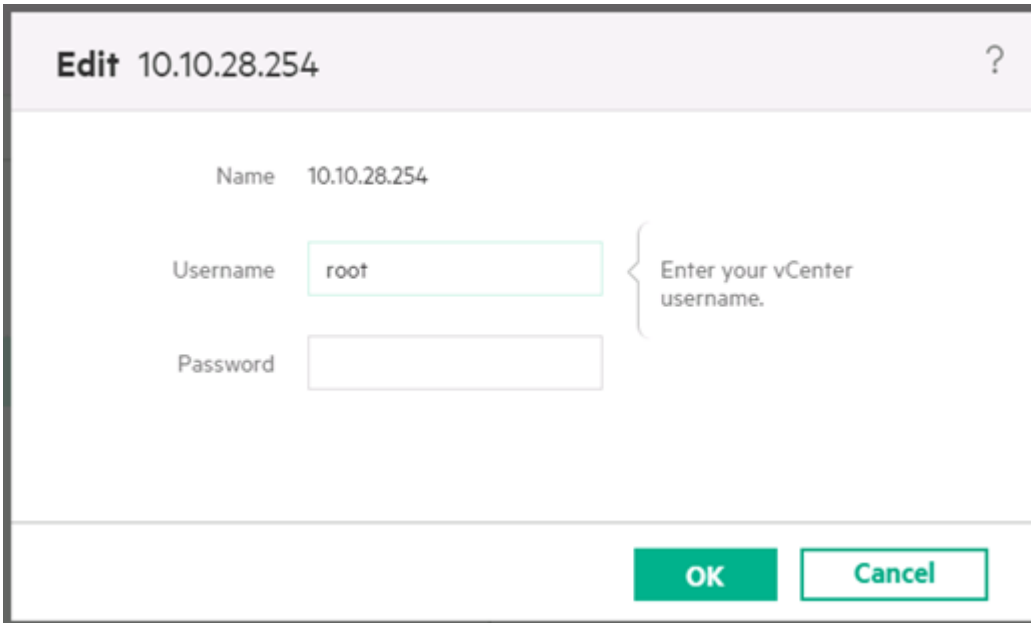


Figure 7: Edit Dialog

- Edit the vCenter password, if you need to and click **OK**.

Deleting vCenter

Procedure

- Select one of the vCenters configured in the HPE OneView for VMware vCenter environment, that needs to be removed.

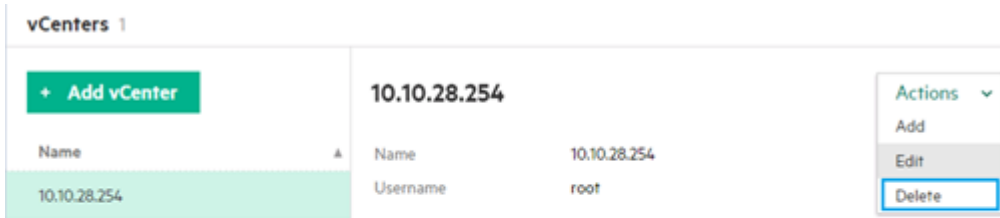


Figure 8: Delete vCenter

- From the Actions menu, select **Delete**.

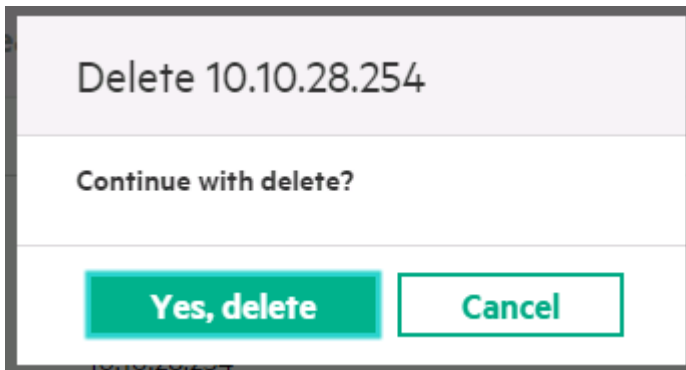


Figure 9: Delete Dialog box

- Click **Yes, delete** to confirm that you want to continue with deleting the information about the selected vCenter.

Storage Management

Starting with HPE OneView for VMware vCenter 8.0 release, the following HPE Storage Systems are no longer supported by HPE OneView for VMware vCenter:

- HPE EVA
- HPE XP/P9000
- HPE MSA 2000 G2/P2000 G3

NOTE:

Before proceeding, verify that the storage systems and the management servers meet the network connectivity requirements described in the *HPE OneView for VMware vCenter Installation Guide*.

Configuring Storage System

This section is about configuring and managing storage systems in the HPE OneView for VMware vCenter environment. You can use the Actions drop down menu to manage (Add, Edit, and Delete) the storage systems currently configured in the environment.

Adding Storage System

Procedure

- From the main menu of the Administrator Console, select **Storage Systems**.

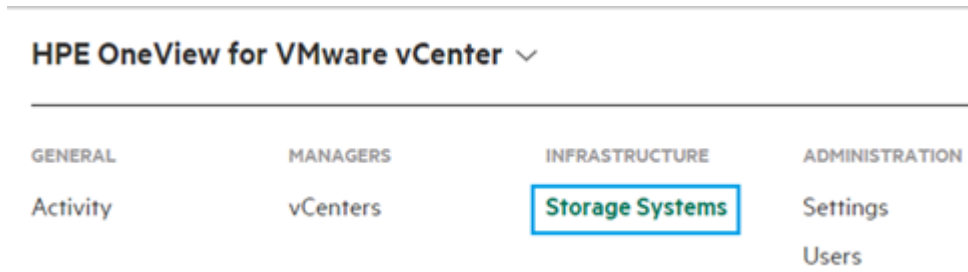


Figure 10: Storage System

The information about all the storage system currently configured in the environment is displayed, especially if you have used the Migration tool to import the data.

2. From **Storage Systems** screen, click **+ Add storage system** from the master pane or select **Add** from the Actions menu.

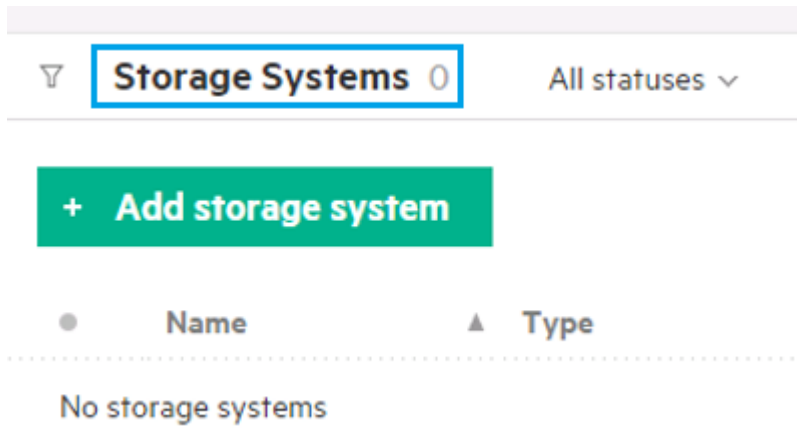


Figure 11: Add Storage Systems

3. Provide the following details in the General pane of the Add storage system screen.

Add Storage System | General ▾ | ?

General

Type

IP / host name

User name

Password

Storage Pool Permissions

To configure storage pools, first connect to the storage system.

Figure 12: Storage system details

- **Type**—Specify the type of storage system you want to add, such as HPE MSA, HPE 3PAR StoreServ, HPE StoreVirtual, or HPE StoreOnce.
 - **Name**
 - Specify a valid host name or an IPv4 address.
 - **Username**
 - Specify a valid user name.
 - **Password**
 - Specify a valid password.
4. Click **Connect**.
- The screen displaying the SSL certificate details appears.

Accept Certificate 10.10.10.1



Issued to HP_3PAR 8400-7CE544P0T7
Organization
Serial number 0
Subject alternative names HP_3PAR 8400-7CE544P0T7
Issued by HP_3PAR 8400-7CE544P0T7
Organization
Valid from 1/28/2016, 12:19:40 PM
Valid until 1/27/2019, 12:19:40 PM
Thumbprint F1:CE:58:41:A6:82:D4:3F:F4:54:68:48:0E:32:B4:06:48:71:90:A2
Signature algorithm SHA256withRSA

▲ Certificate warning

The certificate was not issued to '10.10.10.1', and it is not listed in the subject alternative names.

Accept

Cancel

Figure 13: Certificate details

5. Review the details and click **Accept**.

NOTE:

An error or a warning box appears if there are any issues related to the certificate. Address the issues, if any.

6. As part of adding storage system, you can change the access permission for individual storage pools on the storage system or change the access for all the storage pools by performing **either of** the following:

Add Storage System | General | ?

General

Type: HPE 3PAR StoreServ

IP / host name: 10.10.10.1

User name: username

Password:

Connect Disconnect

Storage Pool Permissions

Allow provisioning Set All

8 Storage pools - 3par

Storage Pool	Permission
CPG1	Allow provisioning
FC_r1	Read only
FC_r5	Read only
R1_CPG	Read only
SFA_CPG	Read only

Connected to storage system

Add Add + Cancel

Figure 14: Storage pool permissions

- To change access permission for individual storage pools on the storage system, click **Read only** on the Maintenance tool to toggle the value to **Allow provisioning**. **OR**
- To change access permission for all storage pools on the storage system, click **Set All** to toggle the value.

7. Click **Add**

NOTE: Add +

enables you to add another Storage System in the same dialog box.

8. The Refresh Storage Data dialog appears.

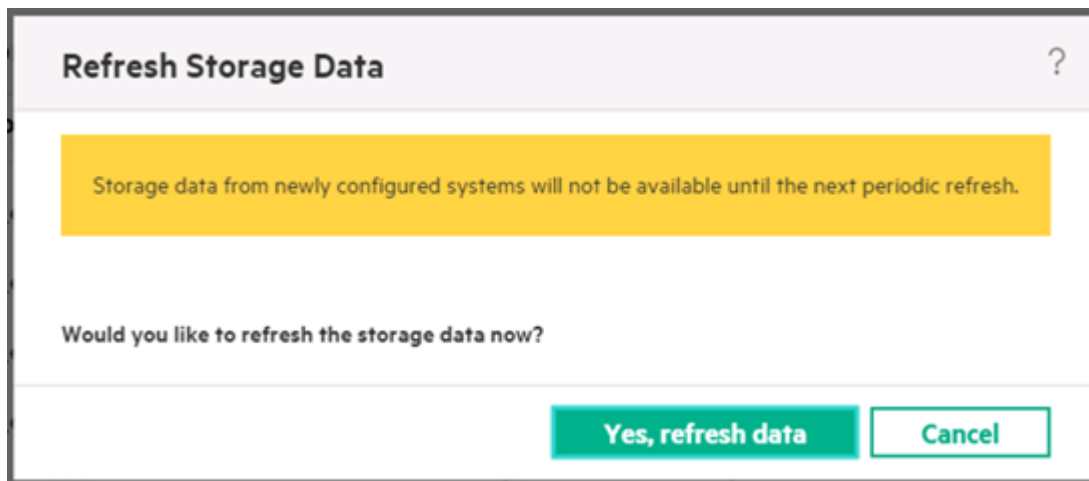


Figure 15: Refresh storage data

9. Click **Yes, refresh data**.
10. The Add Storage Systems screen displays the current health state and the refresh data status of the storage system.

NOTE:

You can postpone and initiate refresh at a later time, by clicking **Cancel**.

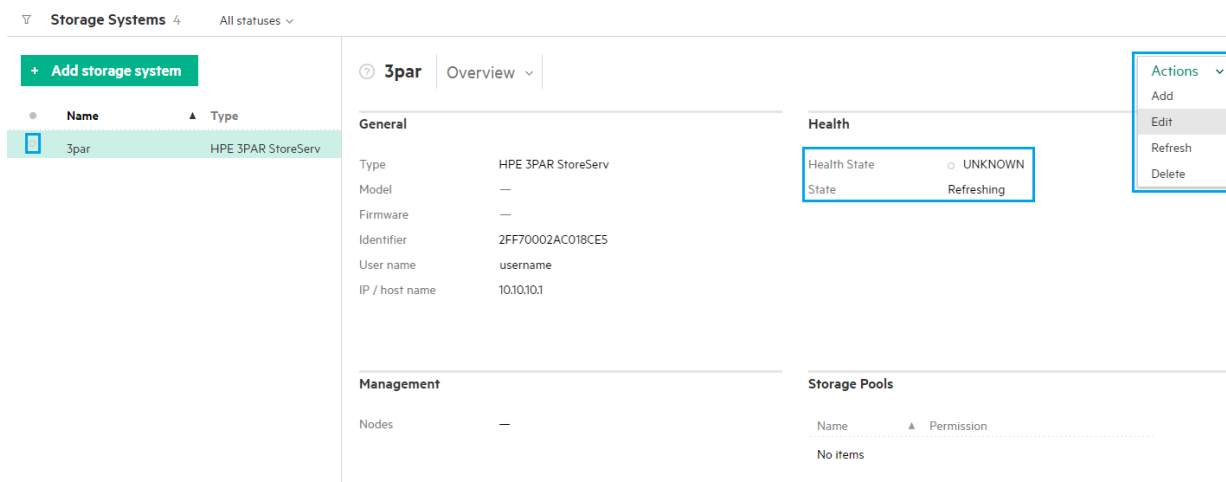



Figure 16: Refresh status

Initiate refresh

To initiate refresh at a later time, do either of the following:

- Select **Refresh** from the Actions menu.**OR**
- Click 

Modifying a storage system

Procedure

1. Select one of the storage systems configured in HPE OneView for VMware vCenter.

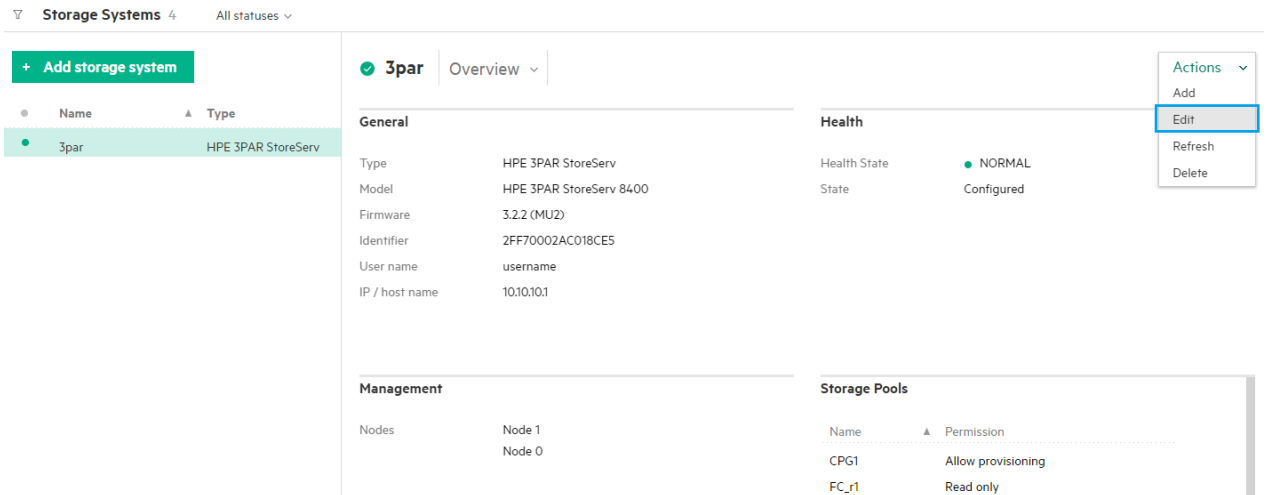


Figure 17: Modify Storage System

2. From the Actions menu, click **Edit**.

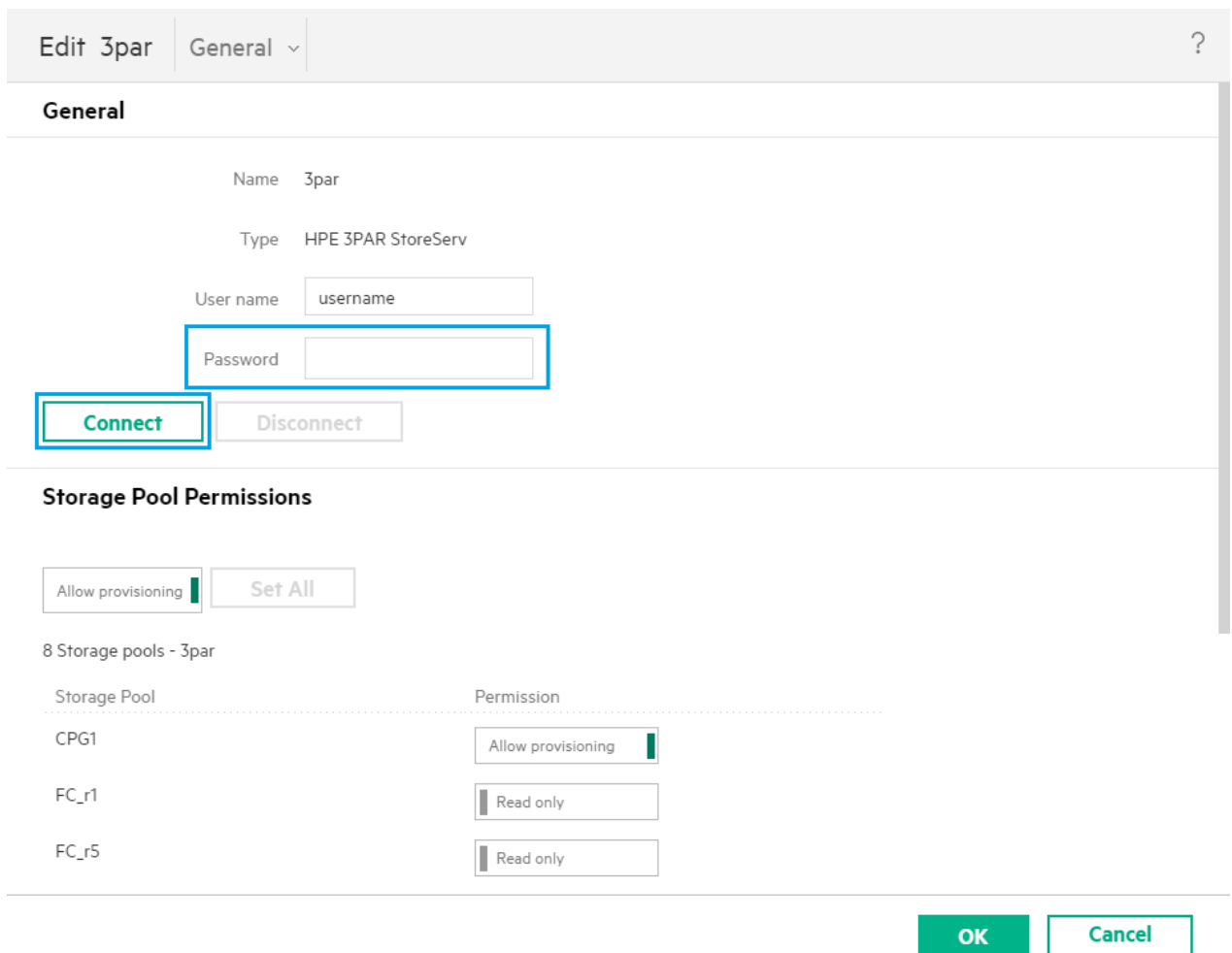


Figure 18: Edit credentials

3. Provide the credentials and click **Connect**.
4. Change the permissions to the storage pools, if you need to by following Step 6 of **Adding Storage System**.
5. From the Action menu, click **Refresh**.

Deleting a Storage System

Procedure

1. Select one of the storage systems configured in HPE OneView for VMware vCenter.
2. From the Actions menu, select **Delete**.

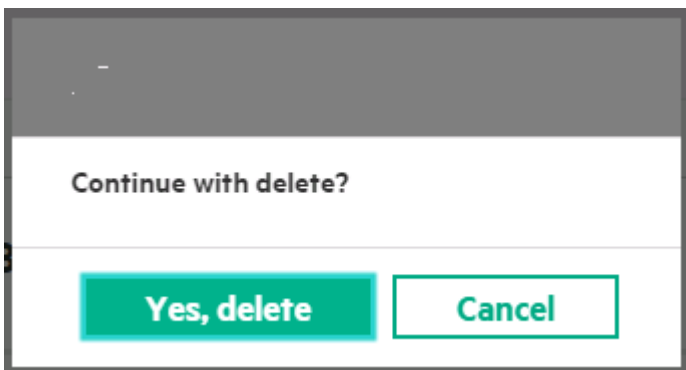


Figure 19: Confirm delete

3. Click **Yes, delete** to confirm that you want to continue with deleting the information about the selected Storage System.

Settings

This section provides information about the following:

- **Backup and Restore**
- **Creating Custom Properties**
- **Enabling logging**

Backup and Restore

Backup

You can create a backup which will replace any existing backup on the system locally. You can also download and manage the backup outside the system.

Restore

Following are the ways you can perform Restore:

- Restore from a previously downloaded backup file by browsing or dragging and dropping it into the dialog
- Restore from a local backup, if it exists.

For more information about Backup and Restore, see the *HPE OneView for VMware vCenter Installation Guide*.

Creating Custom Properties

Procedure

1. Click **Settings > Custom Properties**.

Figure 20: Custom Properties

2. Select **Add Property**.
3. Enter the values for the custom properties
 - Name — Specifies the name of the custom property
 - Value — Specifies the value of the property
4. Click **OK**.

Enabling logging

Procedure

1. Click **Settings > Logging**.

Figure 21: Edit Logging

2. Enable **Trace level logging** in the Edit Logging dialog box.
3. Click **OK**.

Trace level logging may be required by the support personnel to troubleshoot the issues.

Registering the VASA Provider from the vSphere Web Client



To add the Storage Module for vCenter to the Storage Providers list:

Procedure

1. Right-click a datastore in the left pane of **Insight Control for vCenter** HPE OneView for vCenter, and then click **Manage Storage Providers**.
2. The Storage Providers page opens.
3. Click the green add icon ()

The Add Vendor Provider dialog box opens.

4. Enter the following information:
 - a. **Name:** Enter `HPICSM`.
 - b. **URL:** Enter `https://vasaProvider_server_name:port/vasa_provider_ws/vasaService` .

 **TIP:**
To view the VASA Provider URL, click the **Settings** icon  **VASA Provider URL**.

 - c. **Login/Password:** Enter the login information for the system that runs the vSphere Web Client.
5. Click **OK**.

Adding a CA-signed certificate

Hewlett Packard Enterprise recommends using a CA-signed certificate when using the Storage Module for vCenter with the VMware VASA provider.

To add a signed certificate:

Procedure

1. Navigate to the Home page in the vSphere Web Client.
2. Click the **Management Administration** icon.
3. Click on Certificate Management in the left pane.
4. The Certificate Management page opens.
5. Select the **Generate Certificate Signing Request** option.
6. Enter the following information in the Certificate Info section:
 - a. Country
 - b. State
 - c. Locality
 - d. Organization
 - e. Common Name—The fully qualified vCenter Server name.
7. Optionally, enter the following information in the Optional Certificate Info section:
 - a. Organizational Unit
 - b. Email
 - c. Surname

d. Given Name

8. Click **Generate**.
9. The certificate signing request is generated. A certificate request with 1024-bit encryption is generated.

```
-----BEGIN CERTIFICATE REQUEST-----
MIIB/TCCAWYCAQIwgbowxLTArBgNVBAMTJFN1c2FuVk0wMS5jYXNsZGV2LmNhc2wu
YWRhcHBzLmhwLmNvbTELMakGA1UEBhMCVVMxLTArBgNVBAMTJHN1c2FuVk0wMS5j
YXNsZGV2LmNhc2wuYWRhcHBzLmhwLmNvbTESMBAQA1UEBxMjUm9zZXZpbGx1MSAw
HgYDVQQKEXdIZXdsZXROLVBhY2tchmQgQ29tcGFueTELMakGA1UECBMCQ0ExDDAK
BgNVBAsTA01TQjCBnzANBgkqhkiG9wOBAQEFAAOBjQAwYkCgYEA+012KmFgOC2f
N6pTocfHgX15Yq2gbkn2ghsMT6Xh8qF4hFAaOJF/HWYU/U8f4phCs3tbU1YdIw+g
9V3YU6PdUyuxgA4iPp54j1+YoB6kwcZmIZTuiBQJIORmpofOhn903Z4R9ypJoEO
kOu3zXhU4fQ3ZMV+6Ovipwc+91njzhsCAwEAQAAMAAOGCSqGS1b3DQEBBQUAA4GB
ACcTz2T+IzP0IMPu3nfa2Y3trkZgw1I2YiWgAEyDC1V+BZ7KUBmegh18FyVeUP1R
KKTnZaJJgpvaL4CsPYcnnOqIuydV1eOHmgk25CE87Dw7RXfq1BQU1qWRcCRaw2St
G2qK1yU1PuOkGPVpMxDLqFgW92BNtEyYeaspp/kkhnMj
-----
```

Generate Cancel

10. Copy the certificate signing request text.
11. Use the Certification Authority tool to generate the CA-signed certificate.
12. This step is performed outside the vSphere Web Client application. For instructions, see the Certification Authority tool documentation.
13. Copy the generated CA-signed certificate to the server on which the Storage Module for vCenter is installed.
14. Select **Certificate Upload** from the Actions drop-down list.
15. Paste the CA-signed certificate in the text box, and then click **Upload**.

NOTE:

After installing a self-signed certificate, you must restart HPE OneView for vCenter appliance.

Once registration is successful, the provider status is available online.

NOTE:

To register VASA Provider, you must have the **StorageViews Configure** privilege.

VASA provider for 3PAR StoreServ Storage system supports the Storage Capabilities profile as defined by the VASA Specification.

- Provision type
- Virtual Volume type
- Drive type
- RAID type
- Whether or not the volume is in a Remote Copy group

The name and description of all 3PAR storage capabilities can be viewed from the **Manage Storage Capabilities** pop-up from vCenter. To access the **Manage Storage Capabilities** window, start from Home, and then click **VM storage Profiles** from the **Management** tab. Click **Manage Storage Capabilities**.

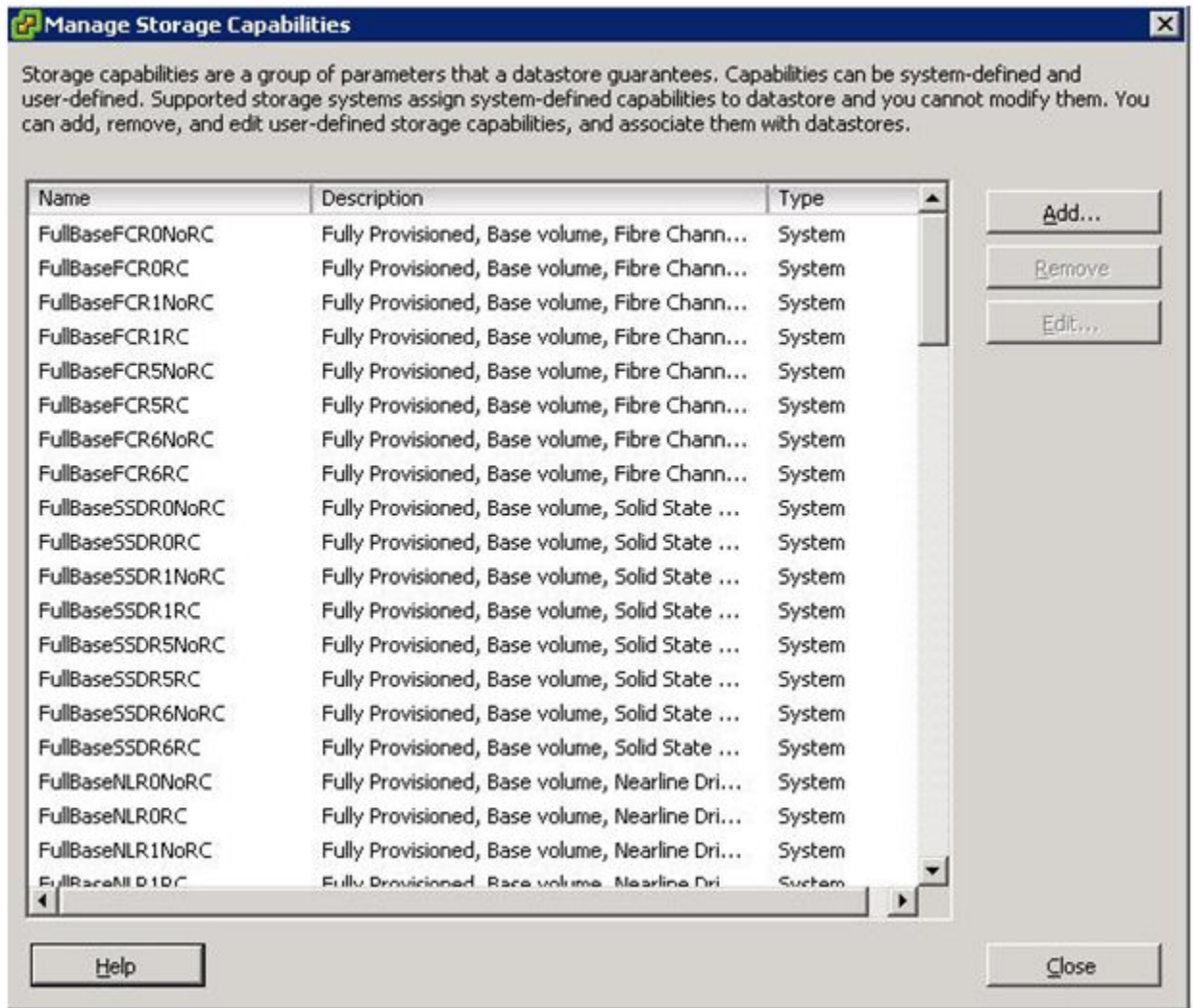


Figure 22: Manage Storage Capabilities Screen

The name of a 3PAR storage capability has five parts and each identifies the value of one of the volume attributes. The following table shows the volume attributes and possible values. (See the 3PAR documentation for details of these attributes.)

Table 1: VASA Storage Capability Volume Attributes

Volume Attribute	Value	Storage Capability Name Segment
Provisioning Type	Fully Provisioned	Full
	Thin Provisioned	Thin
Volume Type	Base Volume	Base
	Virtual Copy Volume	VCpy
Drive Type	Fibre Channel Drive	FC

Table Continued

Volume Attribute	Value	Storage Capability Name Segment
	Near Line Drive	NL
	Solid State Drive	SSD
	Mixed Drive	Mx
RAID Type	RAID 0	R0
	RAID 1	R1
	RAID 5	R5
	RAID 6	R6
Remote Copy	Remote Copy Volume is in Remotecopy	RC
	Volume is not in Remotecopy	NoRC

NOTE:

Consult the appropriate VMware documentation for more details.

Using HPE OneView for vCenter

This chapter describes the processes for accessing and using the software.

You can access resource inventory, Management Administration tools and the Management Deployment Wizard from the vSphere Web Client home page.

