Managing Multi-Hypervisor Environments with vCenter Server

vCenter Server 5.1

vCenter Multi-Hypervisor Manager 1.0

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About Managing Multi-Hypervisor Environments with vCenter Server

Managing Multi-Hypervisor Environments with vCenter Server provides information about how to manage third-party hypervisors in vCenter Server by using VMware vCenter Multi-Hypervisor Manager.

Managing Multi-Hypervisor Environments with vCenter Server also provides information about how to create and manage virtual machines on third-party hypervisors.

Intended Audience

This information is intended for vSphere system administrators who want to manage third-party hypervisors by using vCenter Server.

VMware Technical Publications Glossary

VMware Technical Publications provides a glossary of terms that might be unfamiliar to you. For definitions of terms as they are used in VMware technical documentation, go to http://www.vmware.com/support/pubs.

Multi-Hypervisor Management in vCenter Server 1

If you use heterogeneous types of hypervisors to build your virtualization platform, you can use vCenter Multi-Hypervisor Manager to manage both VMware and third-party hypervisors such as Microsoft Hyper-V in vCenter Server.

Figure 1-1. vCenter Multi-Hypervisor Manager Components
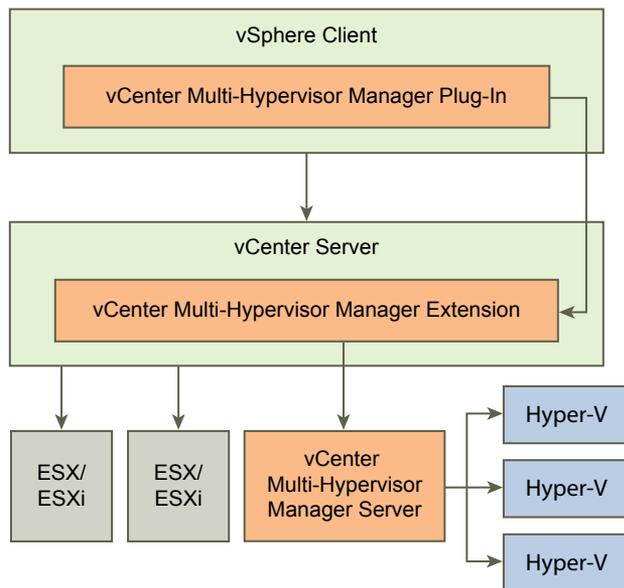
Third-Party Hypervisor	A hypervisor developed by a vendor different than VMware. The type of third-party hypervisors that you can manage with vCenter Multi-Hypervisor Manager 1.0 is Microsoft Hyper-V. See "vCenter Multi-Hypervisor Manager Software Requirements," on page 10 for details.
vCenter Multi-Hypervisor Manager Server	A component that enables the management of third-party hypervisors in vCenter Server. The vCenter Multi-Hypervisor Manager server can reside on the same machine as vCenter Server if it runs on a Windows OS, or on a remote machine

vCenter Multi-Hypervisor Manager Plug-In	The client component of vCenter Multi-Hypervisor Manager. It is installed as a plug-in to the vSphere Client and provides the graphical interface for managing third-party hypervisors in the vSphere Client.
Third-Party Hosts Inventory	An inventory tree in vCenter Server where you can manage third-party hypervisors. When installed and configured, the vCenter Multi-Hypervisor Manager provides the third-party hosts inventory. You can access the third-party hosts inventory by clicking the vCenter Multi-Hypervisor Manager icon under Inventory in the vSphere Client. You can add third-party hypervisors to the third-party hosts inventory and perform management tasks such as create a new virtual machine, change the power state of virtual machines, change the hardware and software configuration of virtual machine, and others.

Installing and Administering vCenter Multi-Hypervisor Manager

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To manage third-party hypervisors in vCenter Server, you must install the vCenter Multi-Hypervisor Manager server and plug-in for the vSphere Client. When installed, vCenter Multi-Hypervisor Manager provides a separate inventory for third-party hypervisors in vCenter Server, which you can manage by using the vSphere Client.

- vCenter Multi-Hypervisor Manager Software Requirements on page 10

  You can manage third-party hypervisors by using vCenter Multi-Hypervisor Manager if your system meets the software requirements for running the vCenter Multi-Hypervisor Manager server and plug-in for the vSphere Client.

- vCenter Multi-Hypervisor Manager Deployment Schemes on page 10

  You can install the vCenter Multi-Hypervisor Manager server on the same machine as vCenter Server if it runs on a Windows OS, or on a remote machine.

- Required Ports for vCenter Multi-Hypervisor Manager on page 11

  vCenter Multi-Hypervisor Manager uses different ports to communicate with vCenter Server, the vSphere Client, and the third-party hypervisors. You can define most of the port numbers while installing the vCenter Multi-Hypervisor Manager server.

- Install the vCenter Multi-Hypervisor Manager Server on page 12

  To manage third-party hypervisors by using vCenter Server, first you must install the vCenter Multi-Hypervisor Manager server. You can install the vCenter Multi-Hypervisor Manager server on the same machine as vCenter Server if it runs on Windows, or on a remote machine.

- Install the vCenter Multi-Hypervisor Manager Plug-In for the vSphere Client on page 14

  After you install the vCenter Multi-Hypervisor Manager server, you must install the vCenter Multi-Hypervisor Manager plug-in for the vSphere Client. The vCenter Multi-Hypervisor Manager plug-in provides a separate inventory tree and management functionality for third-party hypervisors in the vSphere Client.

- Replace the vCenter Multi-Hypervisor Manager Certificate and Configuring a New vCenter Server Certificate on page 14

  You might need to replace the default vCenter Multi-Hypervisor Manager certificate with a certificate signed by a certificate authority or with a custom self-signed certificate. In case you have replaced the vCenter Server certificate, you must pass the thumbprint of the new certificate to the vCenter Multi-Hypervisor Manager server.

- Choosing HTTP or HTTPS Connection Between vCenter Multi-Hypervisor Manager and Hyper-V Hosts on page 15

  Your decision to use HTTP or HTTPS for communication between vCenter Multi-Hypervisor Manager server and the Hyper-V hosts depends on whether you want to use a secure or non-secure connection.

■ Collect the vCenter Multi-Hypervisor Manager Log Files on page 17

VMware technical support might request the vCenter Multi-Hypervisor Manager log files to help resolve technical issues. You can generate a log bundle as a file.

vCenter Multi-Hypervisor Manager Software Requirements

You can manage third-party hypervisors by using vCenter Multi-Hypervisor Manager if your system meets the software requirements for running the vCenter Multi-Hypervisor Manager server and plug-in for the vSphere Client.

Table 2-1. vCenter Multi-Hypervisor Manager Software Requirements

Component	Requirements
vCenter Server systems	vCenter Server 5.1
Third-party hypervisors	■ Microsoft Hyper-V 2008 R2 ■ Microsoft Hyper-V for Windows Server 2008
vCenter Multi-Hypervisor Manager server	The Windows versions that vCenter Server 5.1 supports. For a list of the supported Windows operating systems, see the *VMware Compatibility Guide* at http://www.vmware.com/resources/compatibility/
vCenter Multi-Hypervisor Manager client	The Windows versions that the vSphere Client 5.1 supports. For a list of the supported Windows operating systems, see the *VMware Compatibility Guide* at http://www.vmware.com/resources/compatibility/

vCenter Multi-Hypervisor Manager Operational Limits

vCenter Multi-Hypervisor Manager can manage up to 20 third-party hypervisors with up to 500 virtual machines running.

vCenter Multi-Hypervisor Manager Deployment Schemes

You can install the vCenter Multi-Hypervisor Manager server on the same machine as vCenter Server if it runs on a Windows OS, or on a remote machine.

When the vCenter Multi-Hypervisor Manager server is installed on the same machine as vCenter Server, it communicates with the vSphere Client through the vCenter Server proxy.

Figure 2-1. vCenter Multi-Hypervisor Manager Server Is Installed on the Same Machine as vCenter Server
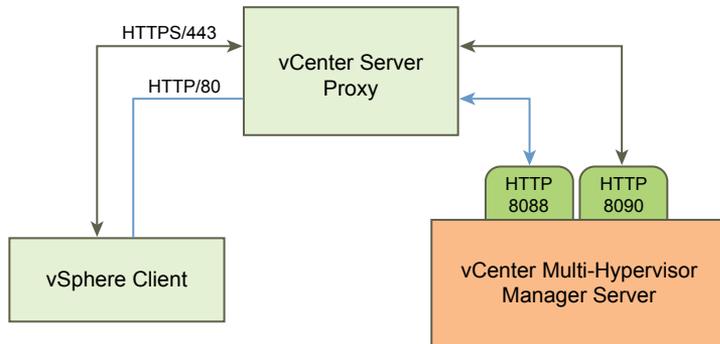
When vCenter Multi-Hypervisor Manager server is installed on a different machine than vCenter Server, it communicates through a direct HTTP or HTTPS connection with the vSphere Client.

