

vSphere Web Access Administrator's Guide

vSphere Web Access 4.0
vCenter Server 4.0
ESX 4.0

EN-000128-01

vmware®

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Contents

Updated Information	5
About This Book	7
1 Introducing VMware vSphere Web Access	9
About vSphere Web Access	9
Key Features of vSphere Web Access	10
Meeting System Requirements for Clients Running vSphere Web Access	10
2 Getting Started with vSphere Web Access	13
Run the vSphere