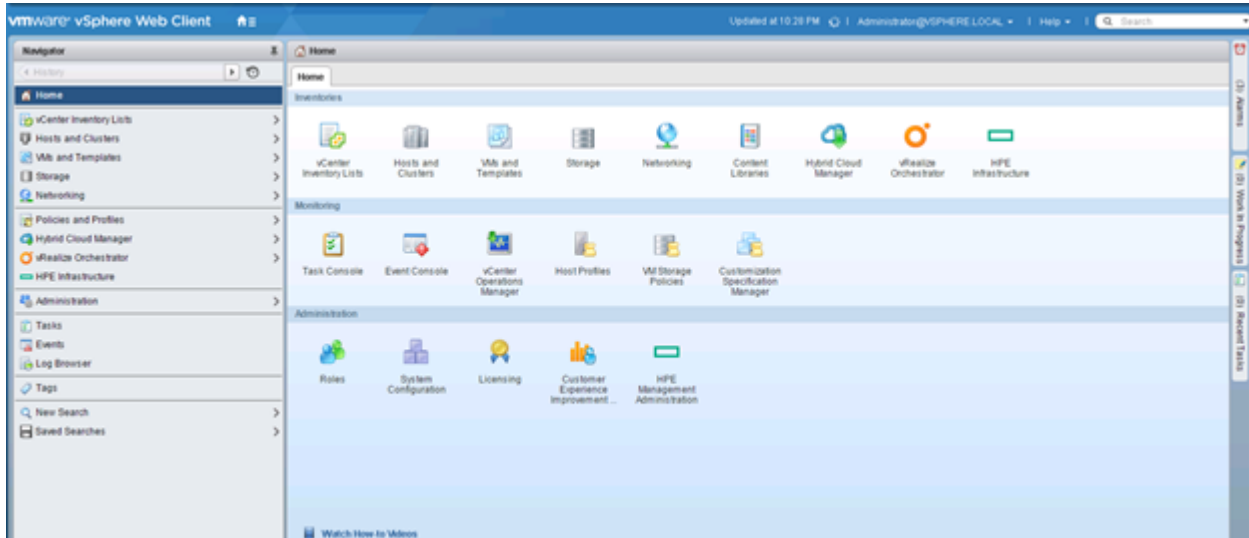


Figure 23: vSphere Web Client home page

For more information about Management Administration, see [Configuring HPE OneView for vCenter](#) on page 6.

Accessing HPE OneView for vCenter

After completing the installation and configuration procedures, you can access HPE OneView for vCenter through the vSphere Web Client.

- **Using the vSphere Web Client to access HPE OneView for vCenter** on page 31
- The vSphere Web Client is a web-based client that utilizes tabs to navigate HPE OneView for vCenter. The Management content is displayed on the Monitor page, the Manage page, and the Summary page. See **Figure 24: Web Client — Overview** on page 31.

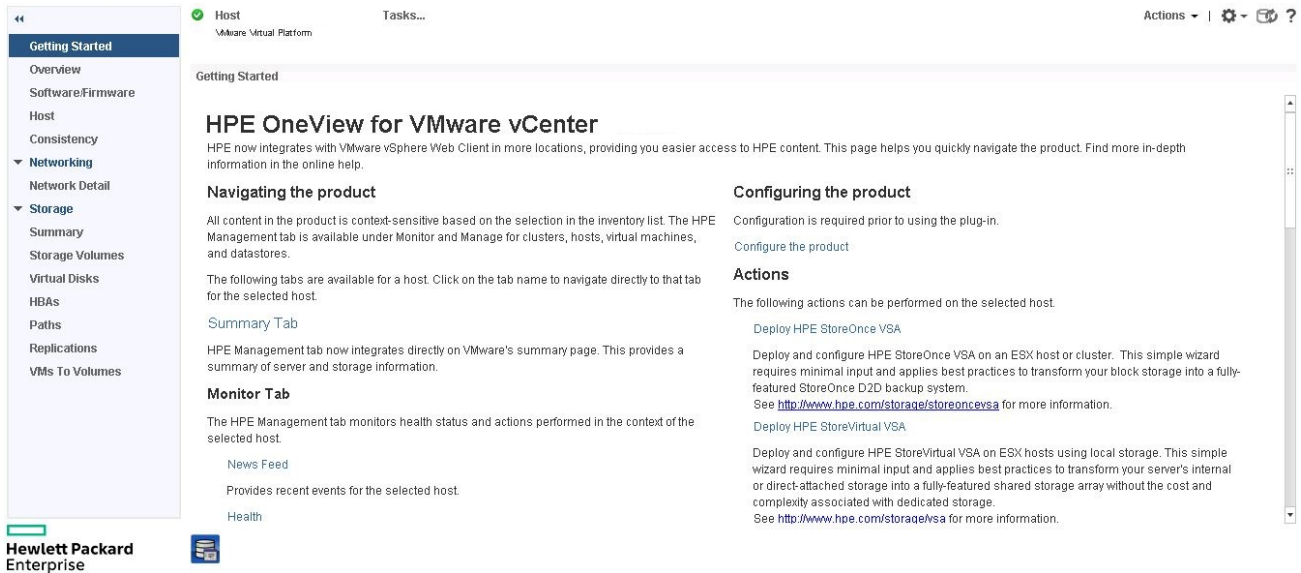


Figure 24: Web Client — Overview


Using the vSphere Web Client to access HPE OneView for vCenter

After completing the installation and configuration procedures, you use the vSphere Web Client to access HPE OneView for vCenter.

NOTE:

If you are using VMware vCenter version 6.5, click **Configure** tab and then click **More > HPE Management** on the left pane to browse HPE Management tab for related objects.



Procedure

1. Log into the vSphere Web Client.
2. The vSphere Web Client home page opens.
3. Select a cluster, host, VM, or datastore from the left navigation pane.
4. Click the **Monitor** or **Manage** tab.
5. Click the **HPE Management** tab.
6. An overview of the VMware component that you selected appears. While HPE OneView for VMware vCenter collects information about this VMware component or corresponding iLO, Onboard Administrator, or Virtual Connect modules; the panes in the overview page display `loading...` HPE Management refreshes the contents on a periodic basis and updates information. To initiate a manual refresh of the Storage Module cache, click the cache refresh icon 

HPE Management pages

The Management information is displayed on the Monitor and Manage pages. Depending on the component selected in the inventory tree and your configuration, the information displayed varies. However, the information displayed on the top and the bottom of all Management pages is consistent.

The top of the Management pages show:

- The consolidated status of the managed component. The most severe status of a component is displayed. Moving your cursor over the status icon shows the status overview. Click the status icon to display the Health page for details about the status of the components.
- The Host or Cluster name/IP address and a brief description of the selected server (if a host or cluster is selected).
- A **Tasks...** link to display current tasks. Moving your cursor over the Tasks displays a list of tasks currently being performed. Click on **Tasks** for more details about the tasks performed.
- An Actions drop-down list of actions that you use to perform actions on the selected host or cluster. For example, you can select a host and then use the Actions list to perform Create Datastore or Create VM provisioning operations. The type of provisioning operations listed in the pull-down list will depend on the type of component selected in the inventory tree.
- A **Settings** icon  to modify configuration settings.
- A cache refresh icon  to refresh the cache of the Storage Module.
- A help ? icon to display help files.
- A row of tabs used to display different views and level of detail. The Monitor page tabs are the same for all components. The Manage page tabs differ depending on the component selected. **Monitor page tabs**

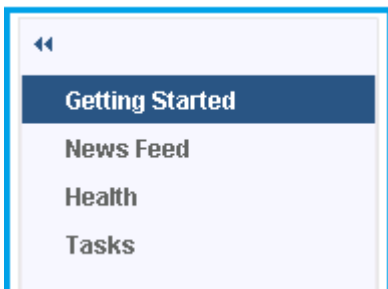


Figure 25: Monitor tab

Manage page tabs (vary depending on component selected)



Figure 26: Manage tab

NOTE:

When a cluster is selected, information is displayed for all hosts in the cluster.

The bottom of the Management pages display links to launch the following Management consoles, if applicable:

- Integrated Lights Out (iLO)
- Onboard Administrator (OA)
- Virtual Connect (VC). Link for launching Virtual Connect at host level.
- Virtual Connect Enterprise Manager (VCEM). This link is displayed when VC is locked by VCEM.
- System Insight Manager (SIM)
- Insight Power Manager (IPM)
- HPE OneView (OV). This link is displayed if the selected host is managed by HPE OneView or the selected cluster contains hosts managed by HPE OneView.
- Storage system management utilities

- The Hewlett Packard Enterprise icon 

The main section in the **Manage > Overview** page displays multiple boxes called **portlets** that provide summary information about the selected server/cluster. The portlets will vary based on your configuration and the selected component. Portlets display information such as:

- Server/cluster Information
- Consistency
- Networking
- Infrastructure
- Software/Firmware
- Storage
- News Feed (a list of recent events)

For detailed information about portlet items, do one of the following:

- Click **More** at the bottom of the portlet. News Feed details are displayed under the Monitor page. All other portlet details are displayed on the Manage page.
- Click the corresponding tab. The tabs for some of the information are on the Monitor page.

NOTE:

When you access HPE Management, you might see security warnings related to the website security certificate. To prevent these warnings from appearing in the future, click **View Certificate**, and then follow the on-screen instructions to import the certificate.

See the VMware documentation for a complete description of the VMware GUI.

Using the Server Module for vCenter

After HPE OneView for vCenter is installed, a Management tab is added under the Monitor tab and Manage tab.

HPE OneView for vCenter enables you to complete the following tasks when using ProLiant servers and BladeSystem enclosures on the network:

- Monitor health status
- Manage server information
- Manage and update firmware inventory
- Identify the physical server
- Trace network path from virtual machine to external switch
- Display deployment and network configuration features (vSphere Web Client only)
- Display enclosure view
- Alert and event forwarding from Onboard Administrator, SNMP agents, and CIM providers to vCenter Server

Use HPE OneView for vCenter to manage clusters and hosts remotely, manage system health and configuration, optimize power usage, and for Virtual Connect networking. The administrator can manage the system and monitor the Virtual Connect network, gather information about individual ProLiant servers and BladeSystem enclosures or the infrastructure, and launch certain Hewlett Packard Enterprise tools.

Navigating Management with the Server Module

Information from iLO, Onboard Administrator, SNMP agents, CIM providers, and Virtual Connect Manager is compiled and displayed on the Management page at both the cluster level and the host level.

NOTE:

- In the vSphere Web Client, information is displayed on the Monitor and Manage pages.

In order for iLO information to display, iLO must be associated with the VMware host. For more information, see [Associating the VMware host to iLO](#).

If you have a server module installed and a cluster is selected in the inventory tree, Management provides the following information:

- Status/Health
- Infrastructure
- Software/Firmware
- News Feed
- Cluster
- Tasks

If you have a server module installed and a host is selected in the inventory tree, Management provides the following information:


- Status/Health
- Overview
- Host
- Consistency
- Networking
- Software/Firmware
- Infrastructure
- News Feed
- Tasks

NOTE:


For information about navigating Management with the Storage Module for vCenter, see [Navigating Management with the Storage Module](#) on page 59.

Depending on the context of the page, links are available to launch Hewlett Packard Enterprise tools, as needed.

Changing Server Management properties

To change host properties, select a host from the inventory tree, and then access **Management**. Move the cursor over the **Settings** icon  **Host Properties**.

The Host Properties page opens and allows you to modify the properties of the selected host.

To change cluster properties, select a cluster from the inventory tree, and then access **Management**. Move the cursor over the **Settings** icon  **Cluster Properties**

The Cluster Properties page opens and allows you to modify the properties of the selected cluster.

When updating the properties information at the cluster level, information is updated for all servers in the cluster. When updating the properties information at the host or server level, information is updated for that host or server only.

Setting the power cost for a cluster

Before entering the power cost settings for a cluster, ensure that the cluster meets the following requirements:

- The cluster contains at least one ProLiant server or BladeSystem enclosure.
- The cluster is DRS-enabled.
- The cluster is configured for DPM.

To determine if the cluster is DRS-enabled, navigate to the vCenter Server **Summary** tab for the cluster and review the cluster information.

From the Management Administration page, select **Server Module Configuration** screen for the cluster, enter the power cost. Entering the power cost for a cluster generates the cost advantage information, which is displayed for each host on the Cluster detail page.

The Cost Advantage value is calculated as follows:

Cost Advantage = (number of hours the server was down) × (power cost) × (average power)

Entering the Power Cost will only calculate the Cost Advantage if all of the requirements in this section are applicable for the cluster. If the requirements are not met by the cluster, the cost advantage is always zero.

Bare-metal provisioning

Server provisioning (vSphere Web Client)

When using the vSphere Web Client, the Server Module for vCenter can be used to perform server provisioning. This involves establishing communication with the Hewlett Packard Enterprise server provisioning server and then using the Server Provisioning wizard.

For more information, see [Connecting to the provisioning server](#) on page 36 and [Running the Server Provisioning wizard](#) on page 36.

Connecting to the provisioning server

Communication must be established with the Hewlett Packard Enterprise server provisioning server before Management can be used for server provisioning.

Procedure

1. Access the HPE Management Administration page.
2. Select **Server Module Credential** from the left pane and then select **Credential for HPE Management Software Integration** tab.
3. Enter the Host Name or IP Address of the Hewlett Packard Enterprise server provisioning server.
4. Enter a valid Username and Password.

The user must have the necessary access privileges.

5. Click **Save**.

Running the Server Provisioning wizard

Server provisioning is done using the Server Provisioning wizard.

Procedure

1. Start the Server Provisioning wizard:
 - a. In the left pane right-click on a cluster or a Datacenter and then select **All HPE Management Actions > Insight Control Server Provisioning**.

The Server Provisioning wizard opens.

2. Select the job plan and the target servers where the vSphere/ESXi versions image will be installed, and click **Next**.

The Configure VMware Host Management Interfaces screen is displayed.

3. Enter the credentials and the network configuration information for each host, and click **Next**.

The credentials are used to communicate with the host after the image has been installed on the server to add the host to the cluster or datacenter. Where the host is added is determined by the object selected when the wizard was launched. For example, if a cluster was selected, the host will be added to the cluster. If a Datacenter was selected, the host will be added to the Datacenter.

A summary screen is displayed.

4. Click **Submit**.



TIP:

You can view the status of the current deployed job in the recent tasks window in the upper-right. Click on **More Tasks** to get a full description of the job status.

Manage networking

Setting host network configuration preferences

These settings are used to evaluate the network configuration of a host with respect to its Virtual Connect/HPE OneView profile. This page is accessed by selecting **Host Network Configuration**

Preferences in the left pane of the Management Administration page. After setting the preferences, click **Save** or **Clear** to reset all the selections to the default values.

The host network configuration preferences are organized into the following categories.

vSwitch Preferences

The vSwitch Preference determines how HPE OneView for VMware vCenter will configure virtual networking to match the networking configured in Virtual Connect.

- **Default vSwitch type used for Host:** Select the type of vSwitch that will be used to configure the virtual networking to match the networking configured in Virtual Connect.
- **VDS Spec Version:** If the default switch type selected is the vSphere Distributed Switch, select the version used when creating Distributed vSwitches.

NOTE:

If your environment has different vSphere/ESXi versions and you intend to use the vSphere Distributed Switch for host network configuration, ensure that the correct vSphere Distributed Switch version is configured so that host network configuration uses this switch version across all hosts in your environment.

It is recommended that the lowest vSphere Distributed Switch version (corresponding to the lowest vSphere/ESXi version in your environment) is configured so that host network configuration can use this switch version across all hosts in your environment.

Virtual Connect Networks

The Virtual Connect Networks available are listed. If all the networks are not displayed, click **Refresh** to update the information.

- Select the Virtual Connect networks to be used for the Management Network, VMotion Network, and Fault Tolerance. All the other networks are considered to be VM networks.

HPE OneView Networks All available HPE OneView Networks are displayed. The network name, purpose, and HPE OneView Domain are listed.

Port Group Names Displays the port group names defined for the networks. By default, the name of the network in Virtual Connect or HPE OneView is used as the port group name. If necessary, the port group name can be changed.

- **Port Group Name:** Enter the new port group name for the network.



TIP:

Custom port group names simplify configuration of active-active network configuration with Virtual Connect. Such configuration can be simplified by using the same custom port group name for active and redundant network.

Managing clusters

To access the cluster overview summary, select a cluster in the inventory tree. On the vSphere Web Client, click **Manage > HPE Management > Overview**.

The Cluster Overview page appears.

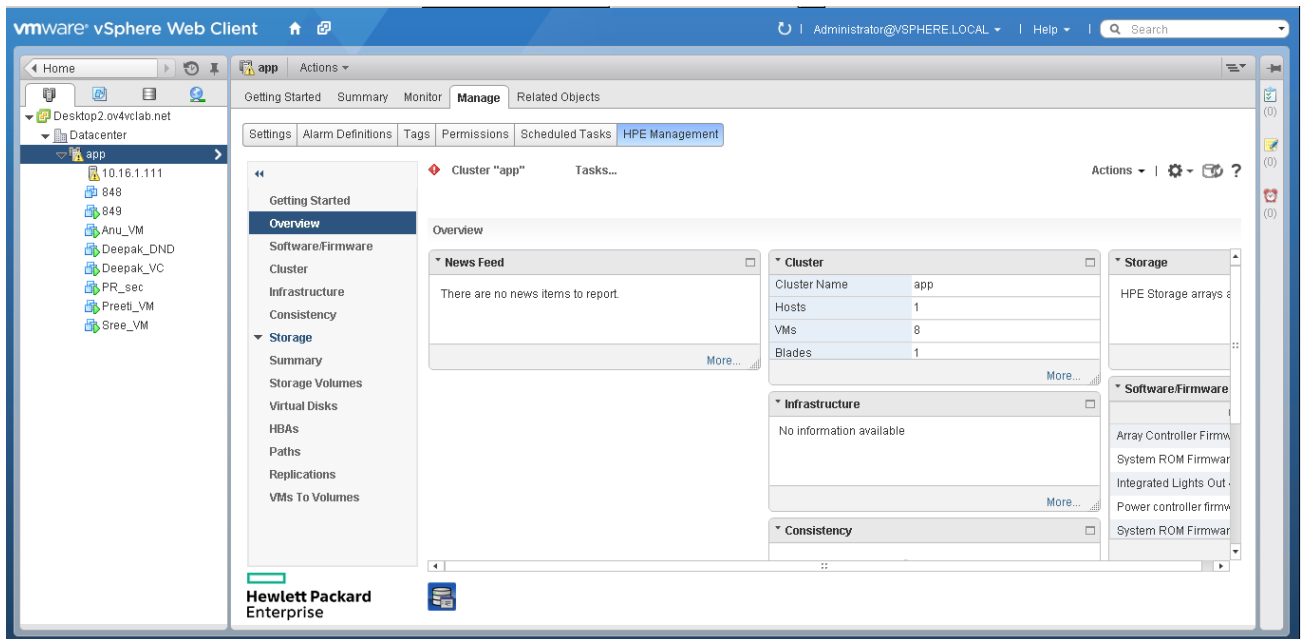


Figure 27: Cluster overview page (vSphere Web Client)

The Overview page for Cluster Management displays status summary information.

Depending on the software installed, links may be available for the following management tools:

- SIM
- Onboard Administrator
- HPE OneView (vSphere Web Client) When you click on a host managed by HPE OneView (OV), you can link to the following options:
 - HPE OneView Dashboard
 - Server Hardware
 - Server Profile

Cluster Overview

The Cluster Overview page displays information for all hosts in the selected cluster. The information is displayed in portlets that provide summary information about the cluster. The portlets displayed are determined by the HPE OneView for VMware vCenter modules (Server, Storage, or both) that have been installed.

Server Module for vCenter portlets

- Cluster
- Infrastructure
- Consistency
- Software/Firmware
- News Feed

Storage Module for vCenter portlets


- Software/Firmware
- Storage
- News Feed

For detailed information, do one of the following:

- Click **More** at the bottom of the portlet
- Select the name of the corresponding portlet from the pull-down list.
- Click **More** at the bottom of the portlet. Some of the details are displayed on the Monitor page.
- Click the corresponding tab. The tabs for some of the information are located on the Monitor page.

Click the **Settings** icon  to view the Product Version or set Cluster Properties.

Consistency portlet information

- The Overall Cluster Status at the top of the consistency portlet indicates the overall cluster consistency status. The configuration status for each individual host is also displayed. Click on the configuration status icon for the cluster to display the consistency page for the cluster with details for each host. You can also select **Configure network** from the Actions drop-down list to display the consistency page. For more information, see [Managing cluster consistency](#) on page 39 .
- The reference host for the cluster which is grown using Unassigned Server Profile will be identified by the  icon next to the host.

For more information on the controls and operation of the Overview page, see [HPE Management pages](#) on page 32.

Cluster information

Information is displayed for all hosts attached to the cluster selected.

To view details for the selected cluster:

Procedure

1. Select a cluster in the inventory tree.
2. Click the **Manage** tab, and then click **HPE Management**.
3. Click the **HPE Management** tab.
4. Select **Cluster**.

The cluster page opens listing details.



TIP:



Use the expand icon at the beginning of each row to see details for the server/host.

Consistency tab

The consistency tab displays data inconsistencies apart from network related information at host level and cluster level. For example, it displays inconsistencies with settings such as firmware, BIOS, and Boot settings. Whenever the settings are changed in SPT, HPE OneView displays inconsistency status.

Managing cluster consistency

The Cluster consistency page displays status for the selected cluster and each host in the cluster. It also provides the capability for setting a reference host and resolving inconsistencies. The page includes the following:

- **Overall Cluster Status**—indicates the overall cluster status. The status values are:
 - **OK** ()—indicates that all hosts in the cluster have a status of OK.
 - **Mismatch** ()—indicates that a host or hosts in the cluster have a Server Profile mismatch status or a Host Configuration status mismatch.

- **UNKNOWN(?)**—indicates that some hosts are in an unknown state. This can occur if a reference host is not set or management network is not specified. Check the individual hosts status description for the actual reason.
- **NA(i)**—indicates that the cluster does not include any hosts that support host network configuration.
- **Host status information**—the following host status conditions are displayed:
 - **Server Profile status**—reflects the result of comparing the Virtual Connect/HPE OneView profile of a host to the profile of the reference host. If no reference host is set for the cluster, the Server Profile Network status for all hosts will be UNKNOWN. If a reference host is set, the Server Profile status of the reference host is set to OK. The Virtual Connect/HPE OneView profile of each remaining host is compared to the profile of the reference host. If the profiles match, the Server Profile status of the host is set to OK. If the profiles do not match, the status is set to MISMATCH.
 - **Host Configuration status**—reflects the result of comparing the settings available in the host with the settings available in the HPE OneView profile of the host.
- **Profile details**—displays profile details for the selected host.
- **Set Reference Host**—this button sets the selected host as the reference host for the cluster. For more information, see **Setting a cluster reference host** on page 40.
- **Apply Recommended Actions**—this button resolves a network MISMATCH status. For more information, see **Resolving a network mismatch** on page 41.

NOTE:

- Clusters with hosts from Virtual Connect and HPE OneView environment together are not supported. To choose a particular environment, select a reference host from that environment.
 - Any changes to HPE OneView profile or network that causes host status inconsistencies will be notified through news feed.
 - For clusters grown using SPT and there are any storage related actions, then the Apply Recommended Actions must be performed at cluster level and not at the host level.
-

Setting a cluster reference host

The reference host for a cluster identifies the host whose Virtual Connect/HPE OneView Profile is considered as the reference configuration when comparing all the hosts in the cluster. A reference host must be selected to perform cluster configuration.

NOTE:

- This feature is available only on the vSphere Web Client.
 - Only servers having Virtual Connect/HPE OneView profile information are supported as a reference host.
 - Ensure that no host network configuration operations are being performed within the cluster when selecting or changing a reference host.
 - If the overall status of the reference host is not consistent, the message **Reference Host is not consistent** is displayed in a pop-up on mouse-over of the Host Network Configuration status of other hosts in the cluster. The reference host can be changed by clicking the **Set Reference Host** button which is enabled when another host in the cluster is selected.
 - Set reference host option is not used for clusters that use Server Profile Template for expansion.
-


To set a cluster reference host:

Procedure


1. Select a cluster in the inventory tree.
2. Click the **Manage** tab and then click **HPE Management**.
3. Select **Consistency** tab.

The Cluster Consistency page opens, which displays information about all the hosts in the cluster with the status for each.


4. Select the host to be used as the reference host by clicking the appropriate row.
5. Click **Set Reference Host**.

The reference host will be identified by the  icon next to the host name.

NOTE:

- The Set Reference Host and the  icon are not available in case of Grow Cluster using SPT.
-

Resolving a network mismatch

If the Virtual Connect/HPE OneView profile of a host does not match that of the profile used by the cluster reference host, the Server Profile Status will have a status of  **Mismatch** (and the Host Configuration Status is **Mismatch**. Select the host for Host Network Configuration by selecting the check box to the left of the host entry. Click **Apply Recommended Actions** to run Host Configuration over the host.

During the configuration, the Virtual Connect/HPE OneView profile of the selected host is modified to make it match the Virtual Connect/HPE OneView profile of the reference host. This sets the Server Profile Status of the non-reference host to OK. During the configuration process, the host is turned OFF. After modifying the host Virtual Connect/HPE OneView profile, the configuration process turns the host back to ON state. The configuration process then makes all the networks in the Virtual Connect/HPE OneView profile available to the host by creating switches at the host level. The Host Configuration status then becomes OK.

NOTE:

- Non-reference hosts cannot be configured if the reference host is inconsistent. In this case, the check boxes for the non-reference hosts are disabled. The reference host must be configured to enable the check boxes for the other host configurator supported hosts. The non-reference hosts can then be configured simultaneously by selecting multiple hosts.
 - The host network configuration process automatically turns the host off before modifying the Virtual Connect/HPE OneView profile of the selected host. When the host network configuration process is complete, the host is turned back on.
-



TIP:

Mouse-over the **Host Network Configuration** status icon to display a pop-up describing the status.


Resolving a network mismatch for the clusters which are grown using Server Profile Template (SPT)

Whenever there is a change in SPT, the Consistency tab displays the inconsistencies at both the host and cluster level. Use the following steps to resolve those inconsistencies:

Procedure

1. Select a cluster in the inventory tree.
2. Click the **Manage** tab and then click **HPE Management**.
3. Select **Consistency** tab.

The Cluster Consistency page opens, which displays information about all the hosts in the cluster with the status for each.

4. Select a host that has a status of  **Mismatch** (for either Server Profile status or Host Configuration Status. Use the Select check box to select a single host or multiple hosts.

The recommended actions required in the Virtual Connect/HPE OneView profile are displayed. The changes required to configure the host based on the network preferences and Virtual Connect/HPE OneView profile networks are also displayed.

A host can be configured in either of the following cases:

- A host having a Server Profile status of Mismatch and a Host Configuration status of Mismatch
- A host having a Server Profile status of OK and a Host Configuration status of Mismatch

5. Click **Apply Recommended Actions.**

The host is configured to match the reference host. The host network configuration process configures the Virtual Connect/HPE OneView profile of the host first. The process then configures the host networking. When the configuration process is complete, Server Profile status and the Host Configuration status are changed to OK.

Viewing cluster infrastructure information

To view infrastructure information about a selected cluster:

Procedure

1. Select a cluster in the inventory tree and access **Management**.
2. The Infrastructure portlet on the Overview page provides an overview of the cluster.
3. Click **More** on the Infrastructure section of the Cluster Overview page.
4. The infrastructure page opens showing a list of enclosures with a hyperlink enabled on them.
5. Click on the hyperlink to navigate to the Enclosure Summary page.

Viewing cluster software and firmware

This page provides all software/firmware details of the host added under the cluster.

NOTE:

Firmware information is available for vSphere/ESXi systems with either the Offline Bundle or ESXi custom image installed only.

To view firmware information and/or update firmware for the selected cluster or servers in the cluster:

Procedure

1. Select a cluster in the inventory tree and access **Management**.
2. The Software/Firmware portlet on the Overview page provides an overview of primary software and firmware versions.
3. For detailed software and firmware information, click **More** at the bottom of the Software/Firmware portlet or do the following:
 - a. From the vSphere Web Client, click the **Software/Firmware** tab on the Manage page.
4. This page provides all software/firmware details of the host added under the cluster.

Growing a cluster

Using the Grow Cluster feature, you can expand the capacity of an existing cluster. This feature presents two options for growing a cluster: basic deployment and enhanced deployment. Both of these options use HPE OneView server provisioning for deployment of ESXi on the HPE server.

The basic deployment option presents a list of bare-metal servers discovered by HPE OneView server provisioning, installs ESXi, and adds the server to the cluster.

The enhanced deployment option presents a list of bare-metal hosts available in HPE OneView and performs an end-to-end configuration and deployment based on HPE OneView server profile. This option requires an HPE OneView reference host for the cluster and a custom ESXi image with support for the Grow Cluster feature. When the deployment is completed using the enhanced option, the deployed host will have HPE OneView profile, firmware, and networking synchronized with the reference host. When the host is added to the cluster, the VMware networking for the host is synchronized to match the reference host's networking.

If the cluster already has shared storage managed by HPE OneView, the shared storage is available to any newly provisioned host in that cluster.

NOTE:

- Deployment option with HPE OneView for VMware works only when NIC0 of the server profile is configured with a network that has connectivity to HPE OneView Server Provisioning server.
 - The above network can act as a vCenter management network or you can configure a unique vCenter management network on any of the NICs.
 - You must enter a valid static IP from the vCenter management network for the host to be discovered in vCenter.
 - The enhanced deployment option is supported only with HPE OneView.
-

To grow a cluster:

Procedure

1. Start the vSphere Web Client and access **HPE Management**.
2. Use one of the following methods to start the Grow Cluster wizard:
 - a. In the left navigation pane, right-click a cluster and select **All HPE Management Actions > HPE Grow Cluster**.
 - b. In the left navigation pane, select a cluster and from the VMware Actions pull-down menu select **All HPE Management Actions > HPE Grow Cluster**.

The Grow Cluster wizard opens.

3. Follow the steps in the wizard.

Help is available for each screen if you need assistance.

NOTE:

If the cluster is empty, the first host added to the cluster will be set as the Reference Host for the cluster.

Grow Cluster with SPT selection

Starting with HPE OneView version 3.0, you can grow a cluster using Server Profile Template. It ensures that appropriate network interfaces, active IP pools, and other configuration parameters remain in sync at the time of cluster expansion. HPE OneView supports common host network configuration. It supports HPE OneView Server Profile Templates (SPT) to obtain the OS build plans to execute deployment to the target hardware. This ensures a successful addition of the host to the vCenter cluster with ESX deployment. HPE OneView obtains the server provisioning credentials from Common Services to render the build plan.

Grow cluster – Work Flow Selection

This page enables you to select the work flow used to grow the cluster. Two work flows are available:

- Basic deployment work flow—the upper work flow is used for clusters not managed by HPE OneView.
- Enhanced deployment work flow—the lower work flow is used to grow a cluster managed by HPE OneView.

If HPE OneView credentials are not configured, this work flow is disabled and a warning message is displayed. If the selected cluster does not have a reference host, a warning message is displayed and the enhanced deployment work flow option is disabled.

NOTE:

If server provisioning credentials are not configured and HPE OneView credentials are configured that do not have Image Streamer configured, then both the work flows are disabled.

If server provisioning credentials are not configured and HPE OneView credentials are configured that have Image Streamer configured, then **Enhanced deployment work flow** is enabled.