Figure 2-2. vCenter Multi-Hypervisor Manager Is Installed on a Different Machine than vCenter Server

NOTE   If vCenter Multi-Hypervisor Manager server is installed on a different machine than vCenter Server, you must enable the firewall on the vCenter Multi-Hypervisor Manager server machine for a direct connection.

Required Ports for vCenter Multi-Hypervisor Manager

vCenter Multi-Hypervisor Manager uses different ports to communicate with vCenter Server, the vSphere Client, and the third-party hypervisors. You can define most of the port numbers while installing the vCenter Multi-Hypervisor Manager server.

Table 2-2. vCenter Multi-Hypervisor Manager Default Ports

Component	Default Port Number	Protocol	Description
vCenter Server proxy	443	HTTP	The vCenter Multi-Hypervisor Manager server and plug-in communicate through the vCenter Server proxy when the vCenter Multi-Hypervisor Manager server and vCenter Server are installed on the same machine.
vCenter Multi-Hypervisor Manager server	8090	HTTP	The vCenter Multi-Hypervisor Manager server and plug-in communicate through a direct HTTP or HTTPS connection when the vCenter Multi-Hypervisor Manager server and vCenter Server are installed on different machines.
	8090	HTTPS	
HTTP server	8088	HTTP	The vCenter Multi-Hypervisor Manager server downloads the vCenter Multi-Hypervisor Manager plug-in from the HTTP server.
WinRM server and client 1.1 and earlier	80	HTTP	Used for communication between the vCenter Multi-Hypervisor Manager server and the Hyper-V hosts.
	443	HTTPS	
WinRM server and client 2.0	5985	HTTP	
	5986	HTTPS	

The vCenter Multi-Hypervisor Manager components communicate with each other on different ports. You can configure HTTPS ports to the vCenter Multi-Hypervisor Manager components to use a secure connection. For more information about how to enable HTTPS

Figure 2-3. vCenter Multi-Hypervisor Manager Communication Schemes
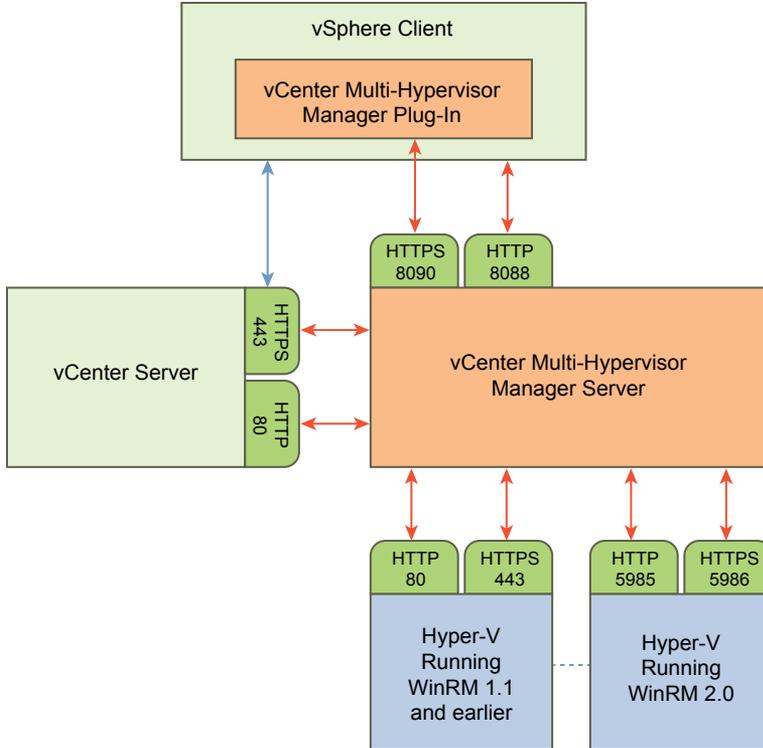
Install the vCenter Multi-Hypervisor Manager Server

To manage third-party hypervisors by using vCenter Server, first you must install the vCenter Multi-Hypervisor Manager server.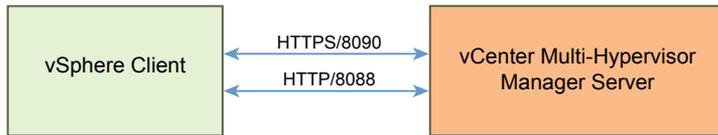 You can install the vCenter Multi-Hypervisor Manager server on the same machine as vCenter Server if it runs on Windows, or on a remote machine.

Prerequisites

- Verify that you have an account with administrative privileges on the vCenter Server system.

- Verify that the Windows Remote Management service is running and configured on the vCenter Server machine and the machine where you install the vCenter Multi-Hypervisor Manager server.

- Verify that your user account has sufficient rights to install the Visual C++ 2008 Redistributable Package. The vCenter Multi-Hypervisor Manager installer initiates the installation of the Visual C++ 2008 Redistributable Package.

- If you want to use a custom certificate for vCenter Multi-Hypervisor Manager, verify that you have all the necessary certification authorities in the Trusted Root Certification Authority on the system where you want to install the vCenter Multi-Hypervisor Manager server.

Procedure

1 Double-click the executable file of the vCenter Multi-Hypervisor Manager server installer.

2 Review the Welcome page of the installer and click **Next**.

3 Review and accept the end-user patent agreement and click **Next**.

4 Review and accept the license agreement and click **Next**.

5 Select an installation directory for the vCenter Multi-Hypervisor Manager server and click **Next**.

6   Select a method for providing a vCenter Multi-Hypervisor Manager certificate.

Option	Description
Automatically generate a certificate	Select this option to use an automatically generated certificate for vCenter Multi-Hypervisor Manager.
Provide a certificate file later	Select this option to manually upload and configure a certificate for vCenter Multi-Hypervisor Manager.

> **CAUTION**   If you select **Provide a certificate file later**, you must replace the default vCenter Multi-Hypervisor Manager certificate after the installation completes, and manually start the VMware vCenter Multi-Hypervisor Manager service. If you skip replacing the default vCenter Multi-Hypervisor Manager certificate, you will be unable to start the vCenter Multi-Hypervisor Manager service. For more information, see "Replace the vCenter Multi-Hypervisor Manager Certificate and Configuring a New vCenter Server Certificate," on page 14.

7   Type the connection properties of the vCenter Server system and click **Next**.

Option	Description
IP address or host name	Type the IP address or the host name of the vCenter Server system.
Port	Type the port number for connecting to the vCenter Server system.
User name	Type the user name for an administrative account for the vCenter Server system. The user account will be granted with administrative privileges on the root of the third-party hosts inventory tree.
Password	Type the password for the administrative account for the vCenter Server system.

8   If the vCenter Server SSL certificate configuration page appears, verify and accept the SSL certificate of vCenter Server and click **Next**.

This vCenter Server SSL certificate configuration page only appears if you have decided to use an automatically generated certificate.

9   Type the credentials of a user account that has sufficient rights to run the VMware vCenter Multi-Hypervisor Manager service and has full permissions to issue Windows Remote Management commands, and click **Next**.

10 Type the vCenter Multi-Hypervisor Manager server connection properties.

   a   In the **HTTP server port** text box, leave the default port 8088 for the HTTP server from where the vCenter Multi-Hypervisor Manager server downloads the vCenter Multi-Hypervisor Manager plug-in.

   The HTTP server is installed together with the vCenter Multi-Hypervisor Manager server. Change the default value of the port if another application uses it.

   b   In the **vCenter Multi-Hypervisor Manager Server Port** text box, type the port number for the vCenter Multi-Hypervisor Manager server.

   c   Select how the vCenter Multi-Hypervisor Manager server will be identified on the network.

   The IP address or the host name that you select must be reachable by the machine that will run the vSphere Client instance where you will install the vCenter Multi-Hypervisor Manager plug-in.

   d   Click **Next**.

11 Click **Install**.

12 When the installation completes, click **Finish**.

The vCenter Multi-Hypervisor Manager server is successfully installed and running.

What to do next

Install the vCenter Multi-Hypervisor Manager client plug-in for the vSphere Client.

Install the vCenter Multi-Hypervisor Manager Plug-In for the vSphere Client

After you install the vCenter Multi-Hypervisor Manager server, you must install the vCenter Multi-Hypervisor Manager plug-in for the vSphere Client. The vCenter Multi-Hypervisor Manager plug-in provides a separate inventory tree and management functionality for third-party hypervisors in the vSphere Client.

Prerequisites

Verify that the vCenter Multi-Hypervisor Manager server is installed and running.

Procedure

1 Using the vSphere Client, connect to the vCenter Server system.

2 Select **Plug-ins > Manage Plug-ins**.

3 Click **Download and Install** for the VMware vCenter Multi-Hypervisor Manager plug-in.

   The installation wizard for the vCenter Multi-Hypervisor Manager client plug-in opens.

4 Review the end user patent agreement and click **Next**.

5 Accept the license agreement and click **Next**.

6 Click **Install**.

7 When the installation completes, click **Finish**.

8 Close the Plug-in Manager window.

The vCenter Multi-Hypervisor Manager plug-in is installed in the vSphere Client. The **vCenter Multi-Hypervisor Manager** icon appears under Inventory in the vSphere Client.

Replace the vCenter Multi-Hypervisor Manager Certificate and Configuring a New vCenter Server Certificate

You might need to replace the default vCenter Multi-Hypervisor Manager certificate with a certificate signed by a certificate authority or with a custom self-signed certificate. In case you have replaced the vCenter Server certificate, you must pass the thumbprint of the new certificate to the vCenter Multi-Hypervisor Manager server.

Procedure

1 Log in to the machine of the vCenter Multi-Hypervisor Manager server as administrator or as a user that has rights to run the vCenter Multi-Hypervisor Manager service.

2 Stop the vCenter Multi-Hypervisor Manager service in case it's running.

3 In the root installation directory of the vCenter Multi-Hypervisor Manager server, open a command prompt and run the `mhmd` executable with the following arguments:

Argument	Description
-C `path to extension.xml`	The path to the `extension.xml` file in the vCenter Multi-Hypervisor Manager installation directory.
-l `vCenter Server IP address, host name, or URL`	The IP address or host name of the vCenter Server system. You can also pass a URL to the vCenter Server system.

Argument	Description
–n *vCenter Server user name*	The user name with which you want to log in to vCenter Server.
–p *vCenter Server password*	The password to log in to vCenter Server.
–g *path to mhm.cfg*	The path to the mhm.cfg file in the vCenter Multi-Hypervisor Manager installation directory.
–t *vCenter Server certificate thumbprint* or <verify>	The mechanism vCenter Multi-Hypervisor Manager uses to validate the current vCenter Server certificate. If you pass a thumbprint argument, vCenter Multi-Hypervisor Manager checks for a thumbprint match only. If you pass <verify> as the argument, vCenter Multi-Hypervisor Manager runs a full validation of the certificate by checking the expiry dates, subject names, and the certificate issuing authorities. NOTE If you use a custom certificate for vCenter Multi-Hypervisor Manager always use the –t <verify> argument for maximum security.
–k *path to the private key file*	The path to the private key of the new vCenter Multi-Hypervisor Manager certificate. This argument is optional.
–K *path to the certificate file*	The path to the new certificate or vCenter Multi-Hypervisor Manager. This argument is optional.

Omit the last two arguments if you have replaced the vCenter Server certificate and you want to pass only the new vCenter Server certificate without replacing the vCenter Multi-Hypervisor Manager certificate.

Example: Replace the vCenter Multi-Hypervisor Manager Certificate

The following command replaces the vCenter Multi-Hypervisor Manager certificate:

```
C:\Program Files\VMware\Infrastructure\VMware vCenter MHM\mhmd.exe ^
–C "C:\Program Files\VMware\Infrastructure\VMware vCenter MHM\extension.xml" ^
–l http://10.23.123.119:80 ^
–n "John Smith" ^
–p "123456" ^
–g "C:\ProgramData\VMware\VMware vCenter MHM\mhm.cfg" ^
–t "04:B3:69:C3:8D:B4:F2:4F:56:A7:F9:FE:A7:AB:FE:8E:DD:06:31:68" ^
–k "C:\temp\rui.key" ^
–K "C:\temp\rui.crt"
```

Choosing HTTP or HTTPS Connection Between vCenter Multi-Hypervisor Manager and Hyper-V Hosts

Your decision to use HTTP or HTTPS for communication between vCenter Multi-Hypervisor Manager server and the Hyper-V hosts depends on whether you want to use a secure or non-secure connection.

If you use the HTTPS protocol, all data exchanged between the vCenter Multi-Hypervisor Manager server and the Hyper-V host passes through an encrypted channel.

If you use the HTTP protocol, the authentication of the Hyper-V host with the vCenter Multi-Hypervisor Manager server is encrypted, and all the management traffic data exchanged between the vCenter Multi-Hypervisor Manager and the Hyper-V host runs through a non-encrypted channel. Management traffic data consists of the operations you perform in the vCenter Multi-Hypervisor Manager, such as power on a virtual machine, create a virtual machine, add a Hyper-V host to the third-party hosts inventory, and so on.

vCenter Multi-Hypervisor Manager server communicates with Hyper-V hosts by using Microsoft Windows Remote Management standards and protocols. For more information, see *Microsoft Windows Remote Management* documentation.

For information about how to configure Hyper-V hosts for remote management, see Hyper-V documentation.

Enable HTTP on a Hyper-V Host

To have an HTTP connection between a Hyper-V host and the vCenter Multi-Hypervisor Manager server, you must enable HTTP on the Hyper-V host.

By default, no WinRM listeners are defined on a Hyper-V host. To enable HTTP connection between the Hyper-V host and the vCenter Multi-Hypervisor Manager server, you must define a WinRM listener.

Procedure

1 On the Hyper-V host system, open a command prompt.

2 Run the following command:

```
winrm quickconfig
```

You successfully enabled HTTP on the Hyper-V host.

Enable HTTPS on a Hyper-V Host

To have a secure connection between a Hyper-V host and the vCenter Multi-Hypervisor Manager server, you must enable HTTPS on the Hyper-V host.

By default, no WinRM listeners are defined on a Hyper-V host. To enable the communication via HTTPS between the Hyper-V host and the vCenter Multi-Hypervisor Manager server, you must define a WinRM listener.

Prerequisites

Verify that you have the **Web Server (IIS)** role enabled with the **Internet Information Services Management Console** components.

Procedure

1 Log in to the Hyper-V host.

2 Click **Start > Administrative Tools > Internet Information Services (IIS) Manager**.

3 From the **Connections** tree, select the node that corresponds to the Hyper-V host and double-click **Server Certificates**.

4 In the Actions pane, click **Create Self-Signed Certificate**.

5 In the Create Self-Signed Certificate dialog box, type a name for the certificate and click **OK**.

6 In the Server Certificates pane, right-click the name of the newly created self-signed certificate, and select **View**.

7 On the **Details** tab, select **Thumbprint** and copy the certificate thumbprint.

8 Open a command line window and run the following command:

```
winrm create winrm/config/Listener?Address=*+Transport=HTTPS @{Certificate
Thumbprint="thumbprint"}
```

Here *thumbprint* is the certificate thumbprint of the self-signed certificate.

You successfully enabled HTTPS on the Hyper-V host.

Collect the vCenter Multi-Hypervisor Manager Log Files

VMware technical support might request the vCenter Multi-Hypervisor Manager log files to help resolve technical issues. You can generate a log bundle as a file.

Procedure

1   Browse to the installation directory of the vCenter Multi-Hypervisor Manager server.

    The default installation directory is `C:\Program Files\VMware\Infrastructure\VMware vCenter MHM`.

2   Double-click the `mhm–support.bat` file.

The vCenter Multi-Hypervisor Manager log files are saved as a `.zip` file in the vCenter Multi-Hypervisor Manager installation directory.

Authorization in vCenter Multi-Hypervisor Manager

<div style="text-align:right">**3**</div>

vCenter Multi-Hypervisor Manager integrates with the vCenter Server authorization mechanism. You can associate roles with user accounts for objects from the third-party hosts inventory.

This chapter includes the following topics:

Minimum Required Privileges to Access the Third-Party Hosts Inventory

To access the third-party hosts inventory, you must be able to log in to vCenter Server. Your user account must have at least the **Ready-Only** role assigned on the vCenter Server root folder.