1. Select the **Work Flow** used to grow the cluster.
2. Click **Next**.

Grow cluster – Choose deployment plan and target servers

This page enables you to select the deployment plan and targets servers used to grow the cluster.

NOTE:

The enhanced deployment option works only with a custom build plan. For more information, see “Creating a custom build plan” in the *HPE OneView for VMware vCenter User Guide*.

Procedure

1. Select a **Server Profile Template**. You can either select an Unassigned Server Profile (USP) or a Server Profile Template (SPT). You can even update the cluster settings USP to SPT. For information about changing the cluster settings, see *HPE OneView for VMware vCenter User Guide*.

If the selected cluster has a reference host that has expanded using Unassigned server profile, then the profile of a reference host is used.

If the selected cluster has expanded using SPT, then the selected SPT is used as a reference for growing the cluster and is marked as read only.

NOTE:

Server profile templates will be listed only from HPE OneView version 3.0.

2. Select an **OS Build Plan**. When you select SPT, you automatically get the build plans from HPE OneView, depending on whether the server provisioning credentials are saved in HPE OneView.
 3. Select the target server.
-

NOTE:

The target servers listed for selection are filtered based on hardware type and enclosure group of the reference profile (or reference host).

Multiple servers can be selected. Use the check box at the top of the table to select all the targets displayed.

NOTE:

Key points to remember when using private volumes:

- If the Reference Profile has a private volume attached to it, the grow cluster workflow will use the private volume for deploying ESXi. If there is a private volume present, local storage will not be used for deployment.
- For each new server being added, a new private volume, similar to the private volume in the Reference Profile is automatically created and used for deployment.
- Multiple private volumes are not supported.
- Multiple shared volumes as part of a profile are supported.

4. Select **Exit Maintenance Mode after OS deployment** if you want to quit the maintenance mode after build plan execution.

5. Select either **Assign Static IP** or **Assign IP from HPE OneView IP pools**.

The two fields are displayed depending on whether the SPT has subnet pools associated with a network.

If a management network is associated with IP pool, you can choose to assign IP from IP pool or static IP.

6. Click **Next**.

Grow cluster – Configure VMware hosts

This page enables you to enter configuration information.

Procedure

1. Enter the **Netmask** and **Gateway** information.

The **DNS Domain** and **DNS Server** information is optional.

2. Enter the **NIC0 Static IP Address** and **ESXi Root Password** for each selected target server enclosure.

The **Hostname** information is optional.

NOTE:

- DHCP is not supported.
- The ESXi Root Password and Hostname are common per cluster and cannot be defined for an individual host. HPE OneView supports common host network configuration.
- If a cluster is grown using unassigned server profile, then you can choose different password for different hosts.

If you select **Assign IP from HPE OneView IP Pools**, the following network related information is displayed:

- **VMotion Network**
- **Management Network**
- **Fault Tolerance Network**
- **Network Name**--Can be either DHCP or Subnet.

NOTE:

If all the special purpose networks, like Vmotion and Fault Tolerance networks are associated with Subnet Pool, then IP is assigned from IP pool. Else, IP is obtained from DHCP for these networks.

3. Click **Next**.

The confirmation screen is displayed.

Grow cluster – Configure VMware Host Management Interfaces

This page enables you to enter configuration information.

Procedure

1. Enter the required **Network Configuration** information for each selected target server.
The **DNS Domain** and **DNS Server** information is optional.
2. Enter the **ESXi Password** for each selected target server.
3. Click **Next**.

The confirmation screen is displayed.

Grow cluster – Confirmation

This page enables you to confirm the configuration before initiating the grow cluster operation.

Procedure

1. Review the information for accuracy.
2. Click **Finish** to grow the cluster.

A message is displayed indicating where you can monitor the progress of the operation.

NOTE:

The hosts added using the grow cluster feature remain in Maintenance Mode.

Updating cluster settings from Unassigned Server Profile (USP) to Server Profile Template (SPT)

Prerequisites

- For an existing cluster, if reference host is not set, then you must first set the reference host. If the cluster is created using Unassigned Server Profile in case of Grow Cluster feature, then the first host is automatically set as a reference host.
- Ensure that all the hosts in a cluster are consistent with the reference host.

To update cluster settings from Unassigned Server Profile (USP) to Server Profile Template (SPT), perform the following steps:

Procedure

1. Navigate to Cluster Consistency tab and verify the consistency status for each and every host.
2. Set the management network to `Subnet Pool`, if you want to use IP pool for the management network defined in reference profile.
3. Verify all the host's management network kernel port is set to `static IP` settings. If the management port is set to `DHCP IP`, then change it to `Static`.

DHCP is not supported. DHCP host import causes the update cluster settings operation to fail and leaves the clusters in an inconsistent state.

4. Create SPT using the same networks defined in your reference host server profile, to prevent inconsistencies.
Skip this step, if the reference host Server Profile is already associated with an SPT.
5. Go to **Actions** at cluster level and select **Update Cluster Settings to Server Profile Template**.
6. Select the Server Profile Template and OS deployment plan from the **Update Cluster Settings to Server Profile Template** page.

- If the reference host Server Profile is already associated with SPT, then the associated SPT is displayed as a read only value. After you update the settings, the SPT will be used as a reference.
 - OS deployment plan will be used subsequently, when you do use the Grow Cluster feature.
7. Click **Finish** to update the cluster settings.

Grow Cluster using Image Streamer

You can use the following steps in Image Streamer environment to grow a cluster in HPE OneView VMware vCenter:

Procedure

1. Register OneView with OV4VC
2. Create ServerProfileTemplate in OV with required connection(s).

Synergy Image Streamer uses the first NIC in the iSCSI network to place the appliance during deployment. Hence, it is mandatory to leave the NIC [: 1-a] as empty.
3. In the vSphere Web Client, right-click on a cluster and select **All HPE Management Actions** → **HPE Grow Cluster**.
4. Select the Enhanced deployment work flow to grow the cluster.
5. Click **Next**.
6. Select server profile template and the customized Image Streamer Build Plan.

Image Streamer deployment works only with a custom build plan which re-configures first NIC based on custom attribute.
7. Select the target server(s).
8. Select the **Exit Maintenance Mode** option depending on the requirement.
9. Select the IP option. User can also use Oneview based IP/Subnet pools.
 - a. In case of IP/subnet pools option, you do not need to enter any IP configuration values.
 - b. In case of static IP option, manually enter IP details.
10. Click **Next**.
11. Enter the network information, in case of Static IP option.
12. Enter the **ESXi Root Password**. This same password will be set for all the selected hosts. This is a one time option for SPT based deployment.
13. Click **Next** and review the information.
14. Click **Finish** to grow the cluster.

A task progress message is displayed to monitor the deployment.

After successful deployment you can see the host added to selected cluster.

FCoE support using HPE 5900 switch

Starting with version 8.1, HPE OneView for VMware vCenter supports Enhanced Grow Cluster with an unassigned server profile which has FCoE connections in it.

The Enhanced Grow Cluster supports two types of configurations:

- Boot from SAN (OS booting from the LUN which is presented through FCoE)
- Shared disk to the server, which is presented through FCoE

The Enhanced Grow Cluster workflow with FCoE maintains the same ability to create and grow VMware cluster from HPE OneView profiles as is done using FC.

In a server profile based, enhanced grow cluster deployment having FCoE connection, you must bind the MAC address of the physical server to the Virtual Fiber Channel by performing manual configuration steps. The binding is required for the FCoE LUN to be available to the target server during build plan execution and server provisioning. The manual steps is required only if HPE 5900 switch series is used with FCoE. For

information about performing these steps, see *HPE OneView 3.0 User Guide* available at <http://www.hpe.com/info/oneview/docs>.

If you want to deploy OS on multiple hosts through FCoE USP request, then use the Grow Cluster workflow instead of the Enhanced Grow Cluster feature. In Grow Cluster workflow, there is time to bind the MAC address for all the hosts unlike in Enhanced Grow Cluster.

Enhanced Linked Mode

Starting with 8.1 release, HPE OneView for VMware vCenter supports the Enhanced Linked Mode (ELM) feature of VMware vCenter. The ELM feature allows you to link multiple vCenter servers and manage the environment through a single web console. With Enhanced Linked Mode, you can search, view, configure, and access the inventory of all the linked vCenters through any vCenter web console. Installing the VMware Platform Services Controller is a prerequisite to ELM. You can install PSC either in an embedded form or externally as a separate standalone VM. You need an external PSC for linking multiple vCenters.

For more information about setting up Enhanced Linked Mode and installing PSC, see the VMware documentation.

NOTE:

HPE does not support using multiple instances of OneView for VMware vCenter in an ELM environment. You can have only one instance of OneView for VMware vCenter configured in an ELM across all connected domains, PSCs and vCenters.

Managing hosts

To access the host overview summary, select a host in the inventory tree. From the vSphere Web Client, click **Manage > HPE Management > Overview**.

The Host Overview page appears.

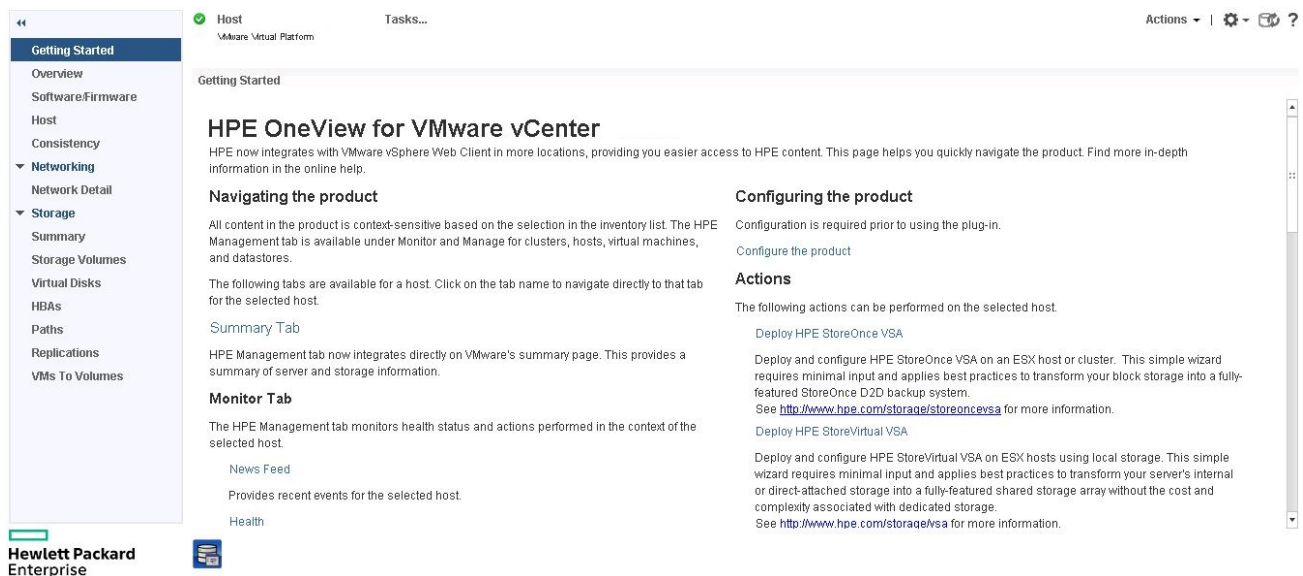


Figure 28: Host Overview page — vSphere Web Client view

The Overview page provides overall details of Host, Infrastructure (Enclosure), networking, Storage (if storage is installed), Software/Firmware, and News Feed events associated with the selected ProLiant server.

Depending on the Management tools and software installed and configured with HPE OneView for vCenter, links are available to launch Hewlett Packard Enterprise Tools.

Host Overview page

The Host Overview page displays information for the selected host. The Overview page displays portlets that provide summary information about the host. The portlets displayed are determined by the HPE OneView for VMware vCenter modules (Storage, Server, or both) that have been installed.

NOTE:

The appropriate ESXi Offline Bundle is required to get provider data and generated events. Without the appropriate bundle, the following information is not displayed.

- Provider Bundle
- News Feed
- Software/Firmware

The ESXi Offline Bundle can be downloaded from the following website:

<http://www.hpe.com/info/VMwareESXi-Images>

Server Module for vCenter portlets

- Host Information
- Consistency
- Networking
- Infrastructure
- Software/Firmware
- News Feed

Storage Module for vCenter portlets

- Software/Firmware
- Storage
- News Feed



TIP:

Click the **Settings** icon  to view the Product Version or set Cluster Properties.

Storage information

If the Storage Module for vCenter is installed, the Overview page includes the following:

- Links to the storage systems management software for configured storage systems (if available)
- Storage Systems health status information
- Storage Systems firmware version information

For more information, see [Navigating Management with the Storage Module](#) on page 59.

Viewing host information

To view information about the host server:

Procedure

1. Select a host in the inventory tree and access **Management**.
2. The Host information portlet on the Overview page provides an overview of the host server.
3. For more information about the host server configuration, click **More** at the bottom of the Host Information portlet or do the following:
 - a. From the vSphere Web Client, click the

Host

tab on the Manage page.

4. Detailed information is displayed, including Host information, Server Status information, Server Power, Memory information, CPU information, Firmware information, Smart Array information, Software information, iLO log, and IML log.

To view the IML or iLO logs for a host:

- Select a ProLiant server, BladeSystem enclosure, or host in the inventory tree, and then access **Management**.
- The Overview page opens.
- Click **More** at the bottom of the Host Information portlet, or select Host.
- Detailed host information is displayed, which includes both iLO and IML logs.

To view the Onboard Administrator logs for a host:

- Select a blade from the inventory tree and navigate to **Management**.
- Click **More** at the bottom of the Infrastructure portlet, or select Infrastructure.
- Detailed Infrastructure information is displayed, which includes the OA logs.

Viewing detailed Smart Array information

To view detailed Smart Array information:

Procedure

1. Select Home from the VMware vSphere Web Client.
2. Select the **Hosts and Clusters** icon.
3. Click on a host from the navigation pane and select **Manage**.
4. Select **Management** to view Smart Array detailed information.

Viewing host consistency information

Host consistency gives information about host configuration status and server profile status. If a cluster uses a reference host profile to configure other hosts, then the consistency tab reports data inconsistencies of all the hosts against the reference host. In case of a cluster grown using OneView SPT, then the consistency tab reports inconsistencies against the SPT changes.

NOTE:



This feature is available only in the vSphere Web Client.



TIP:

Mouse-over the **Host configuration** status icon to display a pop-up describing the status.

Procedure

1. The Host configuration status on the Consistency portlet of the Host Overview page indicates one of the following:
 - a.  **OK**
—indicates the host has a status of OK.
 - b.  **Mismatch**
—indicates the host has a server profile or a configuration status mismatch.

Apply Recommended Actions

will help modify the host consistency to match the reference host.

c. UNKNOWN

—Indicates the host is in an unknown state. This may indicate that the host is not responding to vCenter or the host is managed by a different environment than the reference host. For example, the host is in Virtual Connect but the reference host is in HPE OneView, or vice versa.

d. Host configuration status

—reflects the result of comparing the settings available in the host with the settings available in the HPE OneView profile of the host.

e. NA

—Indicates the host configuration status is not applicable. This is due to the fact that the host hardware type is not a blade.

NOTE:

- For information on setting up a reference host, see **Setting a reference host in a cluster** on page 52.
- If the host status is **Unknown**, mouse-over on the status icon displays the reason for the status. In this case, the host network data displayed is a result of comparison with its own Virtual Connect/HPE OneView profile.

-
2. Click the Host Configuration status icon.
 3. The Host Configuration screen is displayed. This displays the overall profile status, the Virtual Connect/HPE OneView profile status and the host configuration status for the current host. Recommended actions are included for configuring the server profile and VMware host network based on network preference and Virtual Connect/HPE OneView networks.
 - a. The Server Profile Status indicates whether the Virtual Connect/HPE OneView profile for this host matches the profile of the reference host.

If the Server Profile Status is **Mismatch**, then a mismatch in the Server Profile Status and Host Network Status can be corrected by triggering a host network configuration using, **Apply Recommended Action**.
 - b. The Host Network Status indicates whether the host network configuration with regard to its Virtual Connect/HPE OneView profile is correct.

If the Virtual Connect/HPE OneView profile status is OK, then a mismatch in the Host Network Status can be corrected by triggering a host network configuration using **Apply Recommended Action**.
 - c. The Host Network Configuration Status is a combination of both the above status indicators.

NOTE:

The host network configuration process automatically turns the host off before modifying the Virtual Connect/HPE OneView profile of the selected host. When the host network configuration process is complete, the host is turned back on.

-
4. Click **Apply Recommended Actions**.
 5. Confirmation screen is displayed which lists all the networking configuration changes that will be done. Review the changes that will be made.
 6. Click **Apply** to perform the actions.
 7. Once the changes are applied, the final status is shown in the news feed section. To view progress updates, access the Tasks page under Management.

NOTE:

- Host network configuration can fail on hosts having VMs running on them. The status and task details are shown under tasks for the host. HPE OneView for vCenter does not move the VMs before performing host network configuration. The cluster on which the host resides must be DRS enabled to handle VM movement automatically, or the VMs must be manually moved from the host before attempting host network configuration for the host.
 - If host network configuration fails after the host is put into maintenance mode, the host remains in maintenance mode and is not added back into the cluster. If this occurs, view the task details to determine the cause of the failure and resolve the issue manually (typically a vCenter/host configuration modification). The host configure operation should then be retried so the host is configured correctly and added back into the cluster.
 - If the host uses Server Profile Template, then it will have Reference Server Profile template name instead of a Reference host name.
 - A Mismatch link is displayed at the top of the consistency portlet on the host Overview page if there is a network mismatch. For information on resolving a network mismatch, see **[Setting host network configuration preferences](#)** on page 36.
-

Setting a reference host in a cluster

The reference host for a cluster identifies the host whose Virtual Connect/HPE OneView Profile is considered as the reference configuration when comparing all the hosts in the cluster.

NOTE:

- This feature is available only on the vSphere Web Client.
 - Only blade servers are supported as a reference host.
 - Only servers having Virtual Connect/HPE OneView profile information are supported as a reference host.
 - Ensure that no host network configuration operations are being performed within the cluster when selecting or changing a reference host.
 - If there is no reference host identified for the cluster, then the first host where the recommended actions are applied would be marked as the reference host for that cluster.
 - If the overall status of the reference host is not consistent, the message **Reference Host is not consistent** is displayed in a pop-up on mouse-over of the Host Network Configuration status of other hosts in the cluster.
-

Procedure

1. From the vSphere Web Client, for a selected host, click the Consistency tab on the Manage page.
2. Click **Set Reference Host** to set the selected host as the reference host.

Viewing host infrastructure information

The Host Infrastructure page displays information about blade status, enclosure status, and the enclosure power and thermal status as well as interconnect and OA information.

NOTE:

The Infrastructure portlet appears for blades only.

To view an overview of the blade server infrastructure:

Procedure

1. Select a host in the inventory tree.
2. Click the **Manage** tab, and then click **HPE Management**.

3. Click the **HPE Management** tab.
4. Click **More** on the Infrastructure section of the Host Overview page. The HPE Infrastructure Enclosure Summary page opens. Detailed host infrastructure information is displayed, including Enclosure information, Power information, and thermal information, Fan Module information, Power Supply Module information, Interconnect Module information, OA Module information, and OA Logs.

Viewing host networking information

The Networking page displays configuration information such as a list of NICs and vSphere switches, as well as Virtual Connect Network information. The Networking portlet, which displays an overview of the networking, is displayed on the Overview page.

To view Networking information about a selected host:

Procedure

1. Select a host in the inventory tree, and then access **Management**.
2. The Networking portlet on the Overview page provides an overview of the host network configuration.
3. The network configuration status of the host is displayed at the top of the portlet.
4. For detailed networking information, click **More** at the bottom of the Networking portlet or do the following:
 - a. From the vSphere Web Client, click the **Networking** tab on the Manage page.
5. The **Network Detail** view is displayed. Click **Network Diagram** to see a diagram of the network.
6. The following networking information is displayed.
 - a. Network Interface Controllers—detailed information about each NIC
 - b. vSphere Standard Switches—information about each switch, including name, ports, and port groups.
 - c. vSphere Distributed Switches—information about each switch, including Name, Downlink Port Groups, and Uplink Port Groups.
 - d. Virtual Connect information
 - e. External switch information

Using the network diagram

Host networking provides an option to display the end-to-end network from the VM to the external switch on a blade server when Virtual Connect is installed. See **Figure 29: Virtual Connect Network Diagram** on page 54.

To view a network diagram in the vSphere Web Client, click **Network Diagram** at the bottom of the Networking portlet, or click **Manage > Networking > Network Diagram**.

To view a network diagram in the vSphere Web Client, click **Network Diagram** at the bottom of the Networking portlet, or select **Network Diagram** from the pull-down navigation list.

While viewing the diagram:

- If you move the cursor over a Virtual Connect Ethernet network, iSCSI network, or FC SAN, the end-to-end network connection appears brighter. Potential bottlenecks are indicated when an information icon symbol is shown. You can modify bottleneck thresholds by selecting **Home > Administration > HPE Management Administration > Server Module Configuration**. Select the **Virtual Connect Over Subscription factor** to set the threshold.
- If you move the cursor over the information bubbles, details about the network hardware and status are displayed.
- If you move the cursor over a Virtual Connect uplink port, details about the port and connection status appear. For Ethernet uplink ports, a network traffic graph is included.
- A solid line indicates a primary network connection, proportioned according to bandwidth; the thicker the line, the greater the bandwidth.
- A dashed line indicates standby connections.

- The switches in the network diagram are color-coded according to the colors of the switch bays at the back of the enclosure.
- The switch ports in the network diagram are displayed with icons that show the shape of the port on the physical Virtual Connect switch.
- When using the vSphere Web Client, save a copy of the diagram in PNG format by clicking the **Save** icon

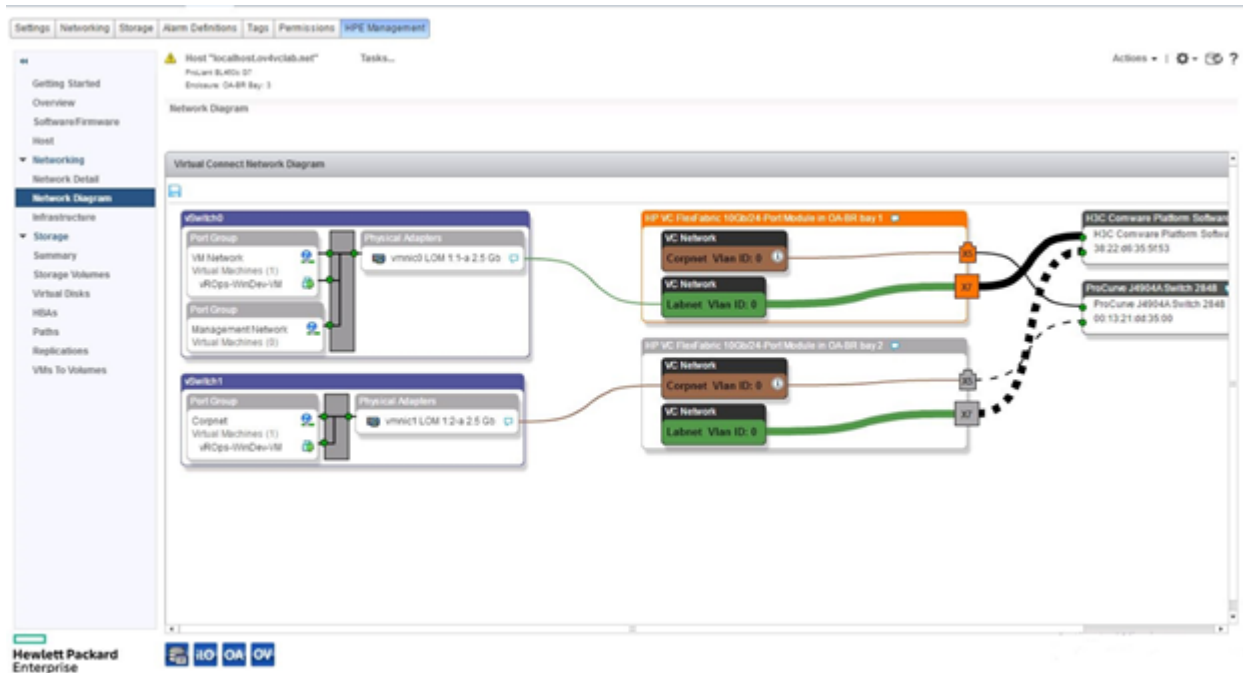


Figure 29: Virtual Connect Network Diagram

Viewing host software and firmware

NOTE:

Firmware information is available for vSphere/ESXi systems with the Offline Bundle or ESXi custom image installed only.

To view firmware information and/or update firmware for the selected server:

Procedure

1. Select a server in the inventory tree and access **Management**.
2. The Software/Firmware portlet on the Overview page provides an overview of primary software and firmware versions.
3. For detailed software and firmware information, click **More** at the bottom of the Software/Firmware portlet or do the following:
 - a. From the vSphere Web Client, click the **Software/Firmware** tab on the Manage page.
4. The details include software/firmware name, version, and a brief description.

Within the Software/Firmware page, you can do the following:

- View software inventory
- View firmware inventory
- Generate a firmware inventory list in CSV file format by clicking **Export (csv)** at the bottom of the page

Power cycling a server

NOTE:

This feature is available only on the vSphere Web Client.

The power to a ProLiant server can be turned off and on using the Power Control feature.

To use this feature, select **Power Control** from the Actions drop-down list.

IMPORTANT:

Because this is not a graceful shutdown of the server, this feature should be used with caution.

Rediscovering devices

NOTE:

This feature is available only on the vSphere Web Client.

A rediscovery of all the devices associated with a selected host can be initiated using the Rediscover Node feature. The rediscovery process may take up to 15 minutes to complete. Information collected from the devices will be missing in various places in the plug-in until the rediscovery is complete.

To use this feature, select **Rediscover Node** from the Actions drop-down list.

HPE OneView Firmware Management

The HPE OneView Firmware Management page is used with the vSphere Web Client to schedule firmware updates for hosts managed by HPE OneView. This feature is available only if the selected host has firmware managed by HPE OneView.

Scheduling firmware baselining

Procedure

1. From the Actions drop-down list, select **Update Firmware**.
 2. Select the new firmware baseline from the **New Firmware Baseline** drop-down list.
 3. Unselect the **Put host in Maintenance Mode** option if desired.
 4. Unselect the **Power on host once baseline is applied** option if desired.
 5. Unselect the **Exit Maintenance Mode once baseline is applied** option if desired.
-

TIP:

You may want to consider leaving the host in maintenance mode to manually verify the update before putting the host back in service.

6. Select the date and time to apply the baseline update. Click **Now** to set the values to the current date and time.
 7. Click **Schedule** to store the baseline update.
 8. The baseline update will be initiated at the scheduled date and time.
-

TIP:

You can monitor the firmware update in Tasks or News Feed, and in the VMware tasks.

Updating scheduled firmware baselining

The parameters for a scheduled firmware baselining can be modified before the update is initiated.

- Make the desired changes to the firmware baselining parameters.
- Click **Update** to store the changes to the scheduled firmware baselining.
- The baseline update will be initiated at the scheduled date and time.

HP SUM Firmware Management

The HP SUM Firmware Management page is used with the vSphere Web Client to schedule firmware updates for hosts with firmware that is not managed by HPE OneView. An instance of HP SUM 6.2 or higher must be configured, running, and accessible by HPE OneView for vCenter.

NOTE:

- The minimum HP SUM version supported is 6.2.0.
 - The HP SUM credentials must be configured in HPE OneView for vCenter prior to using this feature. For information on configuring the credentials, see “Credentials for Management Software Integration” in **Setting Server Module Credentials (vSphere Web Client only)** on page 9.
 - A VMware Host (ESXi) credentials—either global or host specific—must be configured for a successful HP SUM update.
-

Scheduling firmware baselining

Procedure

1. From the Actions drop-down list, select **Update Firmware**.
 2. Select the new firmware baseline from the **New Firmware Baseline** drop-down list.
 3. Unselect the **Reboot host if needed** option if desired.
 4. Unselect the **Place host in Maintenance Mode** option if desired.
 5. Unselect the **Exit Maintenance Mode after rebooting** option if desired.
-



TIP:

You may want to consider leaving the host in maintenance mode to manually verify the update before putting the host back in service.

6. Select the date and time to apply the baseline update. Click **Now** to set the values to the current date and time.
 7. Click **Schedule** to store the baseline update.
 8. The baseline update will be initiated at the scheduled date and time.
-



TIP:

You can monitor the firmware update in Tasks or News Feed, and in the VMware tasks.

Updating scheduled firmware baselining

The parameters for a scheduled firmware baselining can be modified before the update is initiated.

- Make the desired changes to the firmware baselining parameters
- Click **Update** to store the changes to the scheduled firmware baselining.
- The baseline update will be initiated at the scheduled date and time.

Viewing news feeds, tasks, and health information

Viewing news feed information

News feed information is displayed from various sources such as Providers (CIM), Onboard Administrator, and iLO. If a cluster is selected, news feeds from all the hosts in the cluster are displayed.

To view a list of recent events for the selected object:

Procedure

1. Select a component in the inventory tree for which you want news feeds and access **Management**.
2. The News Feed portlet on the Overview page provides an overview of recent events.
3. For detailed news feed information, click **More** at the bottom of the News Feed portlet or do the following:
 - a. From the vSphere Web Client, click the **News Feed** tab on the Monitor page.
4. Detailed event information is displayed. The details include object status, timestamp and a brief message. If a cluster is selected, information is displayed for all hosts in the cluster.

NOTE:

There is also a News Feed portlet on the Overview page under **Manage > Management**. Click **More** to see news feed details.

Viewing health/status information

Health information is collected from sources such as iLO, Onboard Administrator, Virtual Connect, CIM (Providers), and HPE OneView (vSphere Web Client only).

To view health/status information for the selected object:

Procedure

1. Select a component in the inventory tree for which you want health/status information and access **Management**.
2. The Health/Status portlet on the Overview page provides a status overview.
3. For detailed health information, click **More** at the bottom of the portlet or do the following:
 - a. From the vSphere Web Client, click the **Health** tab on the Monitor page.



TIP:

You can also access health/status information using the status icon located at the top left of each Management page. Moving your cursor over the status icon provides a list of icon definitions. For more detailed information, click **More** at the bottom of the list.

Monitoring tasks

Actions performed using the GUI are displayed in the tasks list. For example, updating firmware and toggling UID.

To view task information for the selected object:

Procedure

1. Select a component in the inventory tree for which you want task information and access **Management**.
2. The Tasks portlet on the Overview page provides a tasks overview.
3. For detailed task information, click **More** at the bottom of the Tasks portlet or do the following:
 - a. From the vSphere Web Client, click the **Tasks** tab on the Monitor page.

The details include Task status, Task name, Description, and Time stamp.

**TIP:**

When using the vSphere Web Client, a list of recent task is displayed in the right pane of the Management page.

Launching into Hewlett Packard Enterprise tools

HPE OneView for vCenter provides links to launch Hewlett Packard Enterprise tools if available. Some of the tools that can be launched from the **Management** tab are as follows:

- Integrated Lights Out (iLO)
- Onboard Administrator (OA)
- Virtual Connect (VC). Link for launching Virtual Connect at host level.
- Virtual Connect Enterprise Manager (VCEM). This link is displayed when VC is locked by VCEM.
- System Insight Manager (HPE SIM)
- Insight Power Manager (IPM)
- storage system management utilities
- HPE OneView (vSphere Web Client only). This link is displayed if the selected host is managed by HPE OneView. If a selected cluster contains hosts managed by HPE OneView, this link will be displayed at the cluster level also. If the cluster includes hosts managed by separate instances of HPE OneView, mouse-over the OV icon to display a popup menu with links to each HPE OneView instance.

When configured for vCenter administrators, auto-login is enabled for direct launch into the Hewlett Packard Enterprise tools listed in this section with the exception of Virtual Connect Manager and HPE OneView, which do not support auto-login. Users with read-only access cannot access the Hewlett Packard Enterprise tools. Other non-administrative vCenter Server users are prompted to enter a user name and password to access the Hewlett Packard Enterprise tools.

Onboard Administrator Single Sign-On

To enable SSO, you must upload the HPE OneView for vCenter certificate to the Onboard Administrator.

Procedure

1. On the Onboard Administrator, navigate to **Users/Authentication > HPE SIM Integration**.
2. Set the trust mode to **Trust by Certificate**.
3. Locate and copy the certificate using the following method:
 - a. Access the certificate in the following file:

```
install location\uim\server.pem
```

Open this file with a text editor, such as Notepad, and then copy the text.
4. Click the **Onboard Administrator SIM Integration Certificate Upload** tab, and then paste the contents of the HPE OneView for vCenter certificate into the box.

Using the Storage Module for vCenter

Use the Storage Module for vCenter to view, customize, and refresh storage information that is displayed in the vSphere Web Client.

Navigating Management with the Storage Module

Management displays information about Hewlett Packard Enterprise storage systems. To access the Overview page, select a component in the inventory tree, and then access **Management**. In the vSphere Web Client, click the **Manage** tab and click **HPE Management**.

For more information, see [Accessing HPE OneView for vCenter](#) on page 31.

The Overview page for servers and clusters is shared between the Server Module and Storage Module. The Overview page for datastores and VMs is available only when the Storage Module is installed. For information about the overview pages, see the following:

- [Managing hosts](#) on page 48
- [Managing clusters](#) on page 37
- [Managing datastores](#) on page 59
- [Managing VMs](#) on page 59

Managing datastores

To display the Overview page for a datastore, select a datastore in the inventory tree and access **Management**.

From the Overview page, you can do the following:

- Access the News Feed, Storage, and Software/Firmware portlets.
- Perform provisioning operations from the Actions drop-down list. For more information, see [Provisioning storage](#) on page 86.
- View read-only information about the storage associated with the selected component.

Managing VMs

To display the Overview page for a VM, select a VM in the inventory tree, and access **Management**.

From the Overview page, you can do the following:

- Access the News Feed, Storage, and Software/Firmware portlets.
- Perform provisioning operations from the Actions drop-down list. For more information, see [Provisioning storage](#) on page 86.
- View read-only information about the storage associated with the selected component.

Refreshing Storage Module for vCenter data

After installation, the Storage Module collects information about the VMware environment and the storage systems configured in the VMware environment.

When a cache refresh is in progress:

- The refresh status is listed at the top of each storage page. To view details about the cache refresh, move the cursor over the cache refresh icon.

The time it takes for a refresh to complete depends on the size of the environment and the number of storage systems configured in the Storage Module.

NOTE:

Previously gathered data is displayed in the GUI during a cache refresh.

You can change the automatic cache refresh settings or manually refresh the cache. For more information, see the following:

- [Manually refreshing the cache](#) on page 60

Manually refreshing the cache

When you make changes to the VMware environment using VMware operations (for example, **Add Datastore**, **New Virtual Machine**, and **Remove (VM) From Inventory**), the changes are not reflected in the vSphere Web Client until the cache is refreshed. Hewlett Packard Enterprise recommends that you manually refresh the cache whenever you do any of the following:

- Add, remove, or modify storage systems.
- Add or remove VMware hosts, VMs, or datastores using VMware operations.
- Change the storage provisioning using the storage system management console.
- Delete a VM from a disk using a VMware command.


NOTE:

Provisioning changes performed by the Storage Module for vCenter do not require a manual cache refresh. This information is automatically updated when the provisioning operation is complete. For more information, see [Provisioning storage](#) on page 86.

Use the following procedures to start a cache refresh immediately using Management or the Administrator Console.

Using HPE Management

Procedure

1. Click the cache refresh icon 
2. HPE Management Refresh screen displays the options available.
3. Click **Continue** to continue the cache refresh, or click **Cancel** to stop the refresh.
4. If you click **Cancel** when the refresh process is in a state where it is safe to cancel, the operation is stopped. If it is not safe to cancel, the operation is cancelled as soon as it is safe to stop the operation.
5. Optional: Move the cursor over the refresh status on any storage page to view the elapsed time and estimated time remaining.

Using the Administrator Console

Procedure

1. Log in to the **Administrator** Console.
2. Navigate to **Storage systems > Actions > Refresh**.

Customizing Storage Module for vCenter tables

Storage Module for vCenter pages include tables that present detailed storage information about hosts, VMs, and datastores. The table structure can be customized to meet your needs.

Consider the following when working with the information in the storage tables:

- Click **Export Table** to export the information in a tab to a `.csv` file. When prompted to browse to a download folder, select a folder, and then click **OK**.
- Enter a value in the text box below a column heading to filter the list by a specific value.
- Click the divider between columns and drag to resize a column.
- Click a column heading to sort the data by the selected column.
- Click on the column heading to sort the table by the content of the column. Clicking on the column heading reverses the sort order.

- Click **Save Column Settings** to save the changes.
- Customize the tables as needed. The following changes are saved in cookies and are retained across page reloading and vSphere Web Client sessions:
 - Resized column widths
 - Sorting criteria for one or multiple columns
 - Information about hidden columns

Selecting columns for display in the vSphere Web Client

Click **Select Columns...** from the pull-down Filter list.

A list of the columns is displayed. See **Figure 30: Adding and removing columns (vSphere Web Client)** on page 61.

- Check the box next to a column to display it. Click **Select All** to select all the columns.
- Clear the box next to a column to not display it.
- Click **OK** to save the changes after you add or remove columns.

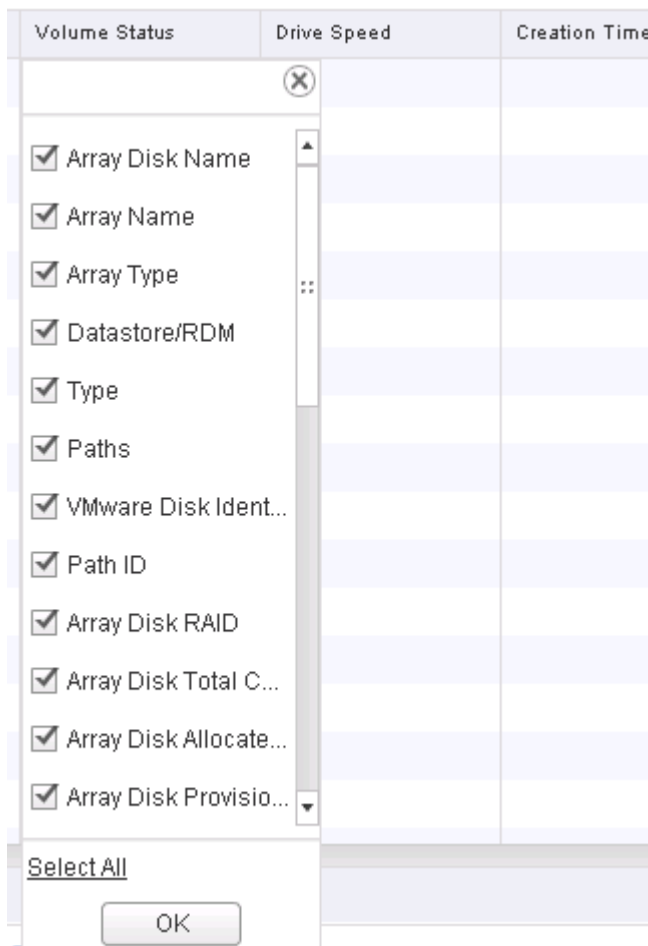


Figure 30: Adding and removing columns (vSphere Web Client)

Viewing host storage information

To view storage information for a host:

Procedure

1. Select a host in the inventory tree and access **Management**.

The Storage portlet on the Overview page provides an overview of the storage systems.

2. For detailed storage information, click **More** at the bottom of the Storage portlet or do the following:
 - a. From the vSphere Web Client, click the **Storage** tab on the Manage page.
3. The storage details page appears.
4. Click **Summary**.

The storage summary displays information about storage and includes a graphical representation of the information. For more information, see [Host storage summary information](#).

Viewing detailed host information

Click the **Storage Volumes**, **Virtual Disks**, **HBAs**, **Paths**, **Replications**, or **VMs to Volumes** tab to view detailed information about the selected host. For information about the values displayed in these tabs, see the following:

- [Viewing storage volumes](#)
- [Viewing virtual disks](#)
- [Viewing HBAs](#)
- [Viewing paths](#)
- [Viewing replications](#)
- [Viewing VMs to volumes](#)

Host storage summary information

The storage summary displays the following information about the selected host:

Storage Provisioned to Host

- **Volumes**
 - Number of volumes available to the host from configured storage systems and whether any are thin-provisioned
- **Storage Provisioned**
 - Amount of storage available to the host from configured storage systems
- **Storage Used**
 - Amount of storage from configured storage systems that is used by the host

NOTE:

The Storage Used value can differ from the Storage Provisioned value if thin provisioning or demand-allocated snapshots are used.

- **Storage ThP Savings**
 - Amount of storage saved through the use of thin provisioning
- **Volumes overprovisioned**
 - Number of over-provisioned volumes

Provisioned from Host to Virtual Machines

- **Current storage inventory**
 - Number of datastores, RDMS, and unused volumes provisioned to VMs
- **Host Provisioned Capacity**
 - Total amount of storage available to the host, including storage, local storage, and unmanaged disks
- **Host Used Capacity**
 - Amount of storage used by the host

- **Host Available Capacity**
—Amount of unused storage on the host
- **Datastores overprovisioned**
—The number of over-provisioned datastores

Storage Systems

This section lists the storage systems that present disks to the selected host. For each storage system, move the cursor over the status bar to view storage information.

The following information is displayed for each storage system:

Storage Provisioned to Host

- **Volumes**
—Number of volumes presented to the selected host from the storage systems
- **Used**
—Amount of storage used by the host from the storage systems
- **Total**
—Total amount of storage presented to the selected host from the storage systems
- **Free pool capacity**
—Amount of available storage in the selected storage systems. The number reflects the difference between configured storage and used storage.
 - HPE StoreVirtual—Amount of available storage in HPE StoreVirtual storage systems storage pools provisioned to this cluster
- **% Savings**
—Amount of storage saved through the use of storage systems-based thin provisioning

Storage Pool

- **Total pool size**
—Total size of the storage pool
- **Provisioned used on pool**
—Amount of provisioned space used on the storage pool
- **Provisioned free on pool**
—Amount of provisioned space free on the storage pool
- **Unallocated space on pool**
—Amount of space not provisioned or allocated on the storage pool

Datastores

This section lists the datastores provisioned from the selected host to VMs. For each datastore, move the cursor over the status bar to view storage information.

The following information is displayed for each datastore:

- **Virtual disks**
—Number of virtual disks on datastores provisioned from the selected host to VMs
- **Total**
—Amount of storage provisioned on the host as virtual disks (VMDKs or RDMs)
- **Used**
—Amount of storage used on the host as virtual disks (VMDKs or RDMs)
- **% Savings**

—Amount of storage saved through the use of VMware-based thin provisioning

Available StoreOnce Backup Systems

This section lists the StoreOnce Backup Systems available. For each StoreOnce Backup System, move the cursor over the status bar to view storage information.

For each configured backup system, all the service sets are displayed. For each service set the following information is displayed:

- **Used**

—Amount of data stored on the service set by the services on the service set

- **Total**

—Total amount of storage on the service set

- **Deduplication Ratio**

—Deduplication ratio of data stored on the service set

Viewing cluster storage information

To view storage information for a cluster:

Procedure

1. Select a cluster in the inventory tree and access **Management**.
2. The Storage portlet on the Overview page provides an overview of the storage.
3. For detailed storage information, click **More** at the bottom of the Storage portlet or do the following:
 - a. From the vSphere Web Client, click the **Storage** tab on the Manage page.
4. The storage details page appears.
5. Click **Summary**.
6. The cluster storage summary displays information about storage and includes a graphical representation of the information. For more information, see [Cluster storage summary information](#).

Viewing detailed cluster information

Click the **Storage Volumes**, **Virtual Disks**, **HBAs**, **Paths**, **Replications**, or **VMs to Volumes** tab to view detailed information about the selected cluster. For information about the values displayed in these tabs, see the following:

- [Viewing storage volumes](#)
- [Viewing virtual disks](#)
- [Viewing HBAs](#)
- [Viewing paths](#)
- [Viewing replications](#)
- [Viewing VMs to volumes](#)

Cluster storage summary information

The storage summary displays the following information about the selected cluster:

Storage Provisioned to Cluster

- **Volumes**

—Number of volumes available to the cluster from configured storage systems and whether any are thin-provisioned

- **Storage Provisioned**

—Amount of storage available to the cluster from configured storage systems

- **Storage Used**

—Amount of storage from configured storage systems that is used by the cluster

NOTE:

The Storage Used value can differ from the Storage Provisioned value if thin provisioning or demand-allocated snapshots are used.

- **Storage ThP Savings**

—Amount of storage saved through the use of storage systems-based thin provisioning

- **Volumes overprovisioned**

—Number of over-provisioned volumes

Provisioned from Cluster to Virtual Machines

- **Datastores overprovisioned**

—The number of over-provisioned datastores

- **Cluster Provisioned Capacity**

—Total amount of storage available to the cluster, including storage, local storage, and unmanaged disks

- **Cluster Used Capacity**

—Amount of storage used by the cluster

- **Cluster Available Capacity**

—Amount of unused storage available to the cluster

Storage Systems

This section lists the storage systems that present disks to the selected cluster. For each storage, move the cursor over the status bar to view storage information.

The following information is displayed for each storage system:

- **Volumes**

—Number of volumes presented to the selected cluster from the storage system

- **Used**

—Amount of storage used by the cluster from the storage system.

- **Total**

—Total amount of storage presented to the selected cluster from the storage system

- **% Savings**

—Amount of storage saved through the use of storage system-based thin provisioning

Datastores

This section lists the datastores provisioned from the selected host to VMs. For each datastore, move the cursor over the status bar to view storage information.

The following information is displayed for each datastore:

- **Virtual disks**

—Number of virtual disks on datastores provisioned from the selected host to VMs

- **Total**

—Amount of storage provisioned on the host as virtual disks (VMDKs or RDMs)

- **Used**

- Amount of storage used on the host as virtual disks (VMDKs or RDMs)
- **% Savings**
 - Amount of storage saved through the use of VMware thin provisioning

Available StoreOnce Backup Systems

This section lists the StoreOnce Backup Systems available. For each StoreOnce Backup System, move the cursor over the status bar to view storage information.

For each configured backup system, all the service sets are displayed. For each service set the following information is displayed:

- **Used**
 - Amount of data stored on the service set by the services on the service set
- **Total**
 - Total amount of storage on the service set
- **Deduplication Ratio**
 - Deduplication ratio of data stored on the service set

Viewing datastore storage information

Procedure

1. To view information about datastore storage availability and use:
2. Select a datastore in the inventory tree and access **Management**.
3. The Storage portlet on the Overview page provides an overview of the storage.
4. For detailed storage information, click **More** at the bottom of the Storage portlet or do the following:
 - a. From the vSphere Web Client, click the **Storage** tab on the Manage page.
5. The storage details page appears.
6. Click **Summary**.

The datastore storage summary displays information about storage and includes a graphical representation of the information. For more information, see [Datastore storage summary information](#).

Viewing detailed datastore information

Click the **Storage Volumes**, **Virtual Disks**, **HBAs**, **Paths**, **Replications**, or **VMs to Volumes** tab to view detailed information about the selected datastore. For information about the values displayed in these tabs, see the following:

- [Viewing storage volumes](#)
- [Viewing virtual disks](#)
- [Viewing HBAs](#)
- [Viewing paths](#)
- [Viewing replications](#)
- [Viewing VMs to volumes](#)

Datastore storage summary information

This tab displays the following information about the selected datastore:

Storage Provisioned to Datastores

- **Volumes**

—Number of volumes available to the datastore from configured storage systems and whether any are thin-provisioned

- **Storage Provisioned**

—Amount of storage available to the datastore from storage systems

- **Storage Used**

—Amount of storage from storage systems that is used by the datastore

- **Storage ThP Savings**

—Amount of storage saved through the use of storage system-based thin provisioning

- **Volumes overprovisioned**

—Number of over-provisioned volumes

Provisioned from Datastore to Virtual Machines

- **Current storage inventory**

—Number of datastores, RDMS, and unused volumes provisioned to VMs

- **Datastore Provisioned Capacity**

—Total amount of storage available to the datastore

- **Datastore Used Capacity**

—Amount of storage used by the datastore

- **Datastore Available Capacity**

—Amount of available storage on the datastore

- **Datastores overprovisioned**

—The number of over-provisioned datastores

Storage Systems

This section lists the storage systems that provide storage to the selected datastore. For each storage system, move the cursor over the status bar to view storage information.

The following information is displayed for each storage system:

- **Volumes**

—Number of volumes presented to the selected datastore from the storage system

- **Used**

—Amount of storage used by the datastore from the storage system

- **Total**

—Total amount of storage presented to the selected datastore from the storage system

- **Free pool capacity**

—Amount of storage available in storage pools

Datastores

This section lists the selected datastore. Move the cursor over the status bar to view storage information.

The following information is displayed for the datastore:

- **Virtual disks**

—Number of virtual disks on the datastore

- **Total**

—Amount of storage on this datastore that is provisioned by VMDKs or RDMS

- **Used**

- Amount of storage on this datastore that is used by VMDKs or RDMs
- **% Savings**
 - Amount of storage saved through the use of thin provisioning

Available StoreOnce Backup Systems

This section lists the StoreOnce Backup Systems available. For each StoreOnce Backup System, move the cursor over the status bar to view storage information.

For each configured backup system, all the service sets are displayed. For each service set the following information is displayed:

- **Used**
 - Amount of data stored on the service set by the services on the service set
- **Total**
 - Total amount of storage on the service set
- **Deduplication Ratio**
 - Deduplication ratio of data stored on the service set

Viewing VM storage information

Procedure

1. To view storage information for a VM:
2. Select a VM in the inventory tree and access **Management**.
3. The Storage portlet on the Overview page provides an overview of the storage.
4. For detailed storage information, click **More** at the bottom of the Storage portlet or do the following:
 - a. From the vSphere Web Client, click the **Storage** tab on the Manage page.
5. The storage details page appears.
6. Click **Summary**.

The VM storage summary displays information about storage and includes a graphical representation of the information. For more information, see [VM storage summary information](#).

Viewing detailed VM information

Click the **Storage Volumes**, **Virtual Disks**, **HBAs**, **Paths**, **Replications**, or **VMs to Volumes** tab to view detailed information about the selected VM. For information about the values displayed in these tabs, see the following:

- [Viewing storage volumes](#)
- [Viewing virtual disks](#)
- [Viewing HBAs](#)
- [Viewing paths](#)
- [Viewing replications](#)
- [Viewing VMs to volumes](#)

VM storage summary information

This tab displays the following information about the selected VM:

Storage Provisioned to Virtual Machine

- **Volumes**

—Number of volumes available to the VM from configured storage systems and whether any are thin-provisioned

- **Storage Provisioned**

—Amount of storage available to the VM from storage systems

- **Storage Used**

—Amount of storage from storage systems that is used by the VM

- **Storage ThP Savings**

—Amount of storage saved through the use of storage system-based thin provisioning

- **Volumes overprovisioned**

—Number of over-provisioned volumes

Provisioned by Virtual Machine

- **Current storage inventory**

—Number of datastores, RDMs, and unused volumes provisioned by the selected VM

- **Virtual Machine Provisioned Capacity**

—Amount of storage provisioned by VMDKs or RDMs

- **Virtual Machine Used Capacity**

—Total amount of storage used by the VM

- **Virtual Machine Available Capacity**

—Amount of storage available to the VM

Storage Systems

This section lists the storage systems that provide storage to the selected VM. For each storage system, move the cursor over the status bar to view storage information.

The following information is displayed for each storage system:

- **Volumes**

—Number of volumes presented to the selected VM from the storage system

- **Used**

—Amount of storage used by the VM from the storage system

- **Total**

—Total amount of storage presented to the selected VM from the storage system

- **Free pool capacity**

—Amount of storage available in storage pools on the storage system

Datastores

This section lists the datastores provisioned from the selected host to VMs. For each datastore, move the cursor over the status bar to view storage information.

The following information is displayed for each datastore:

- **Virtual disks**

—Number of virtual disks on datastores provisioned from the selected host to VMs

- **Total**

—Amount of storage provisioned on the host as virtual disks (VMDKs or RDMs)

- **Used**

—Amount of storage used on the host as virtual disks (VMDKs or RDMs)

- **% Savings**

—Amount of storage saved through the use of VMware thin provisioning

Available StoreOnce Backup Systems

This section lists the StoreOnce Backup Systems available. For each StoreOnce Backup System, move the cursor over the status bar to view storage information.

For each configured backup system, all the service sets are displayed. For each service set the following information is displayed:

- **Used**

—Amount of data stored on the service set by the services on the service set

- **Total**

—Total amount of storage on the service set

- **Deduplication Ratio**

—Deduplication ratio of data stored on the service set

Viewing detailed storage information

When you view storage information in Management, the Storage page includes another row of tabs and a filter that you can use to view specific information about storage components, such as:

- Summary
- Storage Volumes
- Compaction and deduplication ratios
- Virtual Disks
- HBAs
- Paths
- Replications
- VMs to Volumes

Viewing storage volumes

The storage volumes page displays the following information:

- **Storage System Disk Name**

- HPE StoreVirtual—Volume name
- HPE 3PAR StoreServ—Volume name
- HPE MSA—Volume name
- HPE StoreOnce Backup—Not applicable

- **Storage System Name**

- HPE StoreVirtual—Management group name
- HPE 3PAR StoreServ—Storage system display name
- HPE MSA—System name
- HPE StoreOnce Backup—Not applicable

- **Storage System Type**

—Hewlett Packard Enterprise Storage System type

- **Datastore/RDM**

—Datastore name or the associated `.vmdk` name for the RDM

- **Type**

—Disk type (Datastore or RDM)

- **Paths**

—Number of paths to the disk

- **VMware Disk Identifier**
—Disk name assigned by VMware
- **Path ID**
—Path ID assigned by VMware
- **Storage System Disk RAID**
—RAID level of the Storage System disk
- **Storage System Disk Total Capacity**
—Storage System disk capacity (in GB)
- **Storage System Disk Allocated Capacity**
—Capacity allocated by the storage system. For a thin-provisioned disk, this value might differ from the Storage System Disk Total Capacity value.
- **Storage System Disk Provisioned**
—Specifies whether the disk is thin provisioned or normal
- **Storage System Disk Type**
—Storage System disk type
- **Storage Pool**
 - HPE StoreVirtual—Name of the cluster.
 - HPE 3PAR StoreServ—Disk group where the vdisk is located.
 - HPE MSA—Name of the vdisk or pool where the volume is located.
 - HPE StoreOnce Backup—Not applicable.
- **Storage Pool Available Capacity**
 - HPE StoreVirtual—Unallocated space in the storage pool (cluster) that can be used to meet storage needs for a snapshot or thin-provisioned volume. The calculation of this value assumes all unallocated space is formatted the same as this volume. For all other volume types, no value is displayed.
 - HPE 3PAR StoreServ—Unallocated space in the storage pool that can be used to meet storage needs for a snapshot or thin-provisioned volume. For all other volume types, no value is displayed. The calculation of this value assumes that all disk space uses the same RAID type as this volume.
 - HPE MSA—Unallocated space in the storage pool (cluster) that can be used to meet storage needs for a snapshot or thin-provisioned volume. The calculation of this value assumes all unallocated space is formatted the same as this volume. For all other volume types, no value is displayed.
 - HPE StoreOnce Backup—Not applicable
- **Storage Pool Domain Name**
—Domain name assigned to CPG (applies only to HPE 3PAR StoreServ)
- **Copy Pool Name**
—Assigned Copy CPG (applies only to HPE 3PAR StoreServ)
- **Replicated**
—Specifies whether the disk is replicated
- **Physical Device Type**
—The type of device in the CPG (applies only to HPE 3PAR StoreServ). The types can be FC, NL, or SSD.
- **Zero Detection**
—Detect and discard zeros during volume copying (applies only to HPE 3PAR StoreServ)
- **Volume ID**
—Internal volume ID (applies only to storeserv and **storevirtual 13.0 onwards**)
- **Volume Status**
—Volume health status (applies only to HPE 3PAR StoreServ)

- **Drive Speed**
—Physical drive speed (applies only to HPE 3PAR StoreServ)
- **Creation Time**
—Source volume creation time (applies only to HPE 3PAR StoreServ)
- **Expiration Time**
—Source volume expiration time (applies only to HPE 3PAR StoreServ)
- **Retention Time**
—Source volume retention time (applies only to HPE 3PAR StoreServ)
- **User Space Warning**
—Alert threshold for a volume's User CPG (applies only to HPE 3PAR StoreServ)
- **User Space Limit**
—Write failure threshold for a volume's User CPG (applies only to HPE 3PAR StoreServ)
- **Copy Space Warning**
—Alert threshold for a volume's Copy CPG (applies only to HPE 3PAR StoreServ)
- **Copy Space Limit**
—Write failure threshold for a volume's Copy CPG (applies only to HPE 3PAR StoreServ)

Viewing compaction and deduplication ratios

The compaction ratio is how much physical storage space a volume consumes compared to its virtual size and applies to both thin provisioned and thinly deduplicated volumes. The deduplication ratio is how much physical storage space would have been used without deduplication, compared to the actual storage space used by a thinly deduplicated volume. The deduplication ratio does not include savings from inline zero-detection.


The compaction and deduplication ratios are available when viewing details of a 3PAR StoreServ storage system under HPE Infrastructure. The top section reports these ratios at the storage system level while the Storage Summary portlet reports these ratios at the CPG level. From the Home screen, navigate to **HPE Infrastructure > HPE Storage Systems**, select any firmware version (3.2.1 MU2) 3PAR system, and then click the **Summary** tab.

The compaction and deduplication ratios are also available for storage volumes. Select a cluster, host, VM, or datastore, and navigate to **Manage > HPE Management > Storage > Storage Volumes**. The **Compaction Ratio** and **Deduplication Ratio** data are displayed for deduplicated volumes on 3PAR StoreServ storage systems.

HPE 3PAR StoreServ "BumbleBee" Actions ▾

Summary Related Objects

✓ HPE 3PAR StoreServ "BumbleBee"



Model: HPE 3PAR StoreServ F400
 Serial Number: 1304308
 System Id: 4308
 System WWN: 2FF70002AC0010D4
 Firmware: 3.1.3 (MU1)
 Deduplication: Not Supported


Hewlett Packard Enterprise

Figure 31:

HPE 3PAR StoreServ "BumbleBee" Actions ▾

Summary Related Objects

✓ HPE 3PAR StoreServ "BumbleBee" | ⚙️ 📧 ?



Model: HPE 3PAR StoreServ F400
 Serial Number: 1304308
 System Id: 4308
 System WWN: 2FF70002AC0010D4
 Firmware: 3.1.3 (MU1)
 Deduplication: Not Supported

Hewlett Packard Enterprise

HPE Storage Provisioned to VMware

7 volumes (6 thin-provisioned)

HPE Storage Provisioned	49.25 GB
HPE Storage Used	12.50 GB
HPE Storage Thin Provisioned	49.25 GB
HPE Storage Used Thin Provisioned	12.50 GB
HPE Storage ThP Savings	75%
0 volumes overprovisioned	

System Summary	
Controller Nodes	4
Configured User	administrator

Storage Summary	
CPGs	83
CPG Name	Test_CPG
CPG Name	Copy_CPG
CPG Name	200B_Limited_CPG
CPG Name	2TB_Limited_Raid_6
CPG Name	1TB_Limited_Raid5
CPG Name	NL_Test_CPG
CPG Name	5000B_Limited_Raid0
CPG Name	5000B_Limited_Raid1
CPG Name	3TB_Limited_Raid6

Figure 32:

Viewing virtual disks

The virtual disks page displays the following information:

- **Virtual Disk Name**

- Virtual disk name assigned by VMware
- **Virtual Disk Type**
 - Virtual disk type (VMDK or RDM)
- **Virtual Machine**
 - Name of the VM associated with the selected VMDK or RDM
- **Datastore**
 - Datastore name or the `.vmdk` name for the RDM
- **Provisioned Capacity**
 - Disk capacity visible to a VM using this VMDK or RDM
- **Allocated Capacity**
 - Disk capacity reserved by VMware for the VMDK or RDM For an RDM, this value will match the provisioned capacity value. For a VMDK, this value might be less than the provisioned capacity value if VMware thin provisioning is used. This is separate from thin provisioning configured in the storage system.
- **VMware Provisioned**
 - Thick or thin

Viewing HBAs

The HBAs page displays the following information:

- **Host Names**
 - Host name or cluster host names
- **Type**
 - HBA type
- **VMware Device Identifier**
 - HBA identifier assigned by VMware
- **WWN/IQN**
 - HBA WWN

NOTE:

HBA WWN address is not available for HPE MSA SAS storage systems.