The **Ready-Only** role has the **System.View** and **System.Read** privileges. Any other custom-defined or system role has these privileges as well. If your user account has the **Read-Only** or any other role assigned on the root folder of the vCenter Server system, you can log in to vCenter Server and access the third-party hosts inventory.

If your account has the **No Access** role or any other role without the **System.View** and **System.Read** privileges assigned on the root folder of the vCenter Server system, you cannot log in to vCenter Server and access the third-party hosts inventory.

Assign Permissions to Object from the Third-Party Hosts Inventory

You can assign roles to user accounts for objects that are in the third-party hosts inventory tree.

Prerequisites

- The vSphere Client must be connected to the vCenter Server system.
- Required privileges: **Permissions.Modify permissions**

Procedure

1 In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2 From the third-party hosts inventory tree, select the object to which you want to assign permissions.

3 Select the **Permissions** tab.

4   Right-click within the tab and select **Add Permission**.

5   To associate a user with the inventory object, click **Add** in the Users and Groups pane.

6   Identify the user or group.

   a   From the **Domain** drop-down menu, select a domain where the user or group is located.

   b   Type a name in the **Search** box or select a name from the list.

        The system searches user names, group names, and descriptions.

   c   Double-click the user or group name.

        The name is added to the **Users** or **Groups** list.

   d   (Optional) Click **Check Names** to verify that the user or group exists in the database.

   e   Click **OK**.

7   From the drop-down menu in the Assign Role pane, select a role.

     The privileges of the role are listed in the section below the role title.

8   (Optional) Deselect **Propagate to Child Objects**.

     The role is applied only to the selected object and does not propagate to the child objects.

9   Click **OK**.

The server adds the permission to the list of permissions for the object.

The list of permissions references all users and groups that have roles assigned for the object, and indicates where in the vCenter Server hierarchy the role is assigned.

Privileges for Operations on Third-Party Hypervisors

To perform operations such as add a third-party hypervisor in vCenter Server, or change the power state of a third-party hypervisor, your user account must have sufficient privileges on the relevant level of the third-party hosts inventory.

Table 3-1. Operations on Third-Party Hosts

Operation	Privilege	Required on Inventory Level
Add a third-party hypervisor	**Host.Inventory.Add standalone host**	The root of the third-party hosts inventory.
Reconnect a third-party hypervisor	**Host.Configuration.Connection**	The third-party hypervisor
Disconnect a third-party hypervisor		
Reboot a third-party hypervisor	**Host.Configuration.Maintenance**	The third-party hypervisor
Shut down a third-party hypervisor		
Remove a third-party hypervisor	**Host.Inventory.Remove host**	The third-party hypervisor

Privileges for Creating and Removing Third-Party Virtual Machines

To create or remove a third-party virtual machine, your user account must have sufficient privileges. Depending on the properties of the new virtual machine, the required privileges vary.

Table 3-2. Creating and Removing Third-Party Virtual Machines

Operation	Privilege	Required on Inventory Level
Create a new virtual machine	**Virtual machine.Inventory.Create new**	The third-party host
Create the virtual machine with a disk	**Datastore.Allocate space**	The third-party host
Create the virtual machine connected with the local network	**Network.Assign network**	The third-party host
Create the virtual machine with a new disk	**Virtual machine.Configuration.Add new disk**	The third-party host
Create the virtual machine with an existing disk	**Virtual machine.Configuration.Add existing disk**	The third-party host
Create the virtual machine with a virtual ethernet card, or with a virtual DVD or CD-ROM for guest OS installation	**Virtual machine.Configuration.Add or remove device**	The third-party host
Remove a virtual machine	**Virtual machine.Inventory.Remove**	The third-party virtual machine

Privileges for Power State Operations on Third-Party Virtual Machines

To change the power state of a third-party virtual machine, you must have sufficient permissions on the virtual machine object.

Table 3-3. Virtual Machine Power State Operations

Operation	Privilege	Required on Inventory Level
Power on a virtual machine	**Virtual machine.Interaction.Power On**	The third-party virtual machine
Power off a virtual machine	**Virtual machine.Interaction.Power Off**	The third-party virtual machine
Suspend a virtual machine	**Virtual machine.Interaction.Suspend**	The third-party virtual machine
Reset a virtual machine	**Virtual machine.Interaction.Reset**	The third-party virtual machine
Shut down the guest OS of a virtual machine	**Virtual machine.Interaction.Power Off**	The third-party virtual machine

Privileges for Configuring Third-Party Virtual Machines

To change the configuration of a third-party virtual machine, you must have sufficient permissions on the virtual machine object.

Table 3-4. Reconfiguring Third-Party Virtual Machines

Operation	Privilege	Required on Inventory Level
Rename a virtual machine.	**Virtual machine.Configuration.Rename**	The third-party virtual machine
Edit virtual machine devices.	**Virtual machine.Configuration.Modify device settings**	The third-party virtual machine
Edit virtual machine CPU resources.	**Virtual machine.Configuration.Change CPU count**	The third-party virtual machine
Edit virtual machine memory resources.	**Virtual machine.Configuration.Memory**	The third-party virtual machine
Edit the resource allocation for a virtual machine's processors, such as weight, reservation, and limit.	**Virtual machine.Configuration.Change resource**	The third-party virtual machine
Edit the size of a virtual disk.	**Virtual machine.Configuration.Extend virtual disk**	The third-party virtual machine
Edit a virtual DVD/CD-ROM device configuration.	**Virtual machine.Interaction.Configure CD media**	The third-party virtual machine
Edit a virtual floppy device configuration.	**Virtual machine.Interaction.Configure floppy media**	The third-party virtual machine
Remove a virtual disk.	**Virtual machine.Configuration.Remove disk**	The third-party virtual machine
Remove a physical disk from the virtual machine.	**Virtual machine.Configuration.Raw device**	The third-party virtual machine
Remove a virtual DVD or CD-ROM, floppy device, or a virtual adapter.	**Virtual machine.Configuration.Remove device**	The third-party virtual machine
Add or remove DVD or CD-ROM, floppy device, or a virtual adapter.	**Virtual machine.Configuration.Add or remove device**	The third-party virtual machine
Add a physical disk to the virtual machine.	**Virtual machine.Configuration.Raw device**	The third-party virtual machine
Add existing disk.	**Virtual machine.Configuration.Add existing disk**	The third-party virtual machine
Add a virtual disk.	**Virtual machine.Configuration.Add new disk**	The third-party virtual machine
Add a virtual disk.	**Datastore.Allocate space**	The parent third-party host
Add or reconfigure a network adapter.	**Network.Assign network**	

Managing Third-Party Hypervisors

4

To simplify the management of virtual environments that have VMware ESX/ESXi hosts and third-party hypervisors such as Microsoft Hyper-V, you can connect your third-party hypervisors to a vCenter Server system by using vCenter Multi-Hypervisor Manager. Having both VMware and third-party hypervisors connected to vCenter Server, you can manage the whole virtual environment through the vSphere Client.

vCenter Multi-Hypervisor Manager 1.0 supports the management of Microsoft Hyper-V hypervisors in vCenter Server. From the third-party hosts inventory of the vSphere Client, you can view the Hyper-V hosts configuration, and perform management tasks such as power off, reboot, disconnect, reconnect, and remove the host from the third-party hosts inventory.

- Add a Hyper-V Host on page 23

  You can add Hyper-V hosts to vCenter Server, and manage both Microsoft Hyper-V and VMware hypervisors from a single interface.

- View Hyper-V Host Configuration on page 24

  You can review the Hyper-V host configuration from the vSphere Client to reconfigure some of the Hyper-V settings.

- Disconnecting and Reconnecting a Hyper-V Host on page 25

  You can disconnect and reconnect a Hyper-V host that vCenter Server manages. vCenter Server stops performing monitoring activities for a disconnected Hyper-V host.

- Shut Down or Reboot a Hyper-V Host on page 25

  You can shut down or reboot the Hyper-V hosts in your third-party hosts' inventory. Shutting down a Hyper-V host disconnects it from vCenter Server, but does not remove it from the inventory.

- Remove Hyper-V Hosts from Inventory on page 26

  You can remove Hyper-V hosts that you no longer need to manage from your third-party hosts inventory.

Add a Hyper-V Host

You can add Hyper-V hosts to vCenter Server, and manage both Microsoft Hyper-V and VMware hypervisors from a single interface.

Prerequisites

- Verify that the vCenter Multi-Hypervisor Manager server is installed and running.

- Verify that the vCenter Multi-Hypervisor Manager plug-in is installed in the vSphere Client.

- Verify that the vSphere Client is connected to the vCenter Server system.

- Verify that the Hyper-V host is configured for remote management with the Windows Remote Management service.

- To use an HTTPS connection with the host, verify that HTTPS is enabled on the Windows Remote Management service.

- Verify that you have a user account with administrative privileges on the Hyper-V host.

Required privileges: **Host.Inventory.Add standalone host**

Procedure

1   In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2   Right-click the vCenter Server system and select **Add Third-Party Host**.

3   On the Connection Settings page, type the connection settings for the Hyper-V host.

    a   In the Connection pane, type the IP address or the host name.

      To use an SSL-encrypted connection with the Hyper-V host, type
      `https://IP address or host name`.

      If the Windows Remote Management service on the Hyper-V host is configured with a non-default port, add this port to the host address.

    b   In the Authorization pane, type the credentials of the administrative account for the host.

4   Click **Next**.

5   (Optional) If you have configured an HTTP connection with the Hyper-V host, click **OK** in the confirmation dialog that warns you about establishing an insecure connection with the host.

6   Review the Hyper-V host summary and click **Next**.

7   In the Ready to Complete page, click **Finish**.

The Hyper-V host is added to the vCenter Server system and appears in the inventory.

View Hyper-V Host Configuration

You can review the Hyper-V host configuration from the vSphere Client to reconfigure some of the Hyper-V settings.

Prerequisites

Verify that the vSphere Client is connected to the vCenter Server system.

Procedure

1   In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2   From the third-party hosts inventory, select a Hyper-V host.

3   Click the **Configuration** tab.

You can review the following information about the configuration of the Hyper-V host.

Option	Description
Processors	Displays information about the model of the processor, the processor speed, the number of processor sockets, the number of processor cores per socket, and the number of logical processors. Also displays information about manufacturer, model, BIOS version, and release date.
Memory	Displays information about the physical memory of the Hyper-V host.
Networking	Displays information about the virtual switches the Hyper-V host uses.
Network Adapters	Displays information about the physical network adapter devices on the Hyper-V host.

Disconnecting and Reconnecting a Hyper-V Host

You can disconnect and reconnect a Hyper-V host that vCenter Server manages. vCenter Server stops performing monitoring activities for a disconnected Hyper-V host.

The managed Hyper-V host and its associated virtual machines remain in the vCenter Server inventory. However, removing a managed Hyper-V host from vCenter Server removes the managed host and all its associated virtual machines from the vCenter Server inventory.

Disconnect a Hyper-V Host

Disconnect a managed Hyper-V host to temporarily suspend all vCenter Server monitoring and management activities for the host.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Required privileges: **Host.Configuration.Connection**

Procedure

1 In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2 Right-click a Hyper-V host and select **Disconnect**.

3 In the confirmation dialog box, click **Yes**.

The managed Hyper-V host disconnects from vCenter Server, the disconnected designation is appended to its name in parentheses, and the label is dimmed. Labels of all virtual machines on the host are similarly dimmed and labeled.

Reconnect a Hyper-V Host

A Hyper-V host that a vCenter Server system manages might disconnect from vCenter Server because of network problems or other reasons. If this happens, you can reconnect the Hyper-V host.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Required privileges: **Host.Configuration.Connection**

Procedure

1 In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2 Right-click the disconnected host and select **Connect**.

When the host reconnects to vCenter Server, the statuses of the virtual machines on that host are updated to reflect the change.

Shut Down or Reboot a Hyper-V Host

You can shut down or reboot the Hyper-V hosts in your third-party hosts' inventory. Shutting down a Hyper-V host disconnects it from vCenter Server, but does not remove it from the inventory.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Required privileges: **Host.Configuration.Maintenance**

Procedure

1 In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2 From the third-party hosts inventory, select a Hyper-V host.

3 Shut down all virtual machines that are not configured to shut down automatically when the Hyper-V host shuts down or restarts.

4 Right-click the Hyper-V host and select the appropriate option.

   ■ Select **Reboot** if you want to restart the Hyper-V host.

   ■ Select **Shut Down** if you want to shut down the Hyper-V host. You cannot power on a Hyper-V host from vCenter Multi-Hypervisor Manager client.

5 In the confirmation dialog, click **Yes**.

Remove Hyper-V Hosts from Inventory

You can remove Hyper-V hosts that you no longer need to manage from your third-party hosts inventory.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Required privileges: **Host.Inventory.Remove host**.

Procedure

1 In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2 From the third-party hosts inventory, right-click the Hyper-V host and select **Remove**.

3 In the confirmation dialog box, click **Yes** to remove the Hyper-V host.

vCenter Multi-Hypervisor Manager removes the Hyper-V host and all associated virtual machines from the vCenter Server inventory.

Creating Virtual Machines on Hyper-V Hosts

5

Virtual machines are a key component in a virtual environment. You can create virtual machines on Hyper-V hosts that are connected to vCenter Server.

When you create a new virtual machine on a Hyper-V host in vCenter Server, you associate it with the third-party hosts inventory. After you power on the virtual machine, it consumes resources dynamically as the workload increases, and returns them as the workload decreases.

Every Hyper-V virtual machine has virtual devices that provide the same function as physical hardware. A virtual machine gets CPU, memory, storage, and network connectivity from its Hyper-V host.

1 Start the Virtual Machine Creation Process on page 27

   To start the virtual machine creation, you open the Create New Virtual Machine wizard from a Hyper-V host.

2 Configure Virtual Machine Name and Location on page 28

   When you create a third-party virtual machine, you provide a name for it and specify a location for the virtual machine files on the Hyper-V host.

3 Configure Virtual Machine Memory Resources on page 28

   The amount of memory that you can allocate for a virtual machine is the amount of memory that the guest operating system detects.

4 Configure Networking on page 29

   You can configure a networking connection to the virtual machine so it can communicate with other network nodes, such as Hyper-V hosts, devices, and virtual machines.

5 Configure Virtual Machine Disk on page 29

   You can provide a storage space for a virtual machine by attaching a virtual disk. You can reuse an existing virtual disk or create a new one.

6 Select an Option for Installation of an Operating System on page 31

   You can install a guest operating system from an installation media or from a network-based installation.

7 Complete the Virtual Machine Creation on page 31

   The Ready to Complete page lets you review the configuration selections that you made for the virtual machine. You can change the existing settings, configure resources, networking, and more.

Start the Virtual Machine Creation Process

To start the virtual machine creation, you open the Create New Virtual Machine wizard from a Hyper-V host.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Verify that you have privileges to create third-party virtual machines, listed in "Privileges for Creating and Removing Third-Party Virtual Machines," on page 21.

Procedure

1 In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2 Right-click a Hyper-V host and select **New Virtual Machine**.

The Create New Virtual Machine wizard opens.

What to do next

Configure the virtual machine name and location.

Configure Virtual Machine Name and Location

When you create a third-party virtual machine, you provide a name for it and specify a location for the virtual machine files on the Hyper-V host.

Procedure

1 On the Name and Location page of the Create New Virtual Machine wizard, type a name for the virtual machine in the **Name** text box.

2 In the Location pane, select a location for the virtual machine.

Option	Description
Use default location	Leave this option selected to use the default location for storing virtual machine files on the Hyper-V host.
Specify location	Type a new location for storing the files of the new virtual machine. For example, `C:\Virtual Machines\My Virtual Machine`

3 Click **Next**.

What to do next

Configure the memory resources for the virtual machine.

Configure Virtual Machine Memory Resources

The amount of memory that you can allocate for a virtual machine is the amount of memory that the guest operating system detects.

Typically, the minimum amount of memory that a virtual machine needs is at least 512MB depending on the guest operating system that you install. The maximum amount of memory that you should allocate to a virtual machine is equal to or less than the physical memory of its host.

Procedure

1 On the Memory page of the Create New Virtual Machine wizard, select the amount of memory to allocate for the virtual machine.

2 Click **Next**.

What to do next

Select a network adapter for the virtual machine.

Configure Networking

You can configure a networking connection to the virtual machine so it can communicate with other network nodes, such as Hyper-V hosts, devices, and virtual machines.

Procedure

1   On the Network Type page of the Create New Virtual Machine wizard, select a network adapter from the **Type** drop-down list.

Option	Description
No Adapter	Leaves the virtual machine without networking.
Legacy Network Adapter	Allows network boot, but might lead to slower performance.
Network Adapter	Provides better performance, but might require installing additional guest OS drivers. This adapter type does not support network boot.
	The additional drivers are provided by the integration services for the guest OS. Newer versions of the supported Windows guest operating systems include the integration services by default. For all other supported guest operating systems, you must install the integration services separately.