- **Label**
 - HBA identifier assigned by VMware

Viewing paths

The Paths tab is displayed for selected components. It displays the following information:

- **Storage System Disk Name**
 - HPE StoreVirtual—Volume name
 - HPE 3PAR StoreServ—Volume name
 - HPE MSA—Volume name
 - HPE StoreOnce Backup—Not applicable
- **Storage System Name**
 - HPE StoreVirtual—Management group name
 - HPE 3PAR StoreServ—Storage System display name
 - HPE MSA—System name
 - HPE StoreOnce Backup—Not applicable

- **Host HBA Port WWN/IQN**
 - HPE StoreVirtual—IQN assigned to the host
 - HPE 3PAR StoreServ (FC)—WWN for the host port on the host end of this path
 - HPE 3PAR StoreServ (iSCSI)—IQN assigned to the host
 - HPE MSA (FC, SAS)—WWN for the host port on the host end of this path
 - HPE MSA (iSCSI)—IQN assigned to the host
 - HPE StoreOnce Backup—Not applicable
- **Storage System Port WWN/IQN**
 - HPE StoreVirtual—IQN used by the host for connecting to this disk on this storage system
 - HPE 3PAR StoreServ (FC)—WWN for the storage system port on the storage system end of this path
 - HPE 3PAR StoreServ (iSCSI)—IQN used by the host for connecting to this disk on this storage system
 - HPE MSA (FC, SAS)—WWN for the storage system port on the storage system end of this path
 - HPE MSA (iSCSI)—IQN used by the host for connecting to this disk on this storage system
 - HPE StoreOnce Backup—Not applicable
- **LUN**
 - LUN used for presenting the storage disk from the storage system port to the host HBA port
- **Host**
 - Host that is currently running the selected VM
- **Storage System Type**
 - Hewlett Packard Enterprise system type
- **Storage System Controller**
 - Controller used for this path
- **Storage System Port**
 - Storage System's port identifier used for this path
 - HPE StoreVirtual—Not applicable
 - HPE 3PAR StoreServ—Port WWN of the controller node
 - HPE MSA—Port on the storage system controller used for this path
 - HPE StoreOnce Backup—Not applicable
- **Host Group**
 - HPE StoreVirtual—Name configured for the host's IQN in the management console
 - HPE 3PAR StoreServ—Name of the host object containing the host WWN for this path
 - HPE MSA—Nickname of the host with the host WWN for this path
 - HPE StoreOnce Backup—Not applicable
- **Host Access**
 - HPE StoreVirtual—Host access level assigned to the presentation of the disk to the host (for example, READ/WRITE or READ-ONLY)
 - HPE 3PAR StoreServ—N/A. 3PAR storage volumes operate in a read-only/read-write configuration.
 - HPE MSA—Access setting for volume mapping (for example, READ/WRITE or READ-ONLY)
 - HPE StoreOnce Backup—Not applicable
- **Storage System Port Speed**
 - HPE StoreVirtual—Not applicable
 - HPE 3PAR StoreServ—Speed at which the port is connected to the SAN (Gb/s)
 - HPE MSA

- FC—Speed at which the port is connected to the SAN (Gb/s)
- iSCSI—Speed at which the network port is connected to the network (Gb/s)
- SAS—Speed at which the port is connected to the host or switch (Gb/s)
- HPE StoreOnce Backup—Not applicable
- **Host Mode**
 - HPE StoreVirtual—Not applicable
 - HPE 3PAR StoreServ—Not applicable
 - HPE MSA—Name of the host's profile
 - HPE StoreOnce Backup—Not applicable
- **Preferred Path**
 - HPE StoreVirtual—Not applicable
 - HPE 3PAR StoreServ—Not applicable
 - HPE MSA—Not applicable
 - HPE StoreOnce Backup—Not applicable
- **Active Path**
 - Specifies whether the path is active or in standby status. If a path is active and then goes offline, a standby path takes over.
- **Path ID**
 - Path ID assigned by VMware
- **VMware Disk Identifier**
 - Disk name assigned by VMware

Viewing replications

NOTE:

Replication on MSA are available only for Linear (Thick Provisioned) datastores using V2 SMU/CLI mode. You must manage the primary replication system through Administrator Console to obtain the replication reporting.

The replications page displays the following information:

- **Source Disk Name**
 - Source replication disk
- **Source System**
 - Storage System identifier for the local (source) storage system; displayed only for Continuous Access replications and MSA shows the primary replication system storage system name.
- **Replication Type**
 - The type of replication used:
 - HPE StoreVirtual—Snapshot, Remote Snapshot
 - HPE 3PAR StoreServ—Virtual copy, Physical copy, Peer Persistence
 - HPE MSA—Periodic Asynchronous Remote Copy
 - HPE StoreOnce Backup—Not applicable
- **Replica Name**
 - Target replication disk. For MSA, it shows the replication set name.
- **Replica Storage System**
 - Storage System identifier for the remote (target) storage system; displayed only for Continuous Access replications. MSA shows remote system storage system name.
- **Replica Status**

—Status of the replica (for example, PAIR, SUSPEND, SYNCHED, or COPY). See the **Figure 33: Replication status** on page 77 for MSA replication status mapping.

MSA Array Replication State	OV4VC Replication Status
Initializing or Replicating or Replicate-delay	SYNCHING
Online	SYNCHED
suspended	SUSPEND
Offline or Inconsistent	STOPPED
Detached	FAILED
ALL other	UNKNOWN

Figure 33: Replication status

- **Replication Group**
 - MSA—Not applicable
 - HPE StoreVirtual—Not applicable
 - HPE 3PAR StoreServ—Remote Copy group name
 - HPE StoreOnce Backup—Not applicable
- **Datastore/RDM Type**
 - Datastore/RDM type (Datastore or RDM)
- **Datastore Name**
 - Datastore name
- **Source Creation Time**
 - Source volume creation time (applies to HPE 3PAR StoreServ, but not to MSA)
- **Source Expiration Time**
 - Source volume expiration time (applies to HPE 3PAR StoreServ, but not to MSA)
- **Source Retention Time**
 - Source volume retention time (applies to HPE 3PAR StoreServ, but not to MSA)

Switching Peer Persistence

The Switch Peer Persistence page is used to reverse the source and target roles of a 3PAR StoreServ Peer Persistence relationship. Source and target storage systems must be configured in the Administrator Console for Peer Persistence related features to work.

NOTE:

Switch Peer Persistence is only applicable to 3PAR StoreServ source disks. The Switch Peer Persistence operation can be initiated from any of the Storage tabs that display the source disk.

Procedure

1. Open the Switch Peer Persistence page in one of the following ways:
 - a. Select a 3PAR StoreServ host or VM and then select

Manage > Storage > Replications

. Right-click on the Source Disk Name and select the

Switch Peer Persistence

option.

- b. Right-click on a disk name in the Storage Volumes table and select the

Switch Peer Persistence

option.

- c. Right-click on a disk name in the VMs to Volumes Details or Graphics view and select the

Switch Peer Persistence

option.

2. Click **Switch Peer Persistence** to swap the source and target roles.
3. A window is displayed to confirm switching Peer Persistence. The window also indicates how you can monitor the progress of the operation.
4. Click **OK**.

Viewing VMs to volumes

The VMs to volumes page displays the following information:

On the VMs to volumes page click **Details** to display the information in table format or click **Graphics** to display a graphical representation of the VMs to volumes paths.

Details format

NOTE:

The same VM can appear multiple times, based on the number of available paths to a storage disk.

- **Virtual Machine**
 - VM name
- **VM Provisioned Capacity**
 - Amount of storage provisioned on the host as virtual disks (VMDKs or RDMs)
- **VM Allocated Capacity**
 - Amount of storage used on the host as virtual disks (VMDKs or RDMs)
- **Virtual Disk Name**
 - Virtual disk name assigned by VMware
- **Virtual Disk Type**
 - Virtual disk type (VMDK or RDM)
- **Virtual Disk Provisioned Capacity**
 - Actual size of the VMware virtual disk
- **Virtual Disk Allocated Capacity**
 - Allocated capacity of VMware virtual disk
- **VMware Provisioned**
 - Thick or thin
- **Datastore**
 - The datastore that contains the VM
- **VMware Disk Identifier**
 - Disk name assigned by VMware

- **Storage System Disk Name**
 - HPE StoreVirtual—Volume name
 - HPE 3PAR StoreServ—Volume name
 - HPE MSA—Volume name
 - HPE StoreOnce Backup—Not applicable
- **Storage System Disk Type**
 - Storage System disk type
- **Storage System Name**
 - HPE StoreVirtual—Management group name
 - HPE 3PAR StoreServ—Storage System display name
 - HPE MSA—System name
 - HPE StoreOnce Backup—Not applicable
- **Storage System Type**
 - Hewlett Packard Enterprise storage system type
- **Storage System Disk Total Capacity**
 - Total amount of storage available to the datastore
- **Storage System Disk Allocated Capacity**
 - Size of the virtual disk on the storage system
- **Storage System Disk Provisioned**
 - Whether the virtual disk uses thick or thin provisioning
- **Storage System Controller**
 - Controller used for this path
- **Storage System Port**
 - Storage system's port identifier used for this path
- **Host Group**
 - HPE StoreVirtual—Name configured for the host's IQN in the management console
 - HPE 3PAR StoreServ—Name of the host object containing the host WWN for this path
 - HPE MSA—Nickname of the host with the host WWN for this path
 - HPE StoreOnce Backup—Not applicable
- **Host Access**
 - HPE StoreVirtual—Host access level assigned to the presentation of the disk to the host (for example, READ/WRITE or READ-ONLY)
 - HPE 3PAR StoreServ—N/A. 3PAR storage volumes operate in a read-only/read-write configuration.
 - HPE MSA—Access setting for volume mapping (for example, READ/WRITE or READ-ONLY)
 - HPE StoreOnce Backup—Not applicable
- **Host Mode**
 - HPE StoreVirtual—Not applicable
 - HPE 3PAR StoreServ—Not applicable
 - HPE MSA—Name of the host's profile
 - HPE StoreOnce Backup—Not applicable
- **Host Name**
 - Host name
- **Current Owner**
 - Specifies whether the host is the current owner of the selected VM
- **Host HBA Port WWN**

- HPE StoreVirtual—IQN assigned to the host
- HPE 3PAR StoreServ (FC)—WWN for the host port on the host end of this path
- HPE 3PAR StoreServ (iSCSI)—IQN assigned to the host
- HPE MSA (FC, SAS)—WWN for the host port on the host end of this path
- HPE MSA (iSCSI)—IQN assigned to the host
- HPE StoreOnce Backup—Not applicable
- **Storage System Port WWN**
 - HPE StoreVirtual—IQN used by the host for connecting to this disk on this storage system
 - HPE 3PAR StoreServ (FC)—WWN for the storage system port on the storage system end of this path
 - HPE 3PAR StoreServ (iSCSI)—IQN used by the host for connecting to this disk on this storage system
 - HPE MSA (FC, SAS)—WWN for the storage system port on the storage system end of this path
 - HPE MSA (iSCSI)—IQN used by the host for connecting to this disk on this storage system
 - HPE StoreOnce Backup—Not applicable
- **LUN Number**


—LUN used for presenting the storage disk from the storage system port to the host HBA port
- **Path ID**

—Path ID assigned by VMware
- **Preferred Path**
 - HPE StoreVirtual—Not applicable
 - HPE 3PAR StoreServ—Not applicable
 - HPE MSA—Not applicable
 - HPE StoreOnce Backup—Not applicable
- **Active Path**

—Specifies whether the path is active or in standby status

Graphics format

The graphics format provides a representation of the paths between the following entities:

- Virtual Machine
- Virtual Disk Name
- Datastore
- Storage System Disk Name
- Storage pool
- Storage System Name
- A legend describing each element in the graphic can be displayed by right-clicking a column heading and selecting the **Show Legend** option.
- Columns can be sized by dragging the border.
- Right-click on a column heading to display a menu of options for displaying the column content.
- All columns except the Virtual Machine column can be hidden. Connection paths will pass through the hidden column. To control which columns are displayed, right-click a column heading and select the **Show/Hide Columns** option.
- Right-click on a component to initiate an action. For example, right-click on a datastore to expand or delete it.
- The graphic can be exported to a PDF file for printing using the **Export All** option on the pull-down menu located in the lower-right corner of the screen.
- Use the **Filter** tool () in the upper-right corner of the page to limit the information displayed. Enter the data you want to filter on. For example, if you want to see only unmanaged disks, filter on the word `unmanaged`.

Viewing VVOLs

VVOL information is available in the **Storage Volumes**, **Paths** and the **VMs To Volumes** tabs of the Storage module.

HPE OneView for VMware vCenter reports information about Data VVOL and Configuration VVOL.

- **Storage Volume**

tab—Volumes can easily be identified by looking at the types shown in the **Storage System Disk Type** column and are displayed as Config VVOL and Data VVOL.

- **VMs To Volume**

tab—Enhanced to represent Data VVOLs and Configuration VVOLs with new icons. The updated legend on this page helps you to identify these volumes. Right-click on the table column-name, and then click **Show Legend** to see the updated icons and their descriptions.



Figure 34:

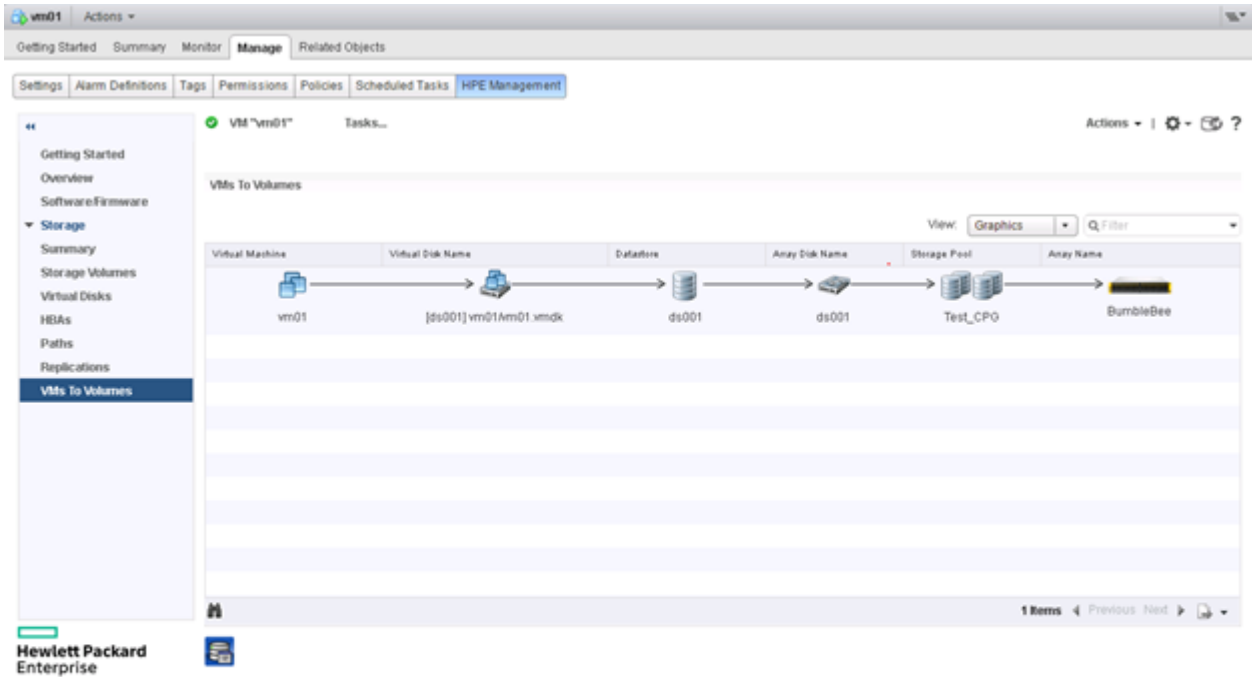


Figure 35:

Viewing Infrastructure information

NOTE:

The Infrastructure feature is available on the vSphere Web Client only.

The HPE Infrastructure page displays information for Storage Systems and Enclosures, and Hyper-converged systems.

The Storage Module for vCenter provides an inventory list that can be displayed to view more information on the configured storage systems. To view the storage systems on the HPE Infrastructure page, they must first be configured using the Administrator Console. For more information, see **Configuring vCenters and Storage Systems** on page 10.


To access the HPE Infrastructure page, on the vSphere Web Client home page click on the **HPE Infrastructure** link in the left navigation pane or click the **Infrastructure** icon under Inventories.

Storage Systems infrastructure page

The Storage Systems infrastructure page displays information for all storage systems configured in the plug-in's environment. The number adjacent to the **HPE Storage Systems** link in the left navigation panel indicates the number of storage systems that have been configured using the Administrator Console. Click on **HPE Storage Systems** to expand the list of configured storage systems and backup systems.

The inventory list indicates the type and name of storage system or backup system. Select an item from the list to display more information in the center pane. The information displayed is determined by the type of storage system selected.




**TIP:**

After configuring storage systems, refresh the storage data by clicking the **Refresh Cache** link in the Administrator Console, or clicking the **Refresh** icon () in any of the Management or Infrastructure pages. Wait for the refresh to complete before opening the Hyper-converged infrastructure page. You can view the refresh status by mousing over the Refresh icon in the web client.

Summary

The HPE Storage Systems Summary tab is organized into the following sections:

- **Header**

—The first line of information includes details like health, storage system type, and the name of the item selected. The health of the storage system is indicated using color-coded icons. A green icon (  )

- **Overview**

—Displays system information such as the model, serial number, and firmware version. If a storage system is selected, the amount of storage provisioned to VMware is displayed. If the storage system has a web based management console, a link is provided to launch the management console.

- **System Summary portlet**

—Displays the number of controllers on the system for storage systems. Expand the controllers to see the names of the individual controllers and ports. For backup systems, the rolled up status at the cluster level is displayed along with the capacity and the deduplication ratio. In addition, the configured user and the IP address of the management system, if applicable, are displayed.

- **Storage Summary portlet**

—Provides additional details about the storage on the system. For a storage system, all the storage pools are listed. Expand each storage pool name to see capacity information for that storage pool and access level as specified in the Administrator Console. For 3PAR StoreServ storage systems, the RAID value of the CPG and the drive type of the physical disks are also displayed. For a StoreOnce backup system, this section displays the service sets in the cluster. Upon expanding each service set, the rolled up health, serial number, capacity, services, and deduplication ratio are displayed. Expand the node name to see the primary and the secondary nodes on which the service set is running. Expand each of the services label to see the status of the service and the number of backup targets for VTL, NAS, and catalyst services.


Related Objects

For a StoreVirtual storage system belonging to a hyper-converged group, the Related Objects tab provides a link to the hyper-converged groups. Double click the name to view details about the hyper-converged group.

Hyper-converged infrastructure page

The hyper-converged infrastructure page provides details about the hyper converged groups configured in the plug-in's environment. The StoreVirtual management server must be configured using the Administrator Console to make the hyper-converged group visible. The number adjacent to the HPE Hyper-converged link in the left navigation panel indicates the number of hyper-converged groups. Click **HPE Hyper-converged** to see the list of groups. Select an item from the list to display information about the hyper-converged systems and nodes in the group.




**TIP:**

After configuring StoreVirtual management server, refresh the storage data by clicking the **Refresh Cache** link in the Administrator Console, or clicking the **Refresh** icon () in any of the Management or Infrastructure pages. Wait for the refresh to complete before opening the HPE Hyper-converged infrastructure page. You can view the refresh status by mousing over the Refresh icon in the web client.

Summary

The HPE Hyper-converged Summary tab is organized into the following sections:

- **Header**

—The header at the top of the page includes the health and the name of the item selected. The health of the hyper-converged group is indicated using color-coded icons. A green icon () indicates that there are no warnings or errors for this storage system. A yellow icon () or a red icon () indicates warnings or errors respectively. Details about the health may be obtained by logging to the management console of the StoreVirtual management group.

- **Overview**

—The top section of the page shows the model and the number of systems and nodes contained within the group. If this group contains different types of hyper-converged systems, each unique model will be displayed. The aggregated resource data for CPU, memory and storage is shown in the graphs.

- **Summary portlet**

—Displays the number of StoreVirtual VSA clusters, hosts and virtual machines related to this hyper-converged group.

- **Systems portlet**

—Displays all the hyper-converged systems in this group. Expand the system to see the model and the list of nodes it contains.

- **Nodes portlet**

—Displays all the hyper-converged nodes in this group. Expand each of nodes to see its details. The host, the storage system, and the StoreVirtual node can all be navigated to by clicking the corresponding hyperlink in the portlet.

Related Objects




The HPE Hyper-converged Related Objects tab displays all of the storage systems and hosts that are related to the hyper-converged group. You can view the storage system details by double clicking on the name.

Enclosures infrastructure summary page

The Enclosures infrastructure summary page displays information for all enclosures configured in the environment. The number adjacent to the **HPE Enclosures** link in the left navigation panel indicates the number of enclosures in the environment. Click on **HPE Enclosures** to expand the list of enclosures.

The enclosure infrastructure information is organized into the following sections:

- **Overview**

—Displays general enclosure information including name, rack, model, UUID, serial number, OA firmware version, VMware hosts, and number of empty bays. Graphs of the current enclosure power and temperature values are also displayed. The health of the enclosure is indicated using color-coded icons. A green icon () indicates that there are no warnings or errors for this enclosure. A yellow icon () or red icon () indicates warnings or errors respectively. Details on the health may be obtained by logging in to the management console for the enclosure.

- **Servers portlet**

—lists the enclosure host servers. This does not display drive enclosure details.

- **Fans portlet**

—lists the enclosure fan information including model, status, and speed.

- **Interconnects portlet**

—lists the interconnect information including status, product name, and firmware version.

- **Power Supplies portlet**

—lists the enclosure power supply information including model, status, and current power output.

- **Drive Enclosure**

—lists the information related to drives in Synergy enclosures.

NOTE:

The Drive Enclosure portlet is unavailable in C7000 enclosures.

**TIP:**

Use the icon in the upper right corner of a portlet to maximize it.

Enclosures infrastructure Related Objects page

Hosts—Click on the Related Objects tab and select **Hosts** to display information for all the hosts configured in the environment. Host information includes Name, State, Status, Cluster and percentage of CPU.

Cluster—Click on the Related Objects tab and select **Cluster** to display information for all of the clusters configured in the environment. This feature helps you to determine where your clusters reside inside of the enclosures. The information displayed on this page includes cluster name, Available CPU, Available Memory, Available Storage, and vSphere HA. Click on the cluster you want to investigate and select **HPE Enclosure** from the list of related objects.

HPE Enclosure—Click **Related Objects** > **Host Enclosure** to display the Enclosure Name, Status, Temperature and Power parameters.

Enclosures Manage page

The Manage tab displays HPE Enclosure details such as:

- **General**
- **Hardware**
- **Firmware**
- **Devices**
- **Interconnects**
- **Power Supplies**
- **Fans**
- **Drive Enclosures**

NOTE:

Drive Enclosures is enabled only in case of Synergy enclosures and disabled in C7000 enclosures.

Provisioning storage

The Storage Module for vCenter supports storage provisioning for 3PAR StoreServ, StoreVirtual, and MSA storage systems. You can perform storage provisioning operations such as creating a new datastore, deleting or expanding an existing datastore, or creating new VMs.

To perform the tasks in this chapter, you must:

- Use a storage system that supports provisioning.
- Disable the browser pop-up blocker. If the pop-up blocker is enabled, provisioning cannot be initiated by right-clicking a VM, host, cluster, or datastore in the inventory tree.
- Use a cluster with configured hosts when performing provisioning operations on a cluster.



TIP:

By default, Internet Explorer shows the page URL in the title bar of a pop-up browser window. To show the window title, enable the following Internet Explorer security settings:

- Allow script-initiated windows without size or position constraints
 - Allow websites to open windows without address or status bars
-

Viewing the audit log

The Storage Module for vCenter provides an audit log for provisioning operations. The audit log, `provisionAuditLog.txt`, is available in the following directory:

```
/var/log/ov4vc/storage
```

Creating a datastore

You can create a new datastore on a host or cluster that meets the following prerequisites.

Hosts

- The host must exist in the VMware inventory of the web client.
- In an FC environment, the SAN must be zoned between the storage pools and the host.
- The host must be configured as a hostgroup or host on the storage system.
- StoreVirtual storage systems in an iSCSI environment only:
 - The iSCSI initiator on the host must be installed and configured.
 - The iSCSI storage system IP address or hostname must be configured in the iSCSI initiator's dynamic discovery list on the host.

Clusters

- The cluster and its hosts must exist in the VMware inventory of the web client.
- In an FC environment, the SAN must be zoned between the storage pools and the cluster hosts.
- The cluster hosts must be configured as hostgroups or hosts on the storage system.
- The cluster hosts can belong to separate hostgroups.

NOTE:

The Storage Module for vCenter does not support configurations that have all cluster hosts in a single hostgroup.

- StoreVirtual storage systems in an iSCSI environment only:

- The iSCSI initiator on all cluster hosts must be installed and configured.
- The iSCSI storage system IP address or hostname must be configured in the iSCSI initiator's dynamic discovery list on all cluster hosts.

Create a datastore using the vSphere Web Client

After the new datastore is created by the plug-in, the new volume is shown in HPE OneView; and when a new volume is created in HPE OneView, you can manage it from the plug-in. To ensure that the new volume is available to HPE OneView and the plug-in:


- The HPE OneView server profile corresponding to an ESX Host that is managed by the plug-in must be created in HPE OneView.
- The same storage systems must be configured in the plug-in and in HPE OneView.
- The same CPGs must be configured in the plug-in and in HPE OneView.

To add a datastore to a host or cluster:

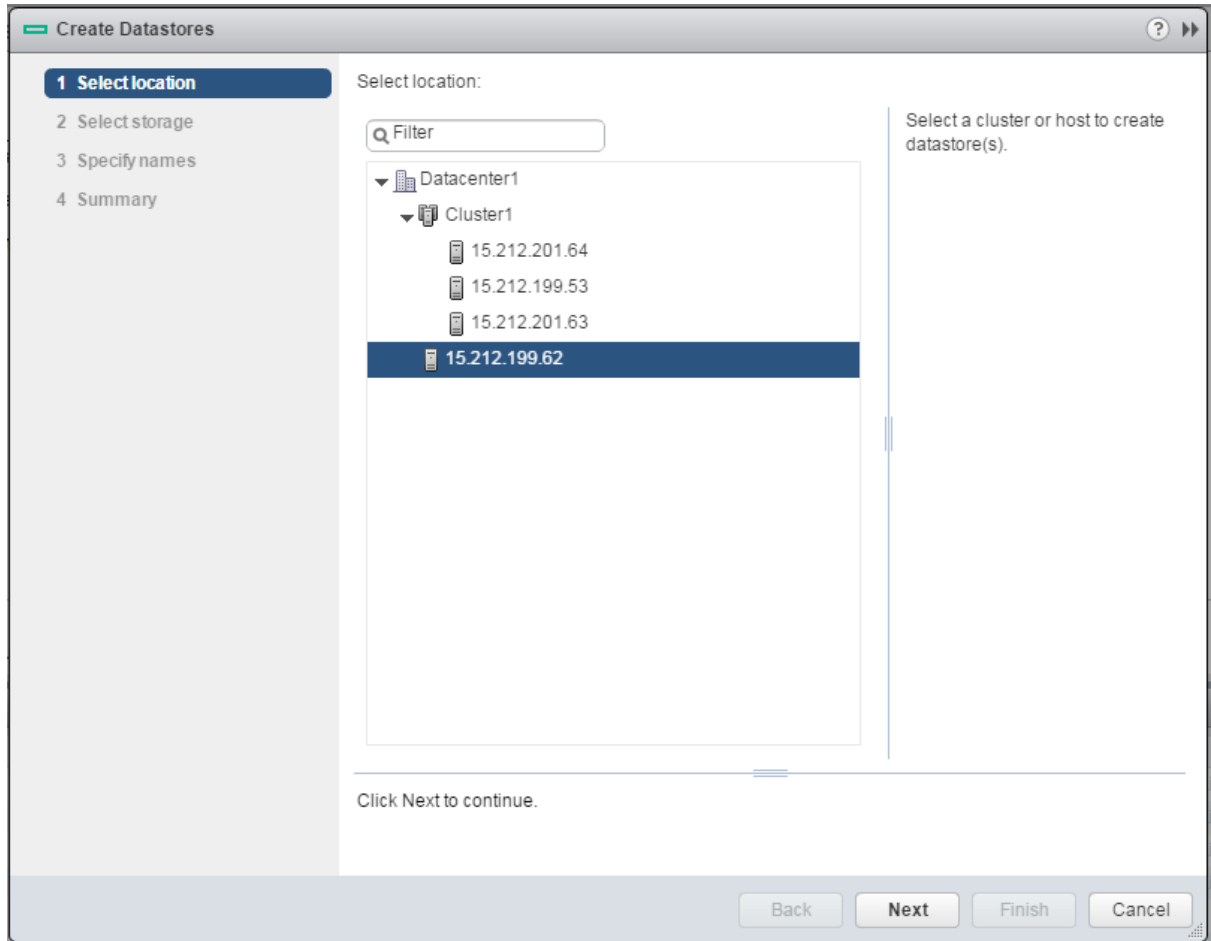
Procedure

1. Start the vSphere Web Client and access Management.
2. Use one of the following methods to start the Create Datastore wizard:
 - Right-click a host or cluster and select **All HPE Management Actions > HPE Create Datastore**
 - Select **Actions > Create Datastore** on the Management page for a host or cluster.
 - Right-click a host or cluster in any Storage Module for vCenter table, and then select **Create Datastore**.

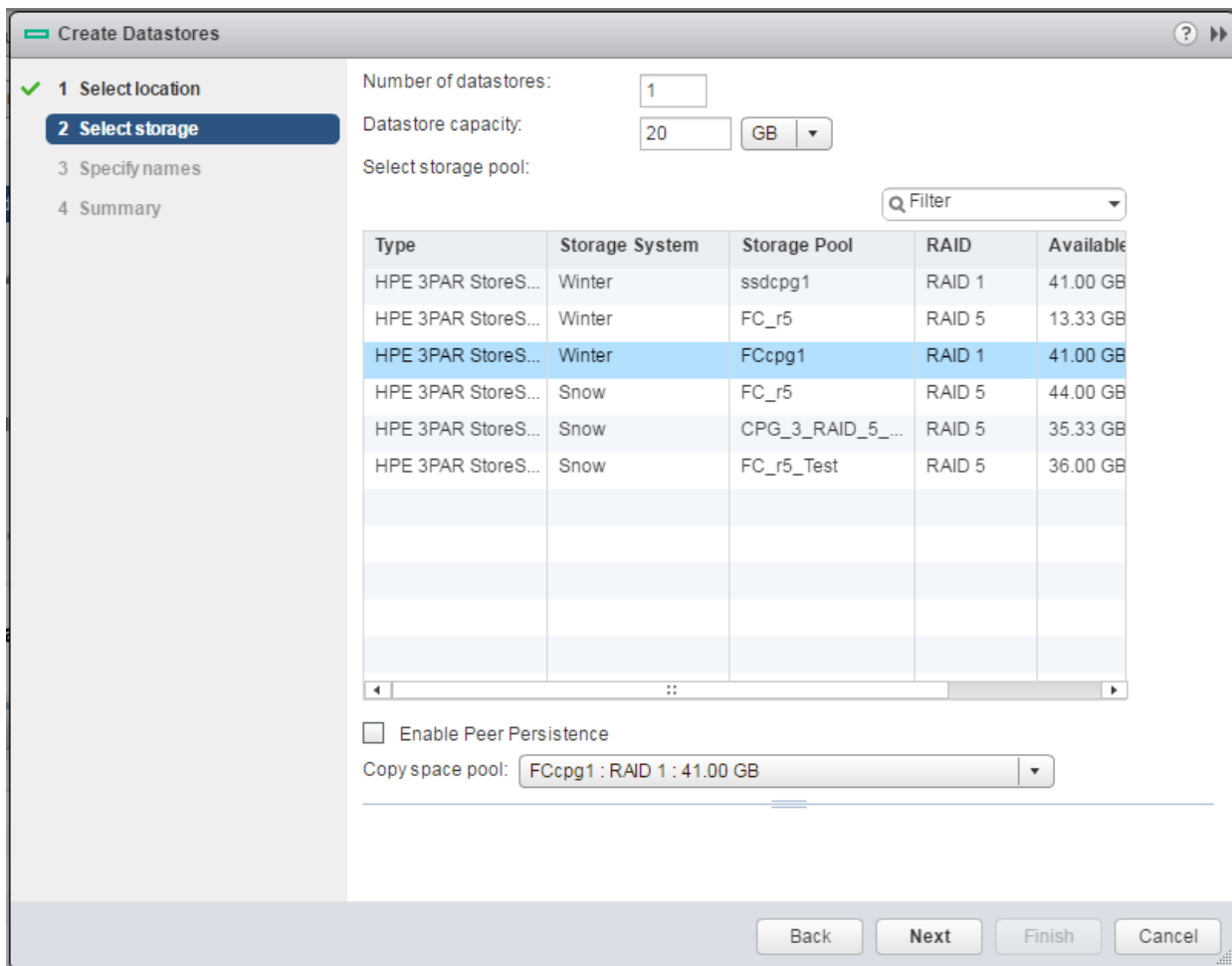
NOTE:

You can minimize the wizard using the minimize control () in the upper right corner of the screen. The wizard will be added to the Work in Progress panel on the right. Click on it to resume the wizard.

The Create Datastores wizard opens and displays the Select Location window.

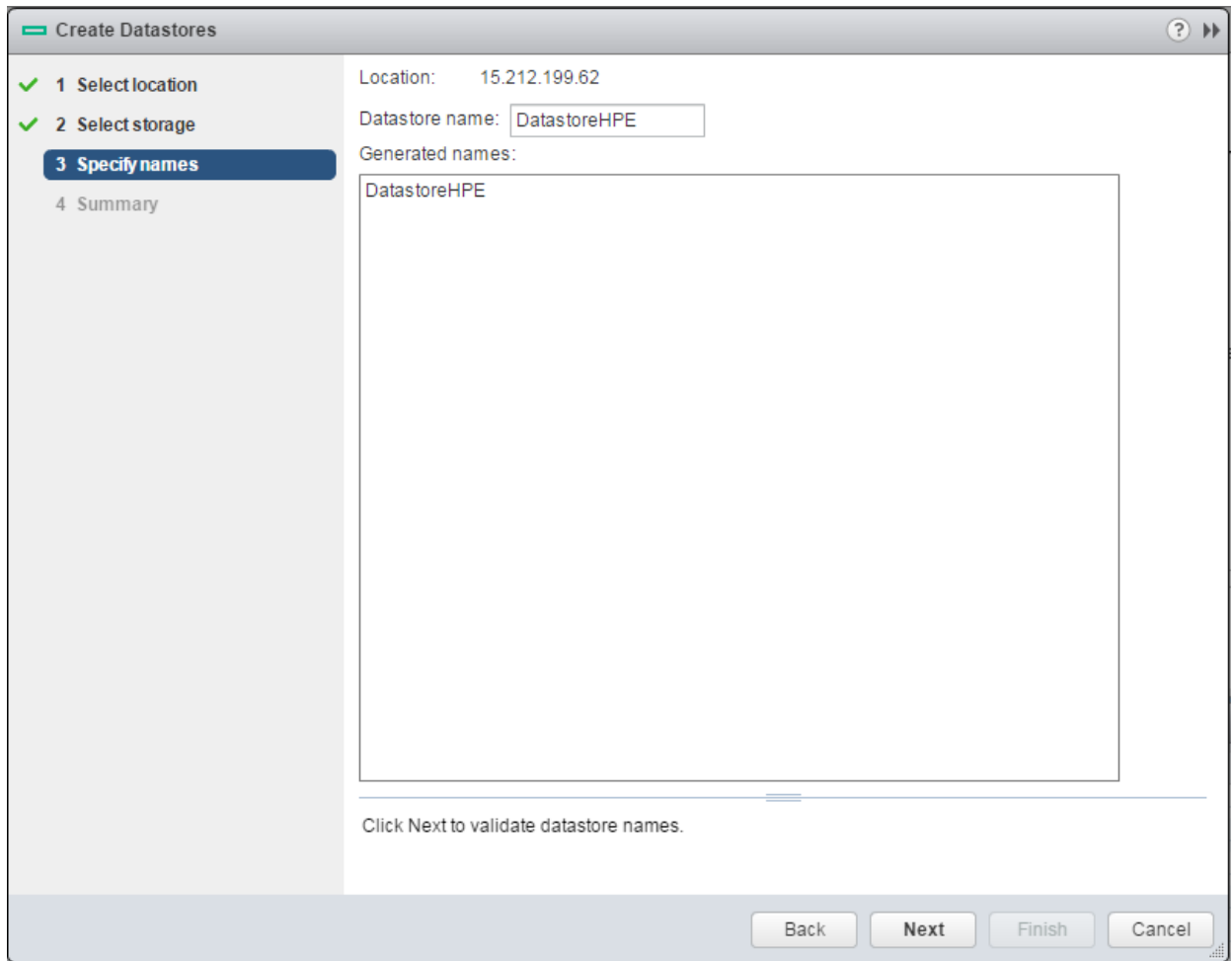


3. Select the host or the cluster which will own the new datastore in **Select location**.
A compatibility check is done to ensure the selected location is valid. If it is not, an error message is displayed and a different location must be selected.
4. Click **Next**.
The Select Storage window opens.

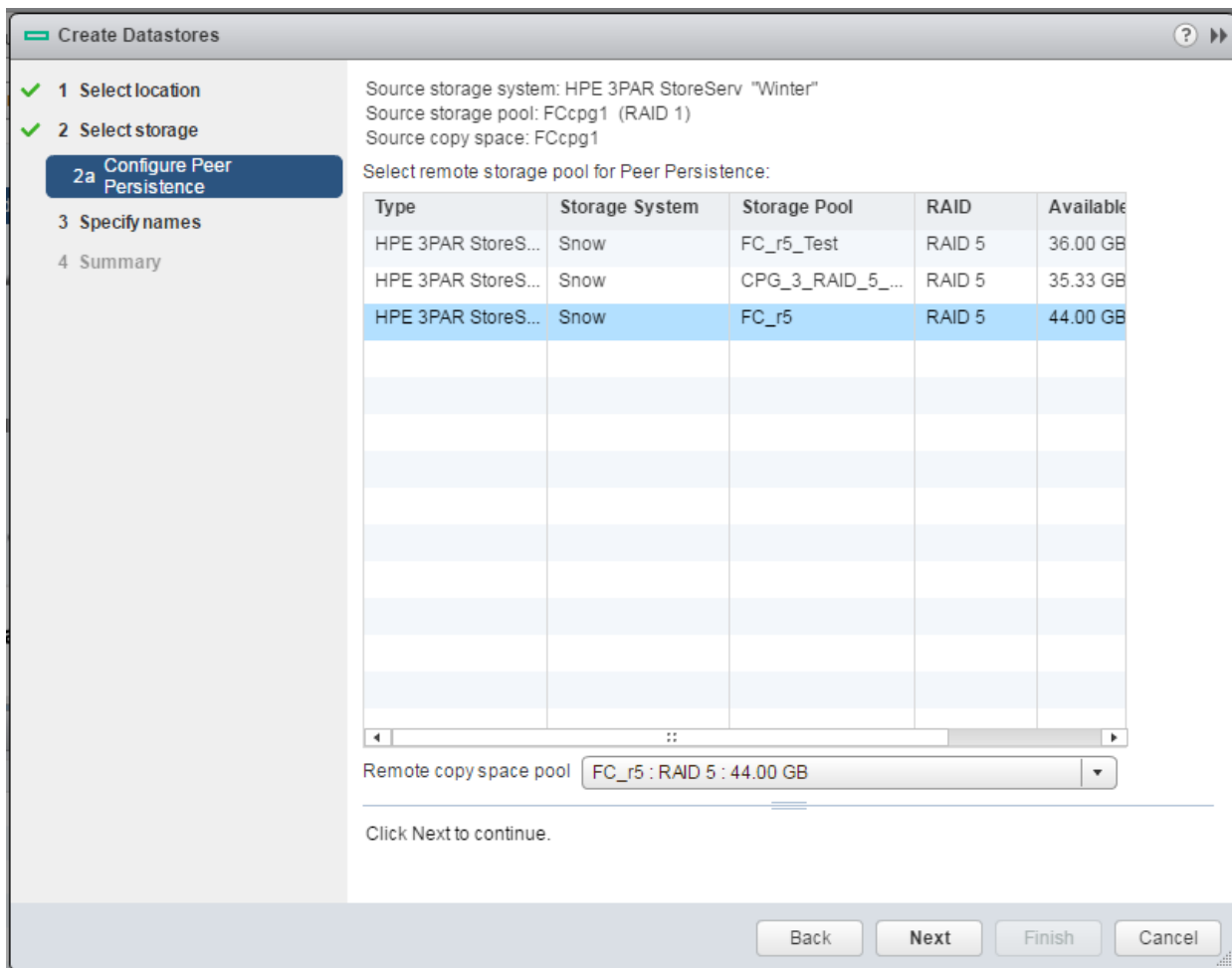


5. Enter the number of datastores to create in the **Number of datastores** box.
6. Enter the capacity for the new datastores in the **Datastore Capacity** box.
The actual value used by the software might be slightly higher than specified in order to accommodate the VMware overhead.
7. Select a storage pool.
8. Depending on the type of storage system selected, perform one of the following steps:
 - a. For a 3PAR StoreServ, select a **Copy Space Pool** to use for the new datastore.
 - b. For all other storage system types, select a **RAID Level** to use for the new datastore.
9. For a 3PAR StoreServ, select **Enable Peer Persistence** if desired.
10. Click **Next**.

If **Enable Peer Persistence** was not selected, the Specify Names window opens. Continue with step 12.

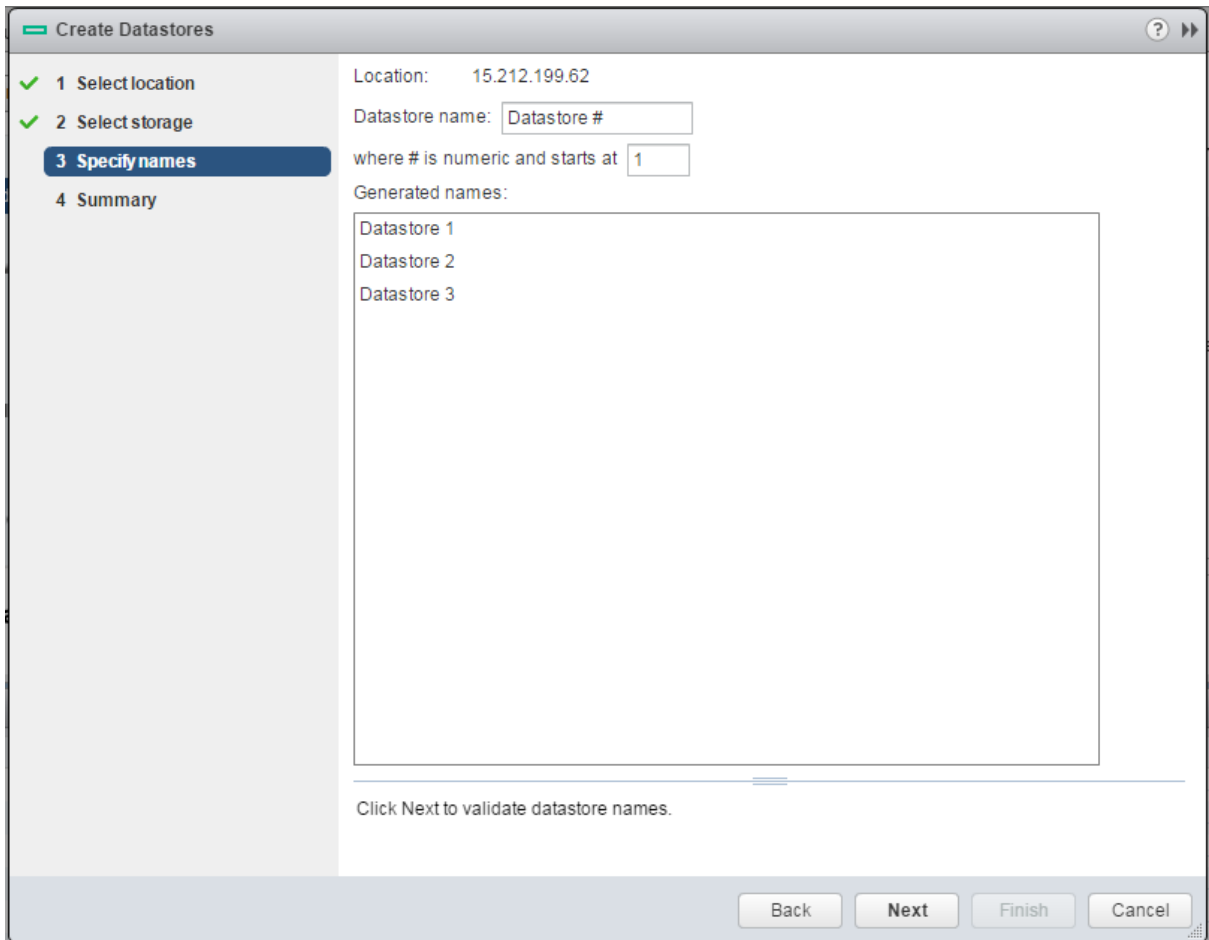


If **Enable Peer Persistence** was selected, the Configure Peer Persistence window opens. Continue with step 11.



11. To enable Peer Persistence, perform the following steps:
 - a. Select a storage pool.
 - b. Select a remote copy space pool.
 - c. Click **Next**. The Specify Names window opens.
12. If a single datastore is being created, perform the following steps:
 - a. Enter the name for the new datastore in the **Datastore Name** box. The name is added to **Generated Names**.
 - b. Click **Next**.
13. If more than one datastore is being created, perform the following steps:
 - a. Enter the name for the new datastores in the **Datastore Name** box.

The # symbol is required and represents the numeric sequence for the new datastore names. In the generated datastore names, the # symbol is replaced with a number.



- b. Enter the start value for the numeric sequence of datastore names in **Where # is numeric and starts at**.

The Generated Names box displays the names of the datastores that will be created.

- c. Click **Next**. The Summary window opens.

General:	
Provisioning type	✓ Create Datastores
Number of datastores	✓ 1
Size of each datastore	✓ 5.00 GB
Location	✓ 15.212.199.62
Datastore names	✓ DatastoreHPE

Storage details:	
Storage array	✓ Winter
Array type	✓ HPE 3PAR StoreServ
Storage pool	✓ FCcpg1
RAID level	✓ RAID 1
Copy space pool	✓ FCcpg1
Peer persistence enabled	✓ Yes
Remote storage array	✓ Snow
Remote storage pool	✓ FC_r5
Remote raid level	✓ RAID 5
Remote copy space pool	✓ FC_r5

Click Finish to trigger the Create Datastore(HPE) task. Progress can be monitored in the recent tasks window shortly.

Buttons: Back, Next, Finish, Cancel

14. Review the information that will be used to create the datastore.
15. Click **Finish** to create the specified datastores.
 - View the progress of the operation in the Tasks pane of the vSphere Web Client.
 - Manual cache refresh is not necessary when the operation is finished. The cache will be refreshed automatically.

Expanding a datastore

You can expand the size of a datastore if it is located on a single disk.

NOTE:

If the underlying volume is setup for 3PAR StoreServ Peer Persistence, the datastore cannot be expanded.

Expand a datastore using the vSphere Web Client

After the size of the datastore is increased by the plug-in, the new size will be shown in HPE OneView. To ensure that the new size is shown in HPE OneView:

Procedure

1. The HPE OneView server profile corresponding to an ESX Host that is managed by the plug-in must be created in HPE OneView.

2. The same storage systems must be configured in the plug-in and in HPE OneView.
3. The same CPGs must be configured in the plug-in and in HPE OneView.

To expand a datastore:

- Start the vSphere Web Client and access Management.
- Use one of the following methods to open the Expand Datastore window:
 1. Right-click a datastore and select **HPE Management > Expand Datastore**.
 2. Select **Actions > Expand Datastore** on the Management page for a datastore.
 3. Right-click a datastore in any Storage Module for vCenter table, and then select **Expand Datastore**.
- The Expand Datastore window opens.

Expand Datastore - ds11

Current datastore capacity: 10.00 GB

New datastore capacity:

Storage System	BumbleBee
Storage System Type	HPE 3PAR StoreServ
Storage Pool	Test_CPG
Raid Level	RAID 5
Available Capacity	1.20 TB
VDisk Name	[ds11] vm11/vm11.vmdk

The final datastore capacity may be more than the requested capacity to account for overhead.

- Enter the new capacity in **Requested Datastore Capacity**.
- The following rules apply when expanding datastores.
 - A datastore can be expanded only if it is located on a single disk on a storage system that supports provisioning by the Storage Module for vCenter.
 - The requested capacity cannot exceed the total capacity of the storage pool.
 - The requested capacity cannot be less than or equal to the original datastore capacity.
- When you enter the new capacity, the Expand Datastore window displays the **Available Capacity** for the selected storage pool.
- **Capacity Before** and **Capacity After** are approximate values. The actual virtual disk size might be slightly larger to accommodate the VMware overhead.
- Click **Finish** to expand the selected datastore.
- If the expand operation cannot be performed, an error message is displayed describing why the operation failed.

Deleting a datastore

You can delete a datastore under the following circumstances:

- If the disk used by the datastore is replicated using snapshot, the delete operation will fail.
- If the datastore is used by a VM or VM template, the delete operation will fail.

Delete a datastore using the vSphere Web Client

To delete a datastore:

Procedure

1. Start the vSphere Web Client and access Management.
2. Use one of the following methods to open the Delete Datastore window:
 - Right-click a datastore and select **HPE Management > Delete Datastore**.
 - Select **Actions > Delete Datastore** on any Management page for a datastore.
 - Right-click a datastore in any Storage Module or vCenter table, and then select **Delete Datastore**.
3. If any errors are shown, address them and then retry the operation. Otherwise, click **Delete** to confirm the operation.
4. The Storage Module for vCenter unrepresents the storage volumes from all hosts, deletes the volumes, and re-scans the hosts. When these tasks are complete, the deleted datastore is no longer displayed in the vSphere Web Client.
5. If the delete operation cannot be performed, an error message is displayed describing why the operation failed.



TIP:

Manual cache refresh is not necessary when the operation is finished successfully. The cache will be refreshed automatically.

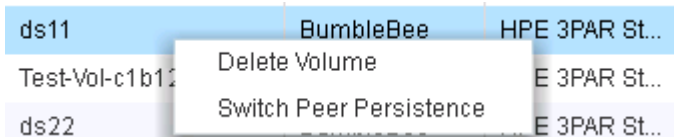
Deleting an unassigned volume

An unassigned volume is a volume that is not associated with a datastore or RDM. You can delete unassigned storage volumes that belong to storage systems that support provisioning.

To delete an unassigned volume:

Procedure

1. Access Management.
2. Locate an unassigned volume in any Storage Module for vCenter table. For example, you could delete a volume from the Storage Volumes table.



3. Right-click the volume, and then select **Delete Volume**.
4. The Storage Module for vCenter prompts you to confirm the delete request.
5. Click **Delete**.
6. The Storage Module for vCenter removes the LUN presentation from all hosts, deletes the volume, and re-scans the hosts. When these tasks are complete, the deleted volume is no longer displayed in the vSphere Web Client.

**TIP:**

Manual cache refresh is not necessary. When a provisioning operation is complete, the Storage Module for vCenter data is refreshed automatically.

Creating a VM from a template

You can create one or more VMs from a VM template. While creating VMs:

- Creating a VM has the same prerequisites as creating a datastore. For more information, see **Creating a datastore** on page 86. During the process of creating the new VM, one or more new datastores are created.
- All of the files associated with the new VMs are created on the new datastores.
- If the template contains an RDM, the operation will fail during the process of creating the new VM.

NOTE:

When VMware converts a VM to a template, all RDMs are converted to empty virtual disks (VMDKs). Therefore, VMs created from this template will not have associated RDMs. For more information, see *Virtual Disk Compatibility Modes* in the VMware vSphere Online Library.

- If a cluster is used to initiate the VM creation, all hosts in the cluster must be zoned to the storage, and hostgroups must be configured.


Create a VM from a template using the vSphere Web Client

To create one or more VMs from a template:

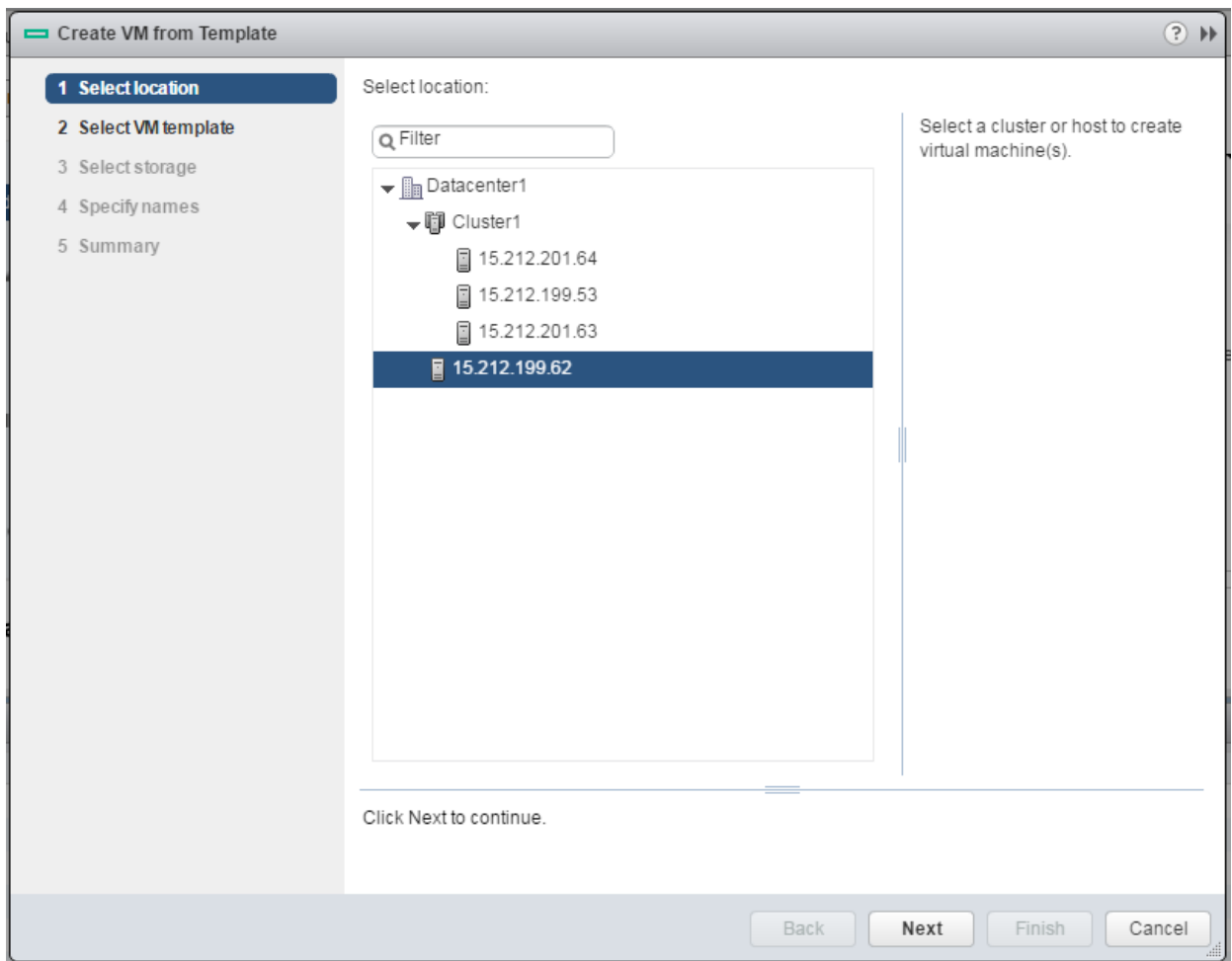
Procedure

1. Start the vSphere Web Client.
2. Use one of the following methods to start the Create Virtual Machines wizard:
 - a. Right-click a host or cluster and select **All HPE Management Actions > Create VM from Template**.
 - b. Right-click a host or cluster in any Storage Module for vCenter table, and then select **Create VM from Template**.
 - c. Select **Actions > Create VM from Template** on the Management page for a host or cluster.
 - d. Right-click a VM template and select **All HPE Management Actions > Create VM from Template**.

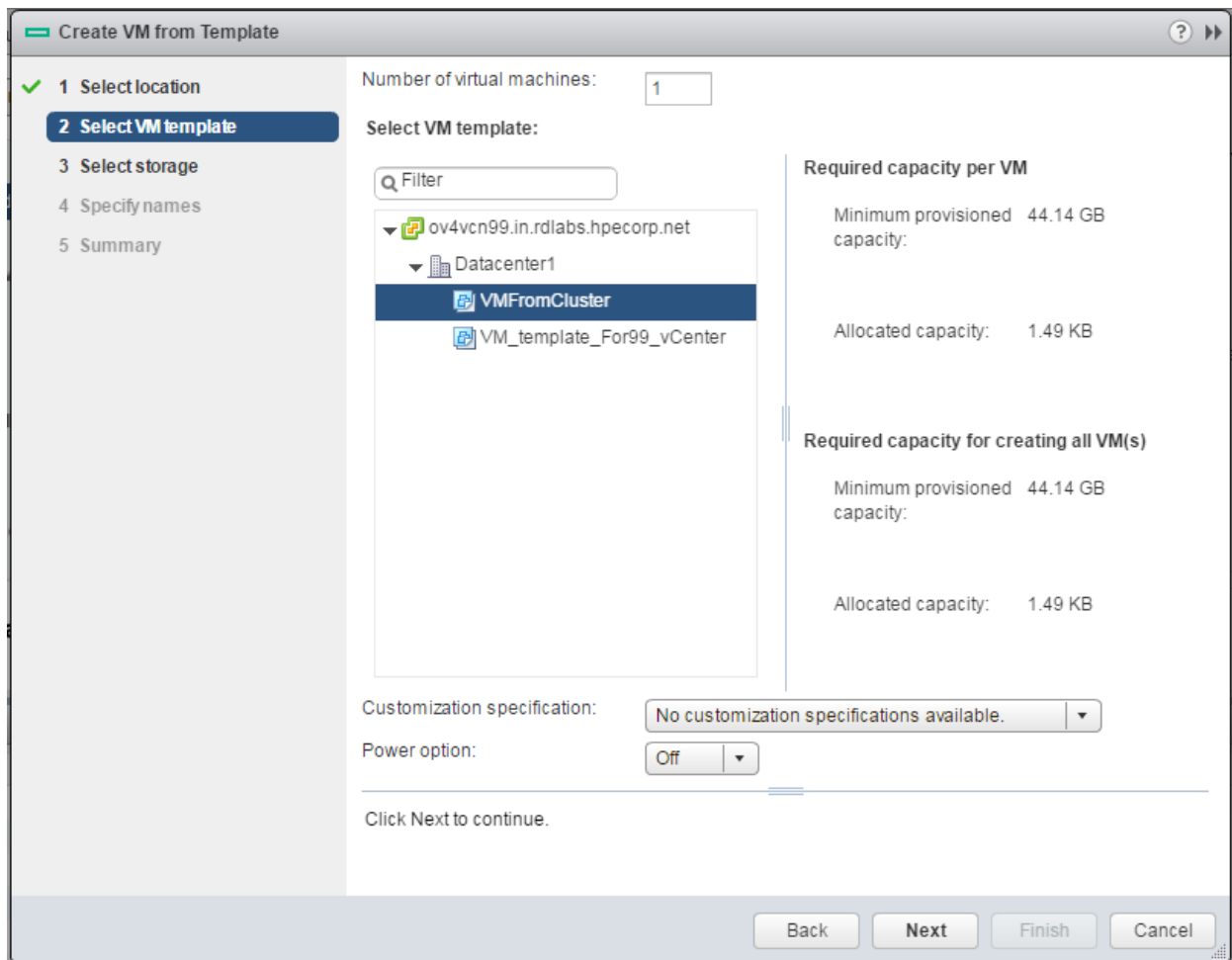
**TIP:**

You can minimize the wizard using the minimize control () in the upper right corner of the screen. The wizard will be added to the Work in Progress panel on the right. Click on it to resume the wizard.

3. The Create Virtual Machines wizard opens and displays the Select Location window.



4. Select the host or the cluster which will own the new virtual machine(s) in **Select location**.
A compatibility check is done to ensure the selected location is valid. If it is not, an error message is displayed and a different location must be selected.
5. Click **Next**.
The Select VM Template window opens.

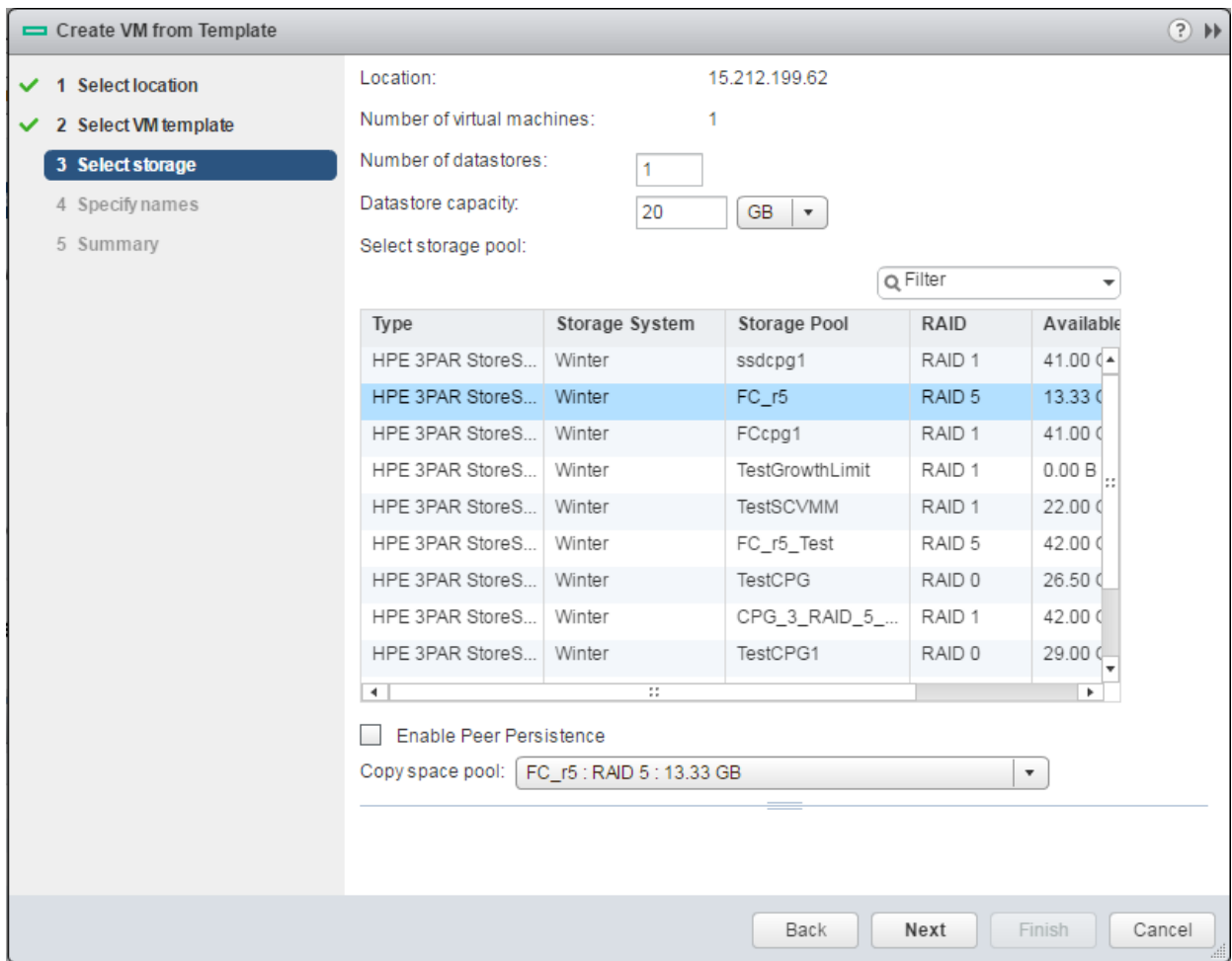


6. Enter the number of VMs to create in **Number of virtual machines**.
7. Select the template to be used to create new VM(s).