2   In the Network Connection pane, select a virtual network from the **Network Label** drop-down list.

3   Click **Next**.

What to do next

Configure the virtual machine disk.

Configure Virtual Machine Disk

You can provide a storage space for a virtual machine by attaching a virtual disk. You can reuse an existing virtual disk or create a new one.

Procedure

1   On the Select a Disk page of the Create New Virtual Machine wizard, select an option for attaching a disk to the virtual machine.

Option	Description
Create a new virtual disk	Create a new disk and attach it to the virtual machine.
Use an existing virtual disk	Reuse an existing disk that is configured with an operating system or other virtual machine data.
Create a disk later	Attach a virtual disk later.

2   Click **Next**.

What to do next

If you decide to create a new disk, configure its properties. If you decide to use an existing disk, select its location. To create the virtual machine without disk, review the virtual machine details and create it.

Create a New Virtual Disk

You can create a new virtual disk and attach it to the virtual machine. You can create a disk with an amount of space that is allocated for the virtual machine, or a disk with dynamic space allocation.

Procedure

1   On the Create a New Disk page of the Create New Virtual Machine wizard, type a name for the new virtual disk.

2   In the Capacity pane, select the disk size.

3   In the Disk Provisioning pane, select the disk provisioning type.

Option	Description
Allocate and commit space on demand (Dynamic)	The disk uses only as much storage space as it needs. If the disk needs more space, it can grow to the maximum capacity allocated to it.
Allocate all disk space now (Fixed)	The storage space allocated to the disk is reserved for this disk only.

4   On the Location pane, select an option for the virtual disk location.

Option	Description
Use default storage	Use the default virtual disks location on the Hyper-V host.
Specify a datastore	Type a custom location for virtual disk on the Hyper-V host. For example, `C:\MyVirtualMachines\VirtualMachineDisks\`

5   Click **Next**.

What to do next

Select an option for installing a guest operating system on the virtual machine.

Select an Existing Virtual Disk

For a new virtual machine, you can use an existing disk that is configured with an operating system or other virtual machine data. This choice allows you to freely move the virtual hard drive from virtual machine to virtual machine.

Procedure

1   On the Select Existing Disk page of the Create New Virtual Machine wizard, type a location for the already existing virtual disk on the Hyper-V host.

For example, `C:\Users\Public\Documents\Hyper–V\Virtual hard disks\myVM.vhd`

2   Click **Next**.

What to do next

Review the details of the virtual machine and create it.

Select an Option for Installation of an Operating System

You can install a guest operating system from an installation media or from a network-based installation.

Procedure

1   On the Operating System Installation page of the Create New Virtual Machine wizard, select an option for installing a guest operating system on the virtual machine.

Option	Description
Install an operating system later	Install an operating system after you create the new virtual machine.
Install an operating system from a bootable CD/DVD-ROM or a floppy disk	Use a bootable media to install the guest operating system.
Install an operating system from a network-based installation server	Use a network-based installation of the guest operating system. To use this option, you must have configured the virtual machine with a legacy network adapter.

2   Click **Next**.

What to do next

Depending on the selected option for installing the guest operating system, there are two ways to proceed:

- Select an installation media.

- Complete the virtual machine creation.

Select an Operating System Installation Media

You can install the guest operating system on the virtual machine by using a physical CD or DVD drive, an ISO image, or a floppy image.

Procedure

1   On the Installation Media page of the Create New Virtual Machine wizard, select the media.

Option	Description
Physical CD/DVD drive	Map a physical CD or a DVD drive to the virtual machine where you have the installation media loaded.
Image file (.iso)	Type the location of an ISO image on the file system of the Hyper-V host.
Floppy image (.vfd)	Type the location of the floppy image file on the file system of the Hyper-V host.

2   Click **Next**.

What to do next

Review the details for the virtual machine and create it.

Complete the Virtual Machine Creation

The Ready to Complete page lets you review the configuration selections that you made for the virtual machine. You can change the existing settings, configure resources, networking, and more.

Procedure

1   On the Ready to Complete page of the Create New Virtual Machine wizard, review the configuration settings for the virtual machine.

2   (Optional) To change the virtual machine settings, go back through the pages of the wizard and change the settings as necessary.

3   Click **Finish** to complete the virtual machine creation.

The new virtual machine appears in the third-party hosts inventory.

What to do next

Before you can use the new virtual machine, install a guest operating system, and install integration services if needed.

Managing Virtual Machines on Hyper-V Hosts

6

You can manage all virtual machines on Hyper-V hosts from the third-party hosts inventory by using the vSphere Client. To manage Hyper-V hosts through your vCenter Server system, you must have vCenter Multi-Hypervisor Manager server installed on your system and the vCenter Multi-Hypervisor Manager plug-in installed in the vSphere Client.

You can power on, power off, and suspend the virtual machines of a Hyper-V host. Power state operations can be useful when you want to perform maintenance on your Hyper-V host. To enhance virtual machine performance, you can also add virtual devices to the virtual machine or change them.

- Virtual Machine Power State Operations on page 33

  The ability to change virtual machine power states is useful when you perform maintenance on the Hyper-V host or want to change the virtual machine hardware devices.

- Changing Virtual Machine Configuration on page 34

  You can reconfigure virtual machine properties after you create the virtual machine and install a guest operating system. You can change nearly every characteristic that you configured when you created the virtual machine.

- Remove a Virtual Machine on page 41

  You can remove virtual machines that you no longer need to see in the third-party hosts inventory.

Virtual Machine Power State Operations

The ability to change virtual machine power states is useful when you perform maintenance on the Hyper-V host or want to change the virtual machine hardware devices.

You can power on, power off, suspend, and reset virtual machines on Hyper-V hosts.

Power On	Powers on a virtual machine when a virtual machine is stopped, or resumes the virtual machine from a suspend power state. If no operating system has been installed, you can install an operating system on a powered-on virtual machine.
Power Off	Powers off the virtual machine. You can update the virtual hardware settings on a powered-off virtual machine.
Suspend	Pauses all the virtual machine activity. You can power on the virtual machine later to run all paused activities.
Reset	Shuts down and restarts the virtual machine. This power state operation is similar to resetting a physical machine by pressing its reset button. Any programs running in the virtual machine might be disrupted.

Power On a Virtual Machine

You can power on a stopped or suspended virtual machine on a Hyper-V host from the third-party hosts inventory in the vSphere Client.

Prerequisites

- Verify that the vSphere Client is connected to the vCenter Server system.

- Required privilege: **Virtual machine.Interaction.Power On**

- Before you power on a virtual machine, verify that the Hyper-V host has sufficient resources. The sum of all virtual machines memory must not exceed the Hyper-V memory. You must have enough memory for the virtual machine, and some memory overhead.

Procedure

1   In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2   On the Hyper-V host, right-click a virtual machine and select **Power On**.

Power Off a Virtual Machine

You can power off a virtual machine on a Hyper-V host to edit its configuration settings.

Prerequisites

- Verify that the vSphere Client is connected to the vCenter Server system.

- Required privileges: **Virtual machine.Interaction.Power Off**

Procedure

1   In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2   In the third-party hosts inventory, right-click a virtual machine and select **Power Off**.

Suspend a Virtual Machine

You can suspend a running virtual machine to free CPU or memory on a Hyper-V host.

Prerequisites

- Verify that the vSphere Client is connected to the vCenter Server system.

- Required priviliges: **Virtual machine.Interaction.Suspend**

Procedure

1   In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2   In the vSphere Client inventory, right-click a virtual machine and select **Suspend**.

The virtual machine is suspended.

Changing Virtual Machine Configuration

You can reconfigure virtual machine properties after you create the virtual machine and install a guest operating system. You can change nearly every characteristic that you configured when you created the virtual machine.

When you create a virtual machine, the hardware properties you set correspond to the physical resources available on the Hyper-V host where the virtual machine resides. The virtual machine hardware includes memory configuration, CPU configuration, hard disk size, available network adapters, and so on.

Table 6-1. Virtual Machine Hardware

Hardware Device	Description
Memory	The size of the virtual hardware memory determines how much memory is available to applications that are running inside the virtual machine. A virtual machine cannot benefit from more memory resources than its configured virtual hardware memory size.
CPU	You can configure a virtual machine that runs on a Hyper-V host to have one or more virtual processors. A virtual machine cannot have more virtual CPUs than the actual number of logical CPUs on the host. You can change the number of CPUs allocated to a virtual machine and configure the CPU resource allocation.
Floppy Drive	You can connect to a floppy (`.flp`) image only. You can add, remove, or configure a floppy device.
Hard Disk	Stores the virtual machine's operating system, program files, and other data associated with its activities. A virtual disk is a large physical file, or a set of files, that can be copied, moved, archived, and backed up.
	You can add physical hard drives for a pass-through to a virtual machine. The hard disk on the Hyper-V host must be enabled for pass-through.
Network Adapter	Network adapters provide network connectivity between the virtual machines on the same host, between virtual machines on different hosts, and between other virtual and physical machines. When you configure a virtual machine, you can add network adapters (NICs) and set the adapter type.
CD/DVD Drive	You can configure DVD/CD-ROM devices to connect to host devices or ISO files on a datastore.

You can view and configure the virtual machine hardware and add or remove devices from a virtual machine.

Edit Memory Resources Allocated to Virtual Machine

You can add or change a virtual machine's memory resources to enhance its performance. The memory resource setting determines how much of the host's memory is allocated to a virtual machine.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Required privileges: **Virtual machine.Configuration.Memory**

■ Verify that the virtual machine is powered off.

Procedure

1 From the third-party hosts inventory, right-click a powered off virtual machine and select **Edit Settings**.

   The Virtual Machine Properties dialog box appears.

2 On the **Hardware** tab, select **Memory**.

   To change the amount of memory allocated to the virtual machine, use the slider or type a value in the **Memory Size** text box.

   To select the predefined default or recommended setting, click the colored triangles on the right-hand side of the memory bar.

3 Click **OK** to save your changes.

Edit CPU Resources Allocated to a Virtual Machine

You can change or configure CPU resources to improve virtual machine performance. You can change CPU resource allocation settings, such as weight, reservation, and limit so that the available resource capacity meets your needs and the resources are balanced among your virtual machines.

If you intend to change the number of virtual processors of a virtual machine, you must power off the virtual machine.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Required privileges: **Virtual machine.Configuration.Change CPU count** and **Virtual machine.Configuration.Change resource**

Procedure

1 From the third-party hosts inventory, right-click a powered off virtual machine and select **Edit Settings**.

The Virtual Machine Properties dialog box appears.

2 On the **Hardware** tab, select **CPUs**.

3 Select a number from the **Number of virtual processors** drop-down menu.

4 In the Resource Allocation pane, allocate the CPU allocation for the virtual machine.

Option	Description
Weight	Defines how the Hyper-V host allocates resources to this virtual machine when running virtual machines compete for resources.
Reservation	Defines the percentage of CPU capacity that is reserved for the virtual machine. This setting guarantees CPU allocation for the virtual machine.
Limit	Defines the upper limit that can be used by the virtual machine from the CPU capacity available to the virtual machine.

5 Click **OK** to save your changes.

Edit Floppy Drive of a Virtual Machine

You can configure a virtual floppy device to connect to an existing floppy image.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Verify that the virtual machine is powered off.

■ Required privileges: **Virtual machine.Interaction.Configure floppy media**

Procedure

1 From the third-party hosts inventory, right-click a powered off virtual machine and select **Edit Settings**.

The Virtual Machine Properties dialog box appears.

2 On the **Hardware** tab, select **Floppy Drive**.

3 In the Device Type pane, select **Use existing floppy image in datastore** and provide the path to the floppy image in the text box.

4 Select the option to create a new floppy image if one does not exist.

5 Click **OK**.

Edit Hard Disk Recourses Allocated to a Virtual Machine

You can change the virtual device node to which a virtual machine hard disk is assigned for better performance.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Verify that the virtual machine is powered off.

■ Required privileges: **Virtual machine.Configuration.Modify device settings**

Procedure

1 From the third-party hosts inventory, right-click a powered off virtual machine and select **Edit Settings**.

The Virtual Machine Properties dialog box appears.

2 On the **Hardware** tab, select a hard disk from the virtual machine hardware devices.

3 From the **Virtual Device Node** drop-down menu, select the virtual device node where you want the hard disk to appear.

4 Review the Disk Provisioning pane and click **OK**.

The virtual disk is assigned to the selected IDE or SCSI controller.

Edit Network Adapter Connection of a Virtual Machine

You can change the MAC address and the network connection for a virtual machine's virtual network adapter.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Verify that the virtual machine is powered off.

■ Required privileges: **Network.Assign network**

Procedure

1 From the third-party hosts inventory, right-click a powered off virtual machine and select **Edit Settings**.

The Virtual Machine Properties dialog box appears.

2 On the **Hardware** tab, select **Network Adapter** from the virtual machine hardware devices.

3 Select an option for MAC address configuration.

Option	Description
Automatic	A MAC address is assigned automatically.
Manual	Type the MAC address for the virtual machine.

4 In the Network Connection pane, select an option from the **Network label** drop-down menu.

Option	Description
Disconnected	Disconnect the network adapter.
Local Area Connection - Virtual Network	Select the port group for the virtual NIC to connect to.

5 Click **OK**.

Edit Virtual Machine CD-ROM or DVD Drive Configuration

You can connect the virtual machine DVD/CD-ROM device to a physical DVD or CD-ROM device that resides on the host.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Verify that the virtual machine is powered off.

■ Required priviliges: **Virtual machine.Interaction.Configure CD media**

Procedure

1   From the third-party hosts inventory, right-click a powered off virtual machine and select **Edit Settings**.

    The Virtual Machine Properties dialog box appears.

2   On the **Hardware** tab, select **CD/DVD Drive**.

3   In the Device Type pane, select a device type:

Option	Description
Host Device	From the **Host Device** drop-down menu, select a device.
Datastore ISO File	In the **Datastore ISO File** text box, type the filepath to a .iso file that you want the virtual machine to use for a CD-ROM or DVD Drive.

4   From the **Virtual Device Node** drop-down menu, select the node the drive to use in the virtual machine.

5   Click **OK**.

Adding a Virtual Machine Device

You can add additional hardware resources to existing virtual machines to increase the available virtual disk space, the number of DVD or CD-ROM devices, or the number of NICs the virtual machine uses.

Add a DVD or CD-ROM Drive

You can configure virtual DVD or CD-ROM devices to connect to physical host devices or ISO files.

Prerequisites

■   Verify that the vSphere Client is connected to the vCenter Server system.

■   Required privileges:**Virtual machine.Configuration.Add or remove device**

■   Verify that the virtual machine is powered off.

Procedure

1   From the third-party hosts inventory, right-click a powered off virtual machine and select **Edit Settings**.

    The Virtual Machine Properties dialog box appears.

2   Click the **Hardware** tab and click **Add**.

    The Add Hardware wizard opens.

3   On the Device Type page, select **CD/DVD Drive** and click **Next**.

4   From the CD/DVD Media Type page, select an option and click **Next**.

Option	Action
Use a physical drive	In the Select CSD/DVD Drive page, select the drive you want to use from the drop-down menu, and click **Next**.
Use ISO image	In the Select ISO Image page, enter the path and filename for the image file, and click **Next**.

5   On the Advanced Options page, select the virtual device node for the drive and click **Next**.

6   Review the Ready to Complete page and click **Finish**.

7   In the Virtual Machine Properties dialog box, click **OK** to apply the changes.

Add a Network Adapter

You can add additional network adapters to a virtual machine so that it can communicate to other nodes on the virtual network. Every network adapter is connected to one of the virtual networks of the Hyper-V host.

Prerequisites

- Verify that the vSphere Client is connected to the vCenter Server system.

- Verify that the virtual machine is powered off.

- Required privileges: **Virtual machine.Configuration.Add or remove device** and **Network.Assign network**

Procedure

1 From the third-party hosts inventory, right-click a powered off virtual machine and select **Edit Settings**.

   The Virtual Machine Properties dialog box appears.

2 Click the **Hardware** tab and click **Add**.

   The Add Hardware wizard opens.

3 On the Device Type page, select **Network Adapter** and click **Next**.

4 In the Adapter Type pane, select a network adapter type from the **Type** drop-down menu.

Option	Description
Network Adapter	Provides better performance, but requires additional guest OS drivers. This adapter does not support network boot.
	The additional drivers are available in the integration services for the guest OS. Newer versions of the supported Windows guest operating systems include the integration services by default. For all other supported guest operating systems, you must install the integration services separately.
Legacy Network Adapter	Allows network boot, but might lead to slower performance. The legacy network adapter is not supported on the 64-bit edition of Windows Server 2003.

5 In the Network Connection pane, select a virtual network from the **Network Label** drop-down list.

6 Click **Next**.

7 Review the Ready to Complete page and click **Finish**.

8 In the Virtual Machine Properties dialog box, click **OK** to apply the changes.

Add a New Virtual Disk

You can create and add a new virtual disk to increase the available space on a virtual machine.

Prerequisites

- Verify that the vSphere Client is connected to the vCenter Server system.

- Required privileges: **Virtual machine.Configuration.Add new disk** and **Datastore.Allocate space**

- Verify that the virtual machine is powered off.

Procedure

1 From the third-party hosts inventory, right-click a powered off virtual machine and select **Edit Settings**.

   The Virtual Machine Properties dialog box appears.

2   Click the **Hardware** tab and click **Add**.

The Add Hardware wizard opens.

3   On the Device Type page, select **Hard Disk** and click **Next**.

4   On the Select a Disk page, select **Create a new virtual disk** from the options for attaching a disk to the virtual machine.

5   On the Create a Disk page, type a name for the new virtual disk in the Name pane.

6   In the Capacity pane, type a size for the disk and from the **Disk Size** drop-down menu, select a disk size in Megabytes, Gigabytes, or Terabytes.

7   In the Disk Provisioning pane, select the disk provisioning type.

Option	Description
Allocate and commit space on demand (Dynamic)	The disk uses only as much storage space as it needs. If the disk needs more space, it can grow to the maximum capacity allocated to it.
Allocate all disk space now (Fixed)	The storage space allocated to the disk is reserved for this disk only.

8   On the Location pane, select an option for the virtual disk location.

Option	Description
Use default storage	Use the default virtual disks location on the Hyper-V host.
Specify a datastore	Type a custom location for virtual disk on the Hyper-V host. For example, `C:\MyVirtualMachines\VirtualMachineDisks\`

9   Click **Next**.

10 On the Advanced Options page, select the virtual device node from the **Virtual Device Node** drop-down menu.

11 Review the Ready to Complete page and click **Finish**.

12 In the Virtual Machine Properties dialog box, click **OK** to apply the changes.

Add an Existing Virtual Disk

You can add an existing virtual disk to increase the available space on a virtual machine.

Prerequisites

■ Verify that the vSphere Client is connected to the vCenter Server system.

■ Required privileges: **Virtual machine.Configuration.Add existing disk** and **Datastore.Allocate space**

■ Verify that the virtual machine is powered off.

Procedure

1   From the third-party hosts inventory, right-click a powered off virtual machine and select **Edit Settings**.

The Virtual Machine Properties dialog box appears.

2   Click the **Hardware** tab and click **Add**.

The Add Hardware wizard opens.

3   On the Device Type page, select **Hard Disk** and click **Next**.

4   On the Select a Disk page, select **Use an existing virtual disk** from the options for attaching a disk to the virtual machine.

5   On the Select Existing Disk page, type a location for the already existing virtual disk on the Hyper-V host.

    For example, `C:\Users\Public\Documents\Hyper–V\Virtual hard disks\myVM.vhd`

6   On the Advanced Options page, select the virtual device node from the **Virtual Device Node** drop-down menu.

7   Review the Ready to Complete page and click **Finish**.

8   In the Virtual Machine Properties dialog box, click **OK** to apply the changes.

Add a Physical Hard Disk

You can add physical hard drives for a pass-through to a virtual machine.

Prerequisites

- Verify that the vSphere Client is connected to the vCenter Server system.

- Verify that the virtual machine is powered off.

- Required privileges: **Virtual machine.Configuration.Raw device**

Procedure

1   From the third-party hosts inventory, right-click a powered off virtual machine and select **Edit Settings**.

    The Virtual Machine Properties dialog box appears.

2   Click the **Hardware** tab and click **Add**.

    The Add Hardware wizard opens.

3   On the Device Type page, select **Hard Disk** and click **Next**.

4   Select **Pass-through to a physical drive on the host** and click **Next**.

5   Select a physical hard drive and click **Next**.

6   Select a SCSI or an IDE virtual device node for the hard drive and click **Next**.

7   Review the properties for adding the physical disk and click **Finish**.

8   In the Virtual Machine Properties dialog box, click **OK** to save your changes.

Remove a Virtual Machine

You can remove virtual machines that you no longer need to see in the third-party hosts inventory.

Removing a virtual machine from the third-party hosts inventory unregisters it from the Hyper-V host and vCenter Server. Virtual machine files remain at the same storage location on the Hyper-V host.

Prerequisites

- Verify that the vSphere Client is connected to the vCenter Server system.

- Verify that the virtual machine is powered off.

- Required privileges: **Virtual machine..Inventory..Remove**

Procedure

1   In the vSphere Client, select **Home > Inventory > vCenter Multi-Hypervisor Manager**.

2   Right-click the virtual machine and select **Remove**.

3   In the confirmation dialog box, click **Yes**.

vCenter Server removes references to the virtual machine and no longer tracks its condition.

Troubleshooting vCenter Multi-Hypervisor Manager 7

The troubleshooting vCenter Multi-Hypervisor Manager topics provide solutions to problems that you might encounter when installing or using vCenter Multi-Hypervisor Manager.

■ Unable to Install the vCenter Multi-Hypervisor Manager Server on page 43

The vCenter Multi-Hypervisor Manager server installation might fail with an error message.

■ Unable to Log In to vCenter Server on page 44

You might be unable to log in to vCenter Server and access the third-party hosts' inventory tree.

■ Unable to Reach vCenter Server During vCenter Multi-Hypervisor Manager Server Installation on page 44

vCenter Server is not reachable during the installation of the vCenter Multi-Hypervisor Manager server and an error message displays.

Unable to Install the vCenter Multi-Hypervisor Manager Server

The vCenter Multi-Hypervisor Manager server installation might fail with an error message.

Problem

Attempts to install the vCenter Multi-Hypervisor Manager server might fail. The following error message appears:

```
Error 1721. There is a problem with this Windows Installer Package. A program required for this
install to complete could not be run. Contact your support personnel or package vendor. Action:
InstallVCRedistributable, location: .../vcredist_x64.e..."
```

Cause

The installer of the vCenter Multi-Hypervisor Manager server attempts to install the Microsoft Visual C++ 2008 Redistributable Package (vcredist_x64). The Microsoft Visual C++ 2008 Redistributable Package required by the vCenter Multi-Hypervisor Manager cannot be installed, because you do not have sufficient rights on the Windows machine where you are installing the vCenter Multi-Hypervisor Manager server.

Solution

You must log in as an administrator to the Windows machine where you want to install the vCenter Multi-Hypervisor Manager server, or you must log in as a user with sufficient rights to install the Microsoft Visual C++ 2008 Redistributable Package.

Unable to Log In to vCenter Server

You might be unable to log in to vCenter Server and access the third-party hosts' inventory tree.

Problem

You cannot log in to vCenter Server and access the third-party hosts' inventory tree. The following error message appears:

```
The vSphere Client could not connect to vCenter Server address. You do not have permission to login
to the server: vCenter Server address
```

Cause

Your user account has the **No-Access** role assigned on the root folder of vCenter Server or has no role assigned at all.

Solution

Assign at least the **Read-Only** role to your user account on the root folder of the vCenter Server system.

Unable to Reach vCenter Server During vCenter Multi-Hypervisor Manager Server Installation

vCenter Server is not reachable during the installation of the vCenter Multi-Hypervisor Manager server and an error message displays.

Problem

On the **Certificate Type Selection** page of the vCenter Multi-Hypervisor Manager installer, you select the **Provide a certificate later** option and click **Next**. On the **vCenter Server** page, you provide the connection settings for vCenter Server and click **Next**. The following error message displays and the installation is blocked:

```
vCenter Server is not reachable.
```

Cause

- The vCenter Server certificate has expired.

- The vCenter Multi-Hypervisor Manager installer checks whether the certificate of the root certification authority that issued the vCenter Server certificate exists in the Trusted Root Certification Authorities on the system where you are installing the vCenter Multi-Hypervisor Manager server. If the certificate of the root certification authority is not found in the Trusted Root Certification Authorities, you cannot continue with the installation and the error message is displayed.

Solution

- Replace the vCenter Server certificate with a valid one.

- Add the root certificate of the certification authority that issued the vCenter Server certificate to the Trusted Root Certification Authorities on the system where you are installing the vCenter Multi-Hypervisor Manager server.

⚠ **CAUTION** Importing certification authorities manually in the Trusted Root Certification Authorities might compromise the security of your system. Make sure that the root certificate of the certification authority that you want to import is authentic and is received through a secure channel.

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VMware, Inc.