When a template is selected, the wizard displays the required storage capacity per VM and for all VMs, if multiple VMs are being created.

8. Specify a customization specification (if available) in **Customization Specification**. For more information, see the VMware documentation.
9. Select the **Power on virtual machines after creation** option if desired.
10. Click **Next**.

The Select Storage window opens.



- Enter the number of datastores to create in **Number of datastores**.

The new VMs are distributed among these new datastores.

- Enter the capacity for the new datastores in **Datastore Capacity**.

NOTE:

The actual value used by the software might be slightly higher than specified in order to accommodate the VMware overhead.

- Select a storage pool to use for the new datastore in **Select Storage Pool**.

The configured storage pools with Full Access on storage systems that support provisioning are listed.

NOTE:

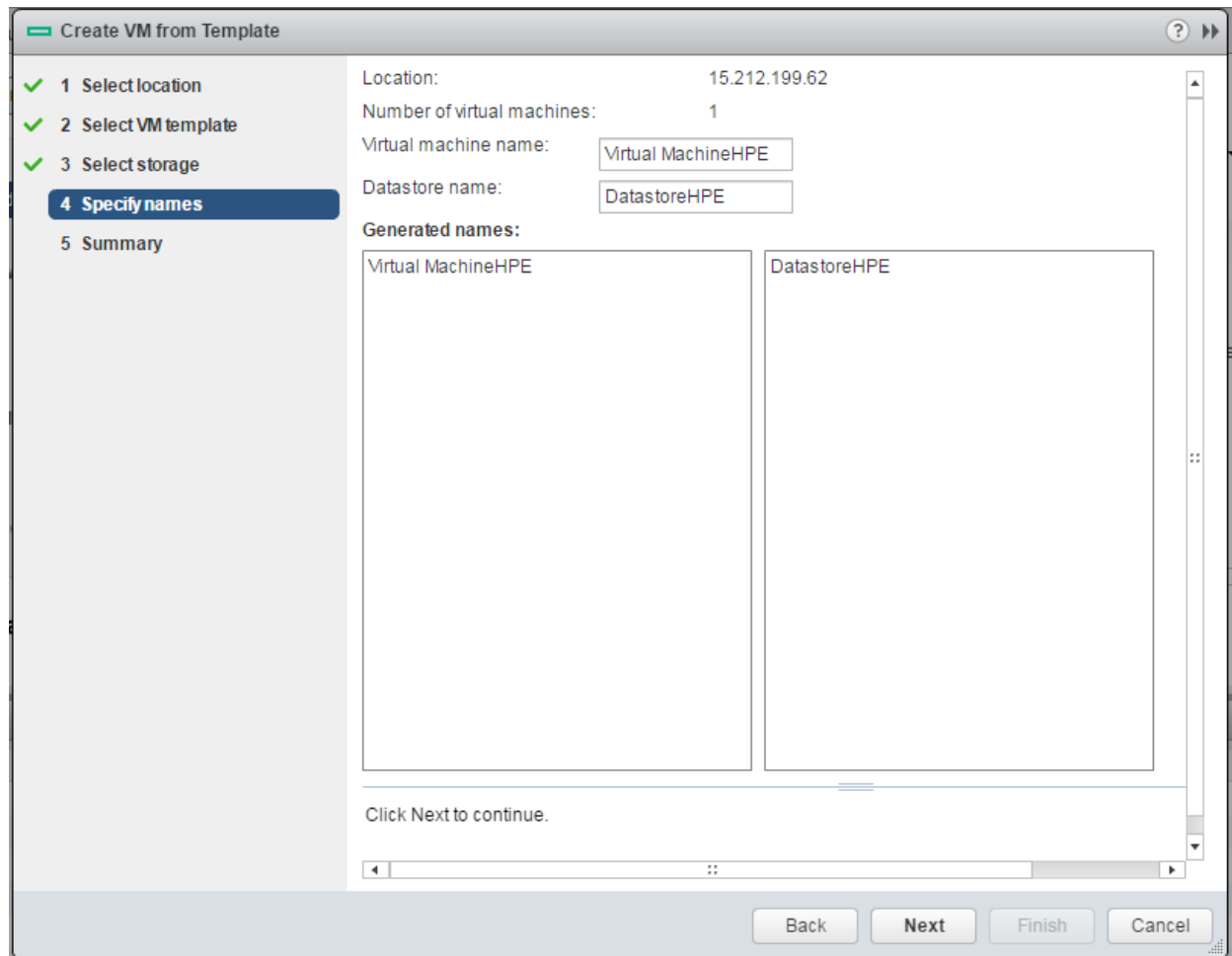
The list can be sorted by any column.

- For a non-3PAR storage system, select a **RAID level** from the drop-down menu.
- For a 3PAR StoreServ storage system, if Peer Persistence is to be enabled, select **Enable Peer Persistence**.
- For a 3PAR StoreServ storage system, select a storage pool for **Copy Space** from the drop-down menu.
- Click **Next**.

If Peer Persistence is enabled, the Configure Peer Persistence window opens. The Peer Storage System should be configured in the Administrator Console. The Peer Storage Pools to be used for the Peer Persistence on the storage system should be configured with Read-Write access. In addition, the Peer Storage Pools should be in the same domain as the selected host(s).

18. Select the Storage Pool on the Peer, and then click **Next**.

The Specify Names window opens.



19. Enter the base name for the new virtual machine(s) in the **Virtual Machine name**.

For single virtual machine, the # symbol is not required. For multiple virtual machines, the # symbol is required.

It represents a numeric sequence. In the generated virtual machine names, the # symbol is replaced with a number.

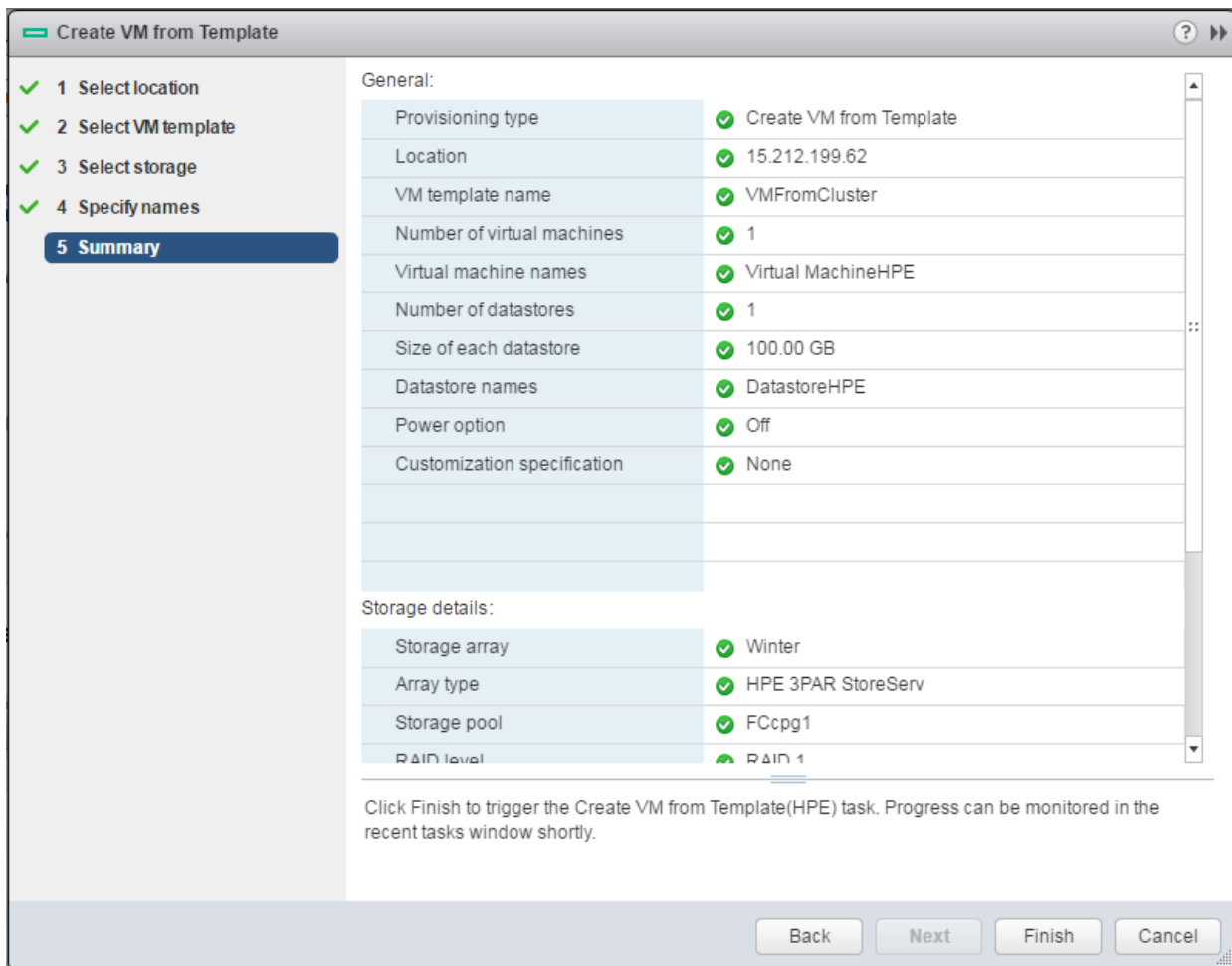
20. Enter the start value for the numeric sequence in **Where # is numeric and starts at**.

The **Generated names** box displays the names of the virtual machines to be created.

21. Similarly, if multiple datastores are being created, enter the base name for the new datastore(s) in **Datastore name** and the start value of the # symbol for the datastore(s).

22. Click **Next**.

The Summary window opens.



23. Review the information that will be used to create the virtual machines.
24. Click **Finish** to create the specified virtual machines.

 **TIP:**

- View the progress of the operation in the Tasks pane of the vSphere Web Client.
- Manual cache refresh is not necessary when the operation is finished. The cache will be refreshed automatically.

Using the Deploy StoreOnce VSA wizard

The Deploy HPE StoreOnce VSA wizard configures and deploys StoreOnce VSA on ESX hosts using the host's local and direct attached storage. Using StoreOnce best practices, the Deploy HPE VSA wizard uses your server's available storage to create a SAN without requiring the additional cost or complexity of adding dedicated storage.

Prerequisites for configuring StoreOnce VSA

Ensure that you have met the following prerequisites before you launch the Deploy HPE VSA wizard:

- Internet access—(Optional) Ensure that HPE OneView for VMware vCenter server has access to the internet. The latest installer will be downloaded automatically from Hewlett Packard Enterprise.
- IP Addresses—Two IPV4 IP addresses are required for deploying StoreOnce VSA using this wizard, one IP address for the Management Network, and the other for the iSCSI Network. Along with the IP

addresses, the other networking details are also needed, such as, Subnet Mask, Gateway IP, DNS and so on.

- **Datstores**—Hewlett Packard Enterprise recommends that you create a datastore on a storage system that yields high IOPs before you launch the Deploy HPE VSA wizard.

Deploying StoreOnce VSA

To deploy StoreOnce VSA:

Procedure

1. Right-click on the desired host on which StoreOnce VSA is going to be deployed.
2. Select **All HPE Management Actions > Deploy HPE StoreOnce VSA...** to launch the Deploy HPE StoreOnce VSA wizard. The drop-down list displays the StoreOnce VSA version. If you are connected to the internet the latest StoreOnce VSA version can be automatically downloaded from the Hewlett Packard Enterprise FTP server during the deployment phase. You can also manually upload the StoreOnce VSA software by executing **3** on page 102 and **4** on page 102.
3. Click **Upload HPE StoreOnce VSA**. This assumes that the installer is already downloaded on the system.
4. Browse to the installer location and click **Upload**.
5. Following a successful upload, click **Refresh** to view the version that will be used for deployment.
6. Click **Accept HPE End User License Agreement**, and then click **Next**.
7. Select the host or cluster you would like to use for the deployment and click **Next**.
8. Select the datstores which will be used for deploying VSA. The total size of the selected datstores should be more than the desired capacity of the VSA. In addition, select System Disk (this is a datastore) that will hold the OS for StoreOnce VSA.
9. Specify StoreOnce VSA credentials and network settings:
 - a. Configure the user name and password.
 - **Backup System Name**
—Provide a backup system name.
 - **Username**
—Auto-populates with the default value.
 - **Password**
—Specify the password.
 - **Confirm Password**
—Confirm the password.
 - b. **Configure the Management and iSCSI Network Interface**—The wizard attempts to automatically choose the appropriate networks. However, you have the option of changing the default selection.
 - c. **IP Addresses**—Provide IP addresses in IPV4 format for the Management and iSCSI networks.

NOTE:

Ensure that the IP Addresses that you choose are not already in use.

 - d. **Subnet Mask**—Provide subnet masks in IPV4 format for the networks.
 - e. **Gateway** (Optional)—Supply gateway IP addresses (in IPV4 format) for the networks.
10. Click **Finish** and monitor the progress in the **Recent Tasks** panel. After a successful deployment, detailed information about the StoreOnce Backup system is available by navigating to **HPE Infrastructure > Storage Systems** from the home page of HPE OneView for VMware vCenter. The newly deployed StoreOnce VSA is ready to be used by HPE Recovery Manager Central to schedule backups of virtual machines and datstores.

Using the Deploy StoreVirtual VSA wizard

Overview of the Deploy HPE VSA StoreVirtual wizard

The Deploy HPE VSA wizard configures and deploys the StoreVirtual VSA on ESX hosts using the hosts' local and direct attached storage. Using the StoreVirtual best practices, the Deploy HPE VSA wizard uses your server's available storage to create a SAN without requiring the additional cost or complexity of adding dedicated storage.

For more information on best practices, see the [HPE StoreVirtual VSA Design and Configuration Guide: For solutions based on Microsoft Hyper-V and VMware vSphere - Technical white paper](#), the [HPE StoreVirtual Storage VSA Installation and Configuration Guide](#), and the [Technical white paper - Adaptive Optimization for HPE StoreVirtual](#).

The Deploy HPE VSA wizard automates the following steps:

- Configures the VSA storage system using the local and direct attached storage across at least three selected ESX hosts
- Creates a new StoreVirtual management group
- Creates at least one cluster of shared storage
- Installs or updates the latest Centralized Management Console (CMC)
- Deploys the VSAs, after which volumes can be created using the CMC and exported to application servers to service IOs.

Prerequisites for configuring the StoreVirtual VSA

Before you launch the Deploy HPE StoreVirtual VSA wizard:

- Internet access—(Optional) Ensure that HPE OneView for VMware vCenter server has access to the internet. The latest installer will be downloaded automatically from Hewlett Packard Enterprise.
- VSA licenses—The Deploy HPE VSA wizard configures VSA with instant-on, 60-day licenses. The instant-on license type and the final license type applied to the system must be consistent. For example, if you configure a 10 TB VSA instant-on license during configuration of the deployment, apply a 10 TB license VSA license to your system after successful deployment.
- IP Addresses—A contiguous block of IP addresses is required for deploying StoreVirtual VSA using this wizard. One IP address is required for each node in addition to one IP address required for each cluster. The cluster Virtual IP (VIP) is listed on the validation page and will be used when configuring hosts to provision storage from the new StoreVirtual storage system.
- ESX server storage—Select vSphere hosts with similar local storage or with similar direct attached storage. This will optimize the capacity and performance of StoreVirtual VSA.

For optimal performance of the deployed VSA, Hewlett Packard Enterprise recommends certain number of virtual CPUs available on the ESX hosts as described in [Storage capacity and CPUs requirement](#).

Table 2: Storage capacity and CPUs requirement

Storage capacity per VSA	Virtual CPUs requirement
0TB to 10TB (SAS Only)	2 Virtual CPUs
0TB to 10TB (SSD or Mixed)	5 Virtual CPUs
10TB to 25TB(SAS Only)	3 Virtual CPUs
10TB to 25TB(SSD or Mixed)	5 Virtual CPUs

Table Continued

Storage capacity per VSA	Virtual CPUs requirement
25TB to 40TB(SAS Only)	4 Virtual CPUs
25TB to 40TB(SSD or Mixed)	5 Virtual CPUs
40TB to 50TB(SAS Only)	5 Virtual CPUs
40TB to 50TB(SSD or Mixed)	5 Virtual CPUs

Deploying StoreVirtual VSA

To deploy StoreVirtual VSA:

Procedure

1. Right-click on the desired host on which StoreVirtual VSA is to be deployed.
2. Select **All HPE Management Actions > Deploy HPE VSA...** and the version screen appears. A drop-down list displays the StoreVirtual VSA versions available to the plug-in. If multiple versions are available, select one of them for the deployment. If any version of the installer is not available to the plug-in and if you are connected to the Hewlett Packard Enterprise FTP server, it will automatically detect and download the latest StoreVirtual VSA version during the deployment phase. You can also manually upload the StoreVirtual VSA software as follows:
3. When any provisioning task is performed on the newly deployed StoreVirtual VSA for the first time, the plug-in will automatically configure iSCSI connections between ESX hosts and the new StoreVirtual VSA. This requires an existing software iSCSI adapter to be pre-configured on the ESX Host.
4. Click **Upload HPE StoreVirtual VSA**. This assumes that the installer is already downloaded on the system.
5. Browse to the location where the installer is located and click **Upload**.
6. After a successful upload, click **Refresh** to view the version that will be used for deployment.
7. Click **Accept HPE End User License Agreement**, and then click **Next**.
8. Select the hosts you would like to configure and select a license type. The license is applied to each node automatically. The following table displays license types:

Table 3: License types

License type	Max # nodes in a cluster ¹	Max # nodes in a management group ²	Max storage size
1 TB 60Day InstantON	3	3	1 TB
4 TB 60Day InstantON	3	3	4 TB
10 TB 60Day InstantON	16	32	10 TB
50 TB 60Day InstantON	16	32	50 TB

¹ The minimum number of nodes for any license type is three.

² The minimum number of nodes for any license type is three.

NOTE:

When StoreVirtual VSA is deployed, each node will be configured with an Instant-On StoreVirtual VSA license that expires after 60 days. Hewlett Packard Enterprise recommends that you apply the permanent license before the 60-day period ends for continuous operation of the storage system.

9. (Optional): When **Configure Capacities** is selected and you have the option of changing cluster node distribution. When you complete the cluster distribution, click **Next**.
10. Specify Network Settings:
 - a. Configure a new username and password.
 - **Management Group Name**
—Automatically populates a group name.
 - **Username**
—Specify a user name for the new management group.
 - **Password**
—Specify a new password.
 - **Confirm Password**
—Confirm the password for the new management group.
 - b. Configure Network Settings:
 - **iSCSI Network Interface**
—The wizard attempts to automatically choose the appropriate iSCSI network. However, you have the option of changing the default selection.
 - **Starting IP Address**
—Provide a starting IP address for the StoreVirtual VSA nodes and clusters that will be created.

NOTE:

Ensure that the IP Address that you choose is not already in use.

- **Subnet Mask**
—Provide a subnet mask for this group in IPv4 format. (For example, 255.255.255.0).
 - **Gateway**
—Supply a gateway IP address for this group in IPv4 format.
 - **Auto-generated IP Addresses**
—Supply a starting IP address and a set of IP addresses in IPv4 format are generated. The number of IP addresses generated is based on the number of nodes and the number of clusters involved (for example three nodes and one cluster generates four IP addresses). The Validation screen is displayed with the validation results of the StoreVirtual VSA configuration.
11. The Validation screen is displayed with the validation results of the StoreVirtual VSA configuration.
 12. Click **Finish** and monitor the progress in the **Recent Tasks** panel. Before using the newly deployed StoreVirtual storage system, follow the recommendations on the "Ready To Complete" section of the wizard or see the *HPE OneView for VMware vCenter User Guide* **Completing the StoreVirtual VSA configuration** on page 105.

Completing the StoreVirtual VSA configuration

After StoreVirtual VSA deployment completes:

Procedure

1. Ensure that the StoreVirtual management group is available in the Infrastructure.
2. Launch the StoreVirtual CMC and view the management group that was created during the VSA configuration. The CMC allows you to perform advanced operations on the StoreVirtual storage system.

NOTE:

The CMC is installed on the same server as HPE OneView for VMware vCenter.

3. Apply permanent VSA licenses using the CMC. Ensure that the permanent license is consistent with the instant-on license type selected during configuration.
4. Start provisioning storage on the new storage system as the Administrator Console has full provisioning access to the StoreVirtual management group. HPE OneView for VMware vCenter plugin presents StoreVirtual storage from the new management group to the ESX hosts.

Managing VSA Licenses

To manage VSA licenses:

Procedure

1. Right-click a host in the VMware inventory list.
2. Select **All HPE Management Actions > Manage HPE VSA Licenses**. This opens the **Manage HPE VSA Licenses** wizard. A table of all StoreVirtual VSA nodes, along with MAC address, license type, and expiration date is displayed.
3. Select the VSA node on which you want to update the license.
A window opens with a text-box to enter the license key.
4. Paste the License key in to the text box and click **OK**.

See the <http://hpe.com/info/sds> website for more information on obtaining licenses.

Viewing hardware alert notifications

This chapter describes the HPE OneView for vCenter hardware alert events and alarms.

HPE OneView for vCenter events

To view hardware tasks and events, navigate to the Events tab in the vSphere Web Client.

Onboard Administrator events

HPE OneView for vCenter registers with the Onboard Administrator to receive supported events as they occur. These events fit into defined vCenter Server categories.

Event type	Event description	vCenter Server event category
Operational status event	OK, Other	Info
Operational status event	Unknown, Degraded	Warning
Operational status event	Non-recoverable error, Predictive failure, Error	Error
Hardware event	Inserted, Removed, Power management, Power state, iLO alive	Info
Hardware event	iLO dead, Interconnect reset	Warning
Hardware event	Blade fault	Error
Subsystem event	OK, Other	Info
Subsystem event	Unknown, Degraded	Warning
Subsystem event	Non-recoverable error, Predictive failure, Error	Error

For more information, see the *HPE BladeSystem Onboard Administrator User Guide*, which is available on the Hewlett Packard Enterprise website: <http://www.hpe.com/servers/onboard>

vCenter Server event category: info

Blade events

Enclosure *name*: Blade in bay *number* status changed to OK.

Enclosure *name*: Blade in bay *number* status changed to other.

Enclosure *name*: Blade in bay *number*: inserted

Enclosure *name*: Blade in bay *number*: removed

Enclosure *name*: Blade in bay *number*: shutdown

Enclosure *name*: Blade in bay *number*: fault

Enclosure *name*: Blade in bay *number*: power management

Enclosure *name*: Blade in bay *number*: power state

Enclosure *name*: Blade in bay *number*: iLO alive

Interconnect events

Enclosure *name*: Interconnect in bay *number* status changed to OK.

Enclosure *name*: Interconnect in bay *number* status changed to other.

Enclosure *name*: Interconnect in bay *number*: inserted

Enclosure *name*: Interconnect in bay *number*: removed

Power supply events

Enclosure *name*: Power supply in bay *number* status changed to OK.

Enclosure *name*: Power supply in bay *number* status changed to other.

Enclosure *name*: Power supply in bay *number*: inserted

Enclosure *name*: Power supply in bay *number*: removed

Fan events

Enclosure *name*: Fan in bay *number* status changed to OK.

Enclosure *name*: Fan in bay *number* status changed to other.

Enclosure *name*: Fan in bay *number*: inserted

Enclosure *name*: Fan in bay *number*: removed

Thermal events

Enclosure *name*: Thermal status changed to OK.

Enclosure *name*: Thermal status changed to other.

Power subsystem events

Enclosure *name*: Power subsystem status changed to OK.

Enclosure *name*: Power subsystem status changed to other.

Fan zone events

Enclosure *name*: Fan zone *number* status changed to OK.

Enclosure *name*: Fan zone *number* status changed to other.

vCenter Server event category: warning

Blade events

Enclosure *name*: Blade in bay *number* status changed to unknown.

Enclosure *name*: Blade in bay *number* status changed to degraded.

Enclosure *name*: Blade in bay *number*: iLO dead

Interconnect events

Enclosure *name*: Interconnect in bay *number* status changed to unknown.

Enclosure *name*: Interconnect in bay *number*: reset

Power supply events

Enclosure *name*: Power supply in bay *number* status changed to unknown.

Enclosure *name*: Power supply in bay *number* status changed to degraded.

Fan events

Enclosure *name*: Fan in bay *number* status changed to unknown.

Enclosure *name*: Fan in bay *number* status changed to degraded.

Thermal events

Enclosure *name*: Thermal status changed to unknown.

Enclosure *name*: Thermal status changed to degraded.

Power subsystem events

Enclosure *name*: Power subsystem status changed to unknown.

Enclosure *name*: Power subsystem status changed to degraded.

Fan zone events

Enclosure *name*: Fan zone *number* status changed to unknown.

Enclosure *name*: Fan zone *number* status changed to degraded.

vCenter Server event category: error**Blade events**

Enclosure *name*: Blade in bay *number* status changed to non-recoverable error.

Enclosure *name*: Blade in bay *number* status changed to predictive failure.

Enclosure *name*: Blade in bay *number* status changed to error.

Interconnect events

Enclosure *name*: Interconnect in bay *number* status changed to non-recoverable error.

Enclosure *name*: Interconnect in bay *number* status changed to predictive failure.

Enclosure *name*: Interconnect in bay *number* status changed to error.

Power supply events

Enclosure *name*: Power supply in bay *number* status changed to non-recoverable error.

Enclosure *name*: Power supply in bay *number* status changed to predictive failure.

Enclosure *name*: Power supply in bay *number* status changed to error.

Fan events

Enclosure *name*: Fan in bay *number* status changed to non-recoverable error.

Enclosure *name*: Fan in bay *number* status changed to predictive failure.

Enclosure *name*: Fan in bay *number* status changed to error.

Thermal events

Enclosure *name*: Thermal status changed to non-recoverable error.

Enclosure *name*: Thermal status changed to predictive failure.

Enclosure *name*: Thermal status changed to error.

Power subsystem events

Enclosure *name*: Power subsystem status changed to non-recoverable error.

Enclosure *name*: Power subsystem status changed to predictive failure.

Enclosure *name*: Power subsystem status changed to error.

Fan zone events

Enclosure *name*: Fan zone *number* status changed to non-recoverable error.

Enclosure *name*: Fan zone *number* status changed to predictive failure.

Enclosure *name*: Fan zone *number* status changed to error.

SNMP agent and CIM provider events

HPE OneView for vCenter registers with SNMP agents and CIM providers to receive traps from SNMP agents and indications from CIM providers as they occur. Events created based on these traps and indications fit into the defined vCenter Server categories.

Event datasource type	Event severity	vCenter Server event category
SNMP agents or CIM providers	Normal or Information	Info
SNMP agents or CIM providers	Warning or Minor	Warning
SNMP agents or CIM providers	Major or Critical	Error

These events contain the following information:

- Event source
- Event name
- Event category
- Event description

Alarms

When an HPE OneView for vCenter event is delivered to vCenter Server, the overall host status changes based on the corresponding event category or the host status. An alarm is triggered when the changes to the host status meet the criteria assigned by the administrator.

Event category	Overall host status
Informational	Green
Warning	Yellow
Error	Red

The following HPE OneView for vCenter events can cause alarms in vCenter Server:

- **Alarms associated with the server SNMP traps**

These alarms can be triggered by any event generated from an SNMP trap. The alarm states are controlled by the event category.

- **Alarms associated with the server WBEM indications**

These alarms can be triggered by any event generated from a WBEM indication. The alarm states are controlled by the event category.

- **Alarms associated with ProLiant and BladeSystem fan zones**

These alarms are triggered by a BladeSystem subsystem event. The alarm states are controlled by the type (severity) of the event. The alarms are triggered on all ProLiant and BladeSystem servers in the affected fan zone.

- **Alarms associated with ProLiant and BladeSystem power subsystem**

These alarms are triggered by a BladeSystem power subsystem event. The alarm states are controlled by the type (severity) of the event. The alarms are triggered on all ProLiant and BladeSystem servers in the affected enclosure.

Alarm icon

When an alarm occurs, an icon appears to the right of the vSphere Web Client window along the bar above the vSphere Web Client tabs or on the host icon in the inventory tree. To view the alarm in the Alarms tab, click the icon. The Alarms tab displays a list of all alarms.

The Alarms tab displays a list of following alarms:

- HPE Blade system Power Alarm
- HPE Blade System Thermal Alarm
- HPE Server SNMP Trap
- HPE Server WBEM Indication
- HPE Oneview Power Alarm
- HPE Oneview Thermal Alarm

Troubleshooting

Symptom

Before troubleshooting issues with HPE OneView for vCenter, you must do the following:

- Verify that the correct user name and password are entered for vCenter Server.
- Verify that the software is installed and configured as described in the *HPE OneView for VMware vCenter Installation Guide*.

Related topics

- [Troubleshooting HPE OneView for vCenter](#) on page 112
- [Troubleshooting the Server Module for vCenter](#) on page 113
- [Troubleshooting the Storage Module for vCenter](#) on page 117
- [Troubleshooting for VASA](#)

Troubleshooting HPE OneView for vCenter

Cause

This section includes general troubleshooting information for HPE OneView for vCenter. For troubleshooting information specific to the Server Module for vCenter, see [Troubleshooting the Server Module for vCenter](#) on page 113. For troubleshooting information specific to the Storage Module for vCenter, see [Troubleshooting the Storage Module for vCenter](#) on page 117.

This section covers the following troubleshooting solutions for HPE OneView for vCenter:

- [Management tab not available in the vSphere Web Client](#)
- [vCenter service terminates during startup](#) on page 113
- [Stale or corrupt cache or cookies results in GUI anomalies](#) on page 113
- [Error Communicating with iLO at VM host](#) on page 113

Management tab not available in the vSphere Web Client

Possible cause: The vSphere Web Client has not deployed the plug-in.

NOTE:

The plug-in is deployed only when the vSphere Web Client is executed.

Action: Execute the vSphere Web Client.

Procedure

1. If the vSphere Web Client was running when the plug-in was installed, log out of the vSphere Web Client.
2. Log into the vSphere Web Client.
3. For the first invocation of vSphere Web Client after the plug-in is installed, you might notice a delay before the GUI appears.
4. Verify that the Management icon appears in the home page of the plug-in.
5. If not, log out of the vSphere Web Client, and then log back in.
6. Verify that the Management icon appears in the home page of the vSphere Web Client.
7. If the icon does not appear on the home page, log out of the Web Client, and retry after restarting the VMware vSphere Web Client service.

vCenter service terminates during startup

Possible cause: vCenter Server depends on SQL Server. If the vCenter service starts before SQL server, vCenter Server fails to connect to its database.

Action: See article 1007669 in the [VMware Knowledge Base](#).

Stale or corrupt cache or cookies results in GUI anomalies

Possible cause: HPE OneView for vCenter uses the VMware plug-in architecture, which uses an embedded Internet Explorer component to display the HPE OneView for vCenter GUI. GUI anomalies might occur if the Internet Explorer cache or cookies are stale or corrupted.

Action: Clear the cache in Internet Explorer.

Procedure

1. Select **Tools > Internet Options**.
2. Click **Delete** in the Browsing history section of the General tab.
3. The Delete Browsing History dialog box opens.
4. Delete the temporary Internet files and cookies, and then click **OK**.

Error Communicating with iLO at VM host

The following error appears if the Windows Proxy Server is enabled and the host is using iLO 3:

```
Error Communicating with iLO at "VM hostname " Text object has no attribute 'ribcl'.
```

Possible cause: Windows proxy server settings are not configured to allow LAN communication from the HPE OneView for vCenter to iLO 3 on the target vSphere 5.x/ESXi 5.x host system.

Action: Disable or bypass Windows Proxy Server for the connection between the HPE OneView for vCenter/ vSphere Web Client and iLO 3 on the ProLiant server running as an vSphere 5.x/ESXi 5.x host system. To disable the Windows Operating System default proxy setting on the HPE OneView for vCenter server:

Procedure

1. Start the windows registry editor program **regedit**.
2. Navigate to `Computer\HKEY_USERS\.DEFAULT\Software\Microsoft\Windows\CurrentVersion\Internet Settings`.
3. Manually change the ProxyEnable value from 1 (enabled) to 0 (disabled).
4. Click **OK**.

To bypass Windows Proxy Server using Microsoft Internet Explorer or to verify if the TCP IP address is configured for a proxy server that does not exist or does not match the existing proxy server, use the Windows Internet Explorer LAN settings using the Microsoft Internet Explorer Tools menu (**Tools > Internet Options > Connections > Local Area Network (LAN) settings**).

For more information about configuring a proxy server, see to the Microsoft KB article 819961 at <http://support.microsoft.com/kb/819961>.

Troubleshooting the Server Module for vCenter

Cause

This section includes troubleshooting information specific to the Server Module for vCenter. For general HPE OneView for vCenter troubleshooting, see [Troubleshooting HPE OneView for vCenter](#) on page 112. For troubleshooting information specific to the Storage Module for vCenter, see [Troubleshooting the Storage Module for vCenter](#) on page 117.

This section covers the following troubleshooting solutions for Storage Module for vCenter:

- **Server summary data is not displayed for host** on page 114
- **Health status or information is missing for specific hosts or clusters** on page 115
- **Auto-login not working for URLs provided for managed nodes by HPE OneView for vCenter** on page 115
- **Virtual Connect Manager launch link from HPE OneView for vCenter prompts for login credentials** on page 115
- **HPE SIM auto-login fails from HPE OneView for vCenter** on page 115
- **Clicking power management launch link does not go to expected HPE SIM page** on page 116
- **Cost Advantage field not showing values** on page 116
- **Events not delivered by HPE OneView for vCenter to vCenter Server** on page 116
- **Firmware inventory information is not shown** on page 116
- **No Virtual Connect information is available for this host error** on page 117

Infrastructure portlet is not displayed for blades

Possible cause: OA credentials are missing or incorrect.

Action: Use the Host Properties page or the Server Password Management page to verify that the OA credentials are correct and reachable for HPE OneView for vCenter, and change them if necessary.

Network portlet for blades is missing the diagram link

Possible cause: Virtual Connect credentials are missing or incorrect.

Action: Use the Host Properties page or the Server Password Management page to verify that the Virtual Connect credentials are correct and reachable for HPE OneView for vCenter, and change them if necessary.

Server summary data is not displayed for host

Possible cause 1: iLO is not associated with the host system.


Action: Verify that iLO is associated with the host system.

Use one of the following methods to associate iLO with a host:

- **Configure iLO in vCenter**

Use this method if you are using a VMware cluster with power management. In the vSphere Web Client, select a host and click the **Configuration** tab. Click the **Power Management** link in the Software section, and then click **Properties** in the upper-right corner. Enter the iLO settings, and then click **OK**.

- **Configure iLO from the Management tab**

Select a host and click the **HPE Management** tab. Move your cursor over the **Settings** icon  **Host Properties**. Enter the iLO settings, and then click **Save**.

- **Use automatic association**

Verify that the SNMP agents/CIM providers are installed on the host and that the credentials are correct:

- HPE OneView for vCenter

Version 6.3 and later can make the host-to-iLO association by communicating directly with the vSphere 5.x/ESXi 5.x host. The ESXi Offline Bundle for VMware ESXi must be installed on the host for the automatic association to occur.

- For HPE OneView for vCenter Version 6.2.2 and earlier, the VMware host-to-iLO association is automatically derived from SIM if SIM is present in the environment. SIM can require that the ESXi Offline Bundle for VMware ESXi are installed on the host.

Possible cause 2: The host lost its connection to iLO.

Action: Re-seat the host in its enclosure.

Health status or information is missing for specific hosts or clusters

Possible cause: Active and properly authenticated communication between vCenter Server, HPE OneView for vCenter, ESXi Offline Bundle for VMware ESXi, or Virtual Connect Manager (blades only), and the managed nodes is not established with their management processors.

Action: Verify that properly authenticated communication is established.

- Verify that the iLO information is associated correctly with the corresponding host system as described in [Associating the VMware host to iLO](#) on page 8.
- Verify that the ESXi Offline Bundle for VMware ESXi are installed and that the credentials are properly configured in HPE OneView for vCenter.
- Verify that either the global credentials or the credentials specific to each iLO, Onboard Administrator, and VMware host are configured properly.
- Ensure that the initial polling cycle is complete. This may take a few moments, depending on the settings.

Auto-login not working for URLs provided for managed nodes by HPE OneView for vCenter

Possible cause: A valid user name and password are not configured, or an SSO certificate (for SSO to Onboard Administrator) is not installed.

Action: Verify the user credentials or SSO settings:

- Ensure that the credentials provided are for a vCenter Server administrator. Auto-login is available only for vCenter Server administrators. For more information, see [Launching into Hewlett Packard Enterprise tools](#).
- Ensure that the correct credentials are provided for iLO, Onboard Administrator, and HPE SIM. The information can be entered using the global credentials setting or by entering the individual settings for each iLO, Onboard Administrator, and HPE SIM on the network. For more information about managing passwords and other system administration tasks, see [Configuring HPE OneView for vCenter](#).
- For SSO to Onboard Administrator, follow the procedure for configuring the SSO certificate described in [Onboard Administrator Single Sign-On](#) on page 58.

Virtual Connect Manager launch link from HPE OneView for vCenter prompts for login credentials

Cause: Virtual Connect Manager does not support auto-login.

HPE SIM auto-login fails from HPE OneView for vCenter

Possible cause: HPE SIM uses cookies for auto-login. If the browser is configured to block all cookies, the HPE SIM auto-login feature for HPE OneView for vCenter does not work.

Action: Configure the Microsoft Internet Explorer browser to accept cookies.

Procedure

1. Select **Tools > Internet Options**.
2. Click the **Privacy** tab, and then change the setting to **Medium**.
3. Remain in the Privacy tab and click **Sites**.
4. In the Address of website box, enter the HPE SIM IP address, click **Allow**, and then click **OK**.
5. Click the **Security** tab.
6. Set the Internet and Local intranet zones security level to **Medium**.
7. Click **OK**.

Microsoft Windows 2008 Internet Explorer Enhanced Security can also block cookies. Be sure to change the security settings to enable cookies in Server Manager in the Internet Explorer Enhanced Security Configuration (ESC) menu.

Clicking power management launch link does not go to expected HPE SIM page

Possible cause: If the Insight power management plug-in for HPE SIM is not installed and the Insight power management launch link under HPE OneView for vCenter is selected, HPE SIM cannot launch the Insight power management pages. For the power management link to work correctly, HPE OneView for vCenter requires that both HPE SIM and the power management plug-in are installed.

Action: Install and configure the Insight power management plug-in for HPE SIM.

Cost Advantage field not showing values

Possible cause: The managed vCenter Server cluster is not a DPM-configured cluster or the power cost value is not configured.

Action: Verify the cluster type and power cost setting.

- Verify that the cluster is DRS-enabled. This feature applies only to DRS-enabled clusters with DPM configured.
- Verify that the power cost value is configured correctly.

Events not delivered by HPE OneView for vCenter to vCenter Server

Possible cause: HPE OneView for vCenter is not configured to deliver events to vCenter Server.

Action: Verify that your systems are configured to deliver events to vCenter Server.

- Note which events are delivered from Onboard Administrator to vCenter Server as defined in **Viewing hardware alert notifications**. If any of those events are not delivered to vCenter Server by HPE OneView for vCenter, verify that the managed node is a ProLiant c-Class server blade and that the corresponding Onboard Administrator is accessible from the default system browser on the system where HPE OneView for vCenter is installed.

For all other events delivered by HPE OneView for vCenter to vCenter Server, the SNMP agents or CIM providers must be installed and configured.

- Verify that the Onboard Administrator is configured to forward events to HPE OneView for vCenter.
 1. Access the HPE OneView for vCenter Home Settings page.
 2. Click the **Configuration** tab.
 3. Verify that OA Settings Forward Events is set to Yes. If No is currently selected, select **Yes**, and then click **Save**.

Firmware inventory information is not shown

Possible causes: HPE OneView for VMware vCenter supports firmware discovery only on vSphere 5.x/ESXi 5.x hosts that have the ESXi offline bundle for VMware installed. The vSphere 5.x/ESXi 5.x user name and password are required for communication with CIM providers.

- If the host is not running vSphere 5.x/ESXi 5.x, the following message is displayed:

```
There are no firmware components to display.
Firmware inventory is only supported on hosts running ESXi.
```

- If the ESXi offline bundle for VMware is not installed on the host, the following message is displayed:

```
There are no firmware components to display.
The HPE ESXi Offline Bundle for VMware is not installed on this host.
```

- If some other error occurs, the following message is displayed:

```
There are no firmware components to display.
An error occurred while discovering firmware.
```

No Virtual Connect information is available for this host error

The following scenarios can cause this error:

- Servers are not blade servers.
- The blade server is not configured with Virtual Connect.
- The Virtual Connect credentials are not valid.
- Other errors occurred while retrieving Virtual Connect data.

Troubleshooting the Storage Module for vCenter

Cause

This section includes troubleshooting information specific to the Storage Module for vCenter. For general HPE OneView for vCenter troubleshooting, see [Troubleshooting HPE OneView for vCenter](#) on page 112. For troubleshooting information specific to the Server Module for vCenter, see [Troubleshooting the Server Module for vCenter](#) on page 113.

This section covers the following troubleshooting solutions for Storage Module for vCenter:

- [Configuration using the Administrator Console](#) on page 117
- [Storage Module for vCenter GUI not responsive to mouse clicks](#) on page 117
- [HPE MSA storage system information not displayed in Storage Module GUI](#) on page 118
- [Duplicate LUNs displayed in Storage Module for vCenter interface](#) on page 119
- [LUN displayed multiple times for VM or datastore that is part of a cluster](#) on page 119
- [Internet Explorer script error occurs in environment with 100 or more LUNs](#) on page 119
- [Cannot configure datastore block size](#) on page 119
- [Expand or Delete on MSA datastore or virtual disk fails](#) on page 120
- [Expansion of datastores created on ESXi 6.5 having a powered-on VM may fail through HPE OneView for VMware vCenter](#) on page 120.

Configuration using the Administrator Console

To configure vCenters and storage systems, you must have administrator privileges with valid credentials to login to the Administrator console. However, this does not grant the VMware Administrator role that is required to perform Storage Module for provisioning operations on Hewlett Packard Enterprise storage systems. To use the Storage Module for provisioning features, you must configure the VMware Administrator role in a vSphere session. For instructions, see the *HPE OneView for VMware vCenter Installation Guide* .

Storage Module for vCenter GUI not responsive to mouse clicks

Possible cause: The `Temporary Internet Files` directory is full.

Action: Delete the temporary files created by Internet Explorer.

HPE MSA storage system information not displayed in Storage Module GUI

Possible cause: The SMI-S service on the storage system might be unresponsive.

Use the following actions to solve this issue. If one action does not work, proceed to the next action.

Action: Restart the HPE MSA SMI-S service. This will not affect disk access.

Procedure

1. Log in to the SMU interface of the HPE MSA storage system as a user with Manage access. Use the available management IP address, applicable for MSA Storage Systems with firmware version GL200 or later (for example: `http://Management_IP_address/v3/`).
2. Navigate to **System > Action > Set Up System Services**.
3. Enable the check box under **Storage Management Initiative Specification (SMI-S)**, and then click **OK**.
4. Re-apply the **Storage Management Initiative Specification (SMI-S)** by selecting the check box under **Storage Management Initiative Specification (SMI-S)** in **Set Up System Services** dialog box, and then click **OK**.
5. The SMI-S service is now running.
6. Refresh the Storage Module for vCenter cache.
7. For instructions, see [Refreshing Storage Module for vCenter data](#).

Action 2: Restart the HPE MSA storage system management controller.

❗ IMPORTANT:

This procedure restarts the HPE MSA storage system controller. If you restart a management controller, communication with it is lost until it restarts successfully . This will not affect disk access. If the restart fails, the partner management controller remains active with full ownership of operations and configuration information. Other applications (such as Microsoft VSS and VDS) that rely on the management controller services might be affected.

-
1. Log in to the SMU interface of the HPE MSA storage system as a user with Manage access. Use the available management IP address applicable for MSA Storage Systems with firmware version GL200 or later (for example: `http://Management_IP_address/v3`).
 2. Navigate to **System topics > Action > Restart System**.
 3. Determine which controller has the IP address used in [1](#).
 4. Select the following:
 - **Operation:** Restart
 - **Controller type:** Management
 - **Controller Module:** A or B, as determined in step 3.
 5. Click **OK**.
 6. Wait till the storage system is operational to log in to the SMU.
 7. Refresh the Storage Module for vCenter cache.

For instructions, see [Refreshing Storage Module for vCenter data](#).

Concatenated replicated LUNs not recognized as replicated LUNs

Replication information is not available for a datastore that consists of two replicated LUNs.

Cause: This configuration is not supported by the Storage Module for vCenter.

Duplicate LUNs displayed in Storage Module for vCenter interface

Possible cause: When using multipathing, duplicate LUNs might be displayed if a LUN is presented to a host using different LUN numbers across multiple paths.

Action: There are two options for addressing this issue:

Procedure

1. Reconfigure the LUNs so they have a single LUN number across all paths. For more information, see article 1003973 in the [VMware Knowledge Base](#).
2. Disable the VMware advanced setting **Scsi.CompareLUNNumber**.
 - a. Select a host in the vSphere Web Client.
 - b. Click the **Configuration** tab.
 - c. Click **Advanced Settings** in the Software pane.
 - d. Click **Scsi** in the list of advanced settings.
 - e. Edit the **Scsi.CompareLUNNumber** value, and then click **OK**.

LUN displayed multiple times for VM or datastore that is part of a cluster

Possible cause: The Storage Module for vCenter uses an ESXi Host+LUN number as the unique identifier. When a single LUN is presented to multiple hosts that are part of a cluster, the LUN is listed on the Related VMs and Related Datastores pages for each host.

Action: LUNs with the same disk names are duplicates and represent a single disk on the storage system.

Internet Explorer script error occurs in environment with 100 or more LUNs

The following message occurs during a refresh in an environment with 100 or more LUNs:

```
Stop running this script? A script on this page is causing
Internet Explorer to run slowly. If it continues to run, your computer might
become unresponsive.
```

Possible cause: An Internet script is taking too long to complete.

Action: Click **No**.

Action: Add or modify the registry entry.

Procedure

1. Open the registry key `HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\Styles`. If the key does not exist, add it.
2. Create a DWORD value called `MaxScriptStatements` under the key you opened or created in [1](#) on page 119.
3. Assign the value `0x00FFFFFFFF` to prevent the script error. To prevent Internet Explorer from displaying this error message again, use the value `0xFFFFFFFF`.

Cannot configure datastore block size

You cannot configure the block size for the VMFS-5 file system when creating a datastore in an vSphere 5.x/ESXi 5.x environment.

Cause: When creating datastores using the VMFS-5 file system, VMware does not support values other than 1 MB for the block size.

Expand or Delete on MSA datastore or virtual disk fails

Datastore expansion or deletion fails

Cause: MSA allows only snap-pool, base, or standard type datastores to be expanded or deleted. If a datastore or virtual disk is part of replication set, it cannot be expanded or deleted.

Action: Remove the replication-set and associated snapshots and snap-pools for the virtual disk. Ensure that disk type is shown as standard or base before deleting.

Expansion of datastores created on ESXi 6.5 having a powered-on VM may fail through HPE OneView for VMware vCenter

Cause

The issue happens because in spite of the volume expansion on the storage system, VMware is unable to obtain the expanded LUN size after HPE OneView for VMware vCenter triggers a rescan of Storage Host Adapter.

Action

Procedure

1. Trigger a manual rescan of the Host Bus Adapter through VMware Storage Adapter options. After VMware is able to detect the increased LUN size, use the **Increase Datastore Capacity** option for the datastore in vCenter to expand the datastore capacity.
2. Trigger a manual cache refresh for HPE OneView for VMware vCenter to obtain the updated information.

Troubleshooting for VASA

Cause

If you are using 3PAR OS Software version 3.1.1 or earlier, see the *HPE 3PAR OS 3.1.1 Messages and Operators Guide* for information about system alerts.

Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website: www.hpe.com/assistance
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website: 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, go to either of the following:
 - Hewlett Packard Enterprise Support Center **Get connected with updates** page: www.hpe.com/support/e-updates
 - Software Depot website: www.hpe.com/support/softwaredepot
- 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 HP Passport set up with relevant entitlements.

Websites

Website	Link
Hewlett Packard Enterprise Information Library	<u>www.hpe.com/info/enterprise/docs</u>
Hewlett Packard Enterprise Support Center	<u>www.hpe.com/support/hpesc</u>

Table Continued

Website	Link
Contact Hewlett Packard Enterprise Worldwide	www.hpe.com/assistance
Subscription Service/Support Alerts	www.hpe.com/support/e-updates
Software Depot	www.hpe.com/support/softwaredepot
Customer Self Repair	www.hpe.com/support/selfrepair
Insight Remote Support	www.hpe.com/info/insightremotesupport/docs
Serviceguard Solutions for HP-UX	www.hpe.com/info/hpux-serviceguard-docs
Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix	www.hpe.com/storage/spock
Storage white papers and analyst reports	www.hpe.com/storage/whitepapers
HPE OneView for VMware vCenter documentation	www.hpe.com/info/ovvcenter/docs
Insight Control documentation	www.hpe.com/info/insightcontrol/docs
Onboard Administrator	www.hpe.com/info/oa
Systems Insight Manager	www.hpe.com/info/hpesim
iLO	www.hpe.com/info/ilo
VMware vCenter Server	www.vmware.com/products/vcenter-server/
3PAR StoreServ Storage	www.hpe.com/info/3par
StoreVirtual Storage	www.hpe.com/us/en/storage/storevirtual
MSA Storage	www.hpe.com/info/msa
StoreOnce Backup	www.hpe.com/us/en/storage/storeonce

Registering for software technical support and update service

Insight Management includes one year of 24 x 7 Hewlett Packard Enterprise Software Technical Support and Update Service. This service provides access to technical resources for assistance in resolving software implementation or operations problems.

The service also provides access to software updates and reference manuals in electronic form as they are made available from Hewlett Packard Enterprise. Customers who purchase an electronic license are eligible for electronic updates.

With this service, Insight Management customers benefit from expedited problem resolution as well as proactive notification and delivery of software updates. For more information about this service, see the HPE OneView Services website at [HPE OneView Services](#).

Registration for this service takes place following online redemption of the license certificate.

How to use your software technical support and update service

As Hewlett Packard Enterprise releases updates to software, the latest versions of the software and documentation are made available to you. The Software Updates and Licensing portal gives you access to software, documentation and license updates for products on your Hewlett Packard Enterprise software support agreement.

You can access this portal from the Hewlett Packard Enterprise Support Center:

Hewlett Packard Enterprise Support Center

After creating your profile and linking your support agreements to your profile, see the Software Updates and Licensing portal at <http://www.hpe.com/info/hpesoftwareupdatesupport> to obtain software, documentation, and license updates.

Related information

The following documents and websites provide related information:

Documents

- *HPE OneView for VMware vCenter Installation Guide*
- *HPE OneView for VMware vCenter Release Notes*
- *HPE Insight Control Getting Started Guide*
- *HPE Systems Insight Manager User Guide*
- *HPE iLO User Guide*
- *HPE BladeSystem Onboard Administrator User Guide*
- *HPE Insight Management Support Matrix*

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:

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.

For more information and device support details, go to the following website:

www.hpe.com/info/insightremotesupport/docs

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hpe.com). When submitting your feedback, include the document title, part number, edition,

and publication date located on the front cover of the document. For online help content, include the product name, product version, help edition, and publication date located on the legal notices page.

Warranty and regulatory information

For important safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at www.hpe.com/support/Safety-Compliance-EnterpriseProducts.

Warranty information

HPE ProLiant and x86 Servers and Options

www.hpe.com/support/ProLiantServers-Warranties

HPE Enterprise 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

Belarus Kazakhstan Russia marking



Manufacturer and Local Representative Information

Manufacturer information:

- Hewlett Packard Enterprise Company, 3000 Hanover Street, Palo Alto, CA 94304 U.S.

Local representative information Russian:

- Russia

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Manufacturing date:

The manufacturing date is defined by the serial number.

CCSYWWZZZZ (serial number format for this product)

Valid date formats include:

- YWW, where Y indicates the year counting from within each new decade, with 2000 as the starting point; for example, 238: 2 for 2002 and 38 for the week of September 9. In addition, 2010 is indicated by 0, 2011 by 1, 2012 by 2, 2013 by 3, and so forth.
- YYWW, where YY indicates the year, using a base year of 2000; for example, 0238: 02 for 2002 and 38 for the week of September 9.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057

Firewall port requirements

For complete information on port requirements, see the “Default port values” appendix in the *HPE OneView for VMware vCenter Installation Guide* .

Creating a custom build plan

When using the enhanced deployment option to grow a cluster, a custom build plan is required.

Use the following procedure to create a custom build plan for growing a cluster.

Procedure

1. Log in to Insight Control Server Provisioning.
2. Select **Configuration Files** from the DEPLOYMENT options.
3. Select the Kickstart configuration file to modify, and then select **Save as** in the Actions menu.
4. Enter a valid name for the new Kickstart file, and then click **OK**.

NOTE:

For the build plan to be available in the HPE OneView for VMware vCenter plugin, the name must contain “esx” (case insensitive).

5. Select the new Kickstart file, and then select **Edit** in the Actions menu.
6. Add the following lines to the Kickstart file. These lines must be added before the `## post-install script` line as shown in **Figure 36: Script example** on page 129. This script can be used for ESXi version 5.0 and above.

```
## OV4VC custom values

%firstboot

VMNIC=$(esxcli network nic list | grep -i @mgmt_mac_address@ | awk -F " " '{ print $1 }')

esxcli network vswitch standard uplink remove --uplink-name=vmnic0 --
vswitch-name=vSwitch0

esxcli network vswitch standard uplink add --uplink-name=$VMNIC --vswitch-
name=vSwitch0

esxcli network ip interface ipv4 set --interface-name=vmk0 --
ipv4=@ip_address@ --netmask=@net_mask@ --type=static

esxcli network ip route ipv4 add --gateway @gate_way@ --network default

esxcli network ip dns server remove --server "" -a

esxcli network ip dns server add --server @primary_dns_server@

esxcli network ip dns server add --server @alternate_dns_server@

esxcli system hostname set --host @host_name@ --domain @domain_name@

# If vlan tagging is not used then vlan_id value should be 0 # A vlan_id of
0 disables vlan_tagging in ESX and causes Mgmt to use interface of vswitch

esxcli network vswitch standard portgroup set --portgroup-name "Management
```



```
Network" --vlan-id @vlan_id@
```

```
services.sh restart
```

Configuration File

```
#####  
# Command for server-based licensing  
# To use: Set the Custom Attribute for ProductKey_ESXi50 and uncomment the  
# 'vmserialnum' line below  
# vmserialnum --esx=@ProductKey_ESXi51@  
  
# Set the root password for the DCUI and Tech Support Mode  
rootpw --iscrypted "@root_password:$1$7z4m7f1z$wliShMhVv2HuCAPmuiQzV1@"  
  
# Choose the first discovered disk to install onto  
# Note for more advanced partitioning, you may want to replace and customize  
# this section  
install --firstdisk --overwritevmfs  
  
# reboot after installation  
reboot  
  
# Set the network to DHCP on the network adapter  
network --bootproto=dhcp  
  
## IC4VC custom values  
%firstboot  
  
VMNIC=$(esxcli network nic list | grep -i @mgmt_mac_address@ | awk -F " " '{ print $1 }')  
  
esxcli network vswitch standard uplink remove --uplink-name=vmnic0 --vswitch-name=vSwitch0  
esxcli network vswitch standard uplink add --uplink-name=$VMNIC --vswitch-name=vSwitch0  
  
esxcli network ip interface ipv4 set --interface-name=vmk0 --ipv4=@ip_address@ --netmask=@net_mask@ --type=static  
esxcli network ip route ipv4 add --gateway @gate_way@ --network default  
  
esxcli network ip dns server add --server @primary_dns_server@  
esxcli network ip dns server add --server @alternate_dns_server@  
  
esxcli system hostname set --host @host_name@ --domain @domain_name@  
  
# If vlan tagging is not used then vlan_id value should be 0 # A vlan_id of 0 disables vlan_tagging in ESX and  
# causes Mgmt to use interface of vswitch  
  
esxcli network vswitch standard portgroup set --portgroup-name "Management Network" --vlan-id @vlan_id@  
  
services.sh restart  
  
## post-install script  
### DO NOT MODIFY THE CODE BELOW. IT WILL RESULT IN BUILD PLAN FAILURE ###  
%post --interpreter=python --ignorefailure=true  
import time  
stampFile = file("/finished.stamp", mode="w")  
stampFile.write( time.asctime() )
```

Figure 36: Script example

7. Click **OK** to save the updated Kickstart configuration file.
8. Select **OS Build Plans** from the DEPLOYMENT options.
9. Select the OS Build Plan to modify, and then select **Save as** in the Actions menu.
10. Enter a valid name for the new custom OS Build Plan, and then click **OK**.
11. Select the new custom OS Build Plan, and then select **Edit** in the Actions menu.
12. The OS Build Plan Edit window opens.
13. Select the ESXi 5.1 Kickstart Config File step (step 6 in the sample figure), and then click the **Edit** icon.
14. The Edit Step window opens.

Steps

Step	Name	Parameters	Type		
1	Validate Gateway Setting for Static Network Config...		OGFS		×
2	Check iLO Service		OGFS		×
3	Boot	--serviceOS=linux64	OGFS		×
4	Wait for HP SA Agent	--maintenance --atLeast=3 --atMost=20	OGFS		×
5	Set Media Source	@__OPSW-Media-LinURI@/esxi51	Python		×
6	ESXi 5.1 Kickstart	/tmp/user.ks.cfg	Config File		×
7	Inject Required ESXi 5 Kickstart Settings	--accept-encrypted-password	OGFS		×
8	Inject Kickstart Personalization Settings for ESXi 5		OGFS		×
9	Create Stub Partition		Unix		×
10	Copy Boot Media		Unix		×

15. In the **Configuration File** field, select the new Kickstart configuration file created in the preceding steps.
16. Verify that the **Install path** field value is maintained from the original OS Build Plan.
17. Click **OK** to save the edits to the step.
18. Click **OK** in the OS Build Plan Edit window to save the new build plan.

The new custom build plan can now be used to grow a cluster using the enhanced deployment option.

Glossary

CIM	Common Information Model.
CLI	Command-line interface. An interface comprised of various commands which are used to control operating system responses.
datastore	A storage location for VM files in the VMware environment.
DNS	Domain Name System.
DPM	Distributed power management.
DRS	Distributed Resource Scheduler.
ESX	An enterprise-level virtualization product offered by VMware.
EVA	Enterprise Virtual Array.
FC	Fibre Channel. A network technology primarily used for storage networks.
FQDN	Fully Qualified Domain Name.
FTP	File Transfer Protocol.
HBA	Host bus adapter.
iLO	Integrated Lights-Out.
IML	Integrated Management Log.
IQN	iSCSI Qualified Name.
iSCSI	Internet small computer system interface. Like an ordinary SCSI interface, iSCSI is standards-based and efficiently transmits block-level data between a host computer (such as a server that hosts Exchange or SQL Server) and a target device (such as the HP All-in-One Storage System). By carrying SCSI commands over IP networks, iSCSI is used to facilitate data transfers over intranets and to manage storage over long distances.
LD, LDEV	Logical device. An LDEV is created when a RAID group is carved into pieces according to the selected host emulation mode (that is, OPEN-3, OPEN-8, OPEN-9). The number of resulting LDEVs depends on the selected emulation mode. The term LDEV is also known as term volume .
LUN	Logical unit number. A LUN results from mapping a logical unit number, port ID, and LDEV ID to a RAID group. The size of the LUN is determined by the emulation mode of the LDEV and the number of LDEVs associated with the LUN.
MSA	Modular Smart Array.
NRAID	A RAID level that uses nonstriped mapping to a single disk.
NFS	Network File System.

OA	Onboard Administrator.
RAID	Redundant array of independent disks.
RDM	Raw device mapping.
RDP	Rapid Deployment Pack.
RMI	Remote Method Invocation. A set of protocols that enables Java objects to communicate remotely with other Java objects.
SAID	Service Agreement Identifier.
SAN	Storage area network. A network of storage devices available to one or more servers.
SAS	Smart Array System.
SI	Storage Integration.
SIM	Systems Insight Manager.
SMI-S	Storage Management Initiative Specification.
SMU	Storage Management Utility. The web browser interface that system administrators can use to configure, monitor, and manage MSA2000 Family storage systems. SMU is accessible from any management host that can access a system through an out-of-band Ethernet connection.
SSO	Single Sign-On.
SUM	Software Update Manager.
SPOCK	Single Point of Connectivity Knowledge website. SPOCK is the primary portal used to obtain detailed information about supported HP storage product configurations.
UID	Unit Identification Light.
VASA	VMware Aware Storage APIs.
VDS	Microsoft Virtual Disk Service. The Windows service that manages storage through the HWPs.
VM	Virtual Machine.
VMDK	Virtual Machine Disk Format.
VMFS	Virtual Machine File System.
VMware vCenter Server	The central management server of the VMware environment, which combines a number of standalone hypervisors or one or more VMware clusters into a single point of management.
VMware vSphere Client	The VMware GUI used to view and manage the virtual environment.

VSS	Microsoft Volume Shadow Copy Service. The Windows service that creates data copies. A service that works through an HP provider to make copies of disk array volumes.
WBI	Web Based Interface.
WWN	World Wide Name. A unique 64-bit value used to identify Fibre Channel devices on an arbitrated loop. The WWN consists of a prefix issued by the IEEE to uniquely identify the company, and a suffix that is issued by the company.
WWNN	World wide node name. A globally unique 64-bit identifier assigned to each Fibre Channel node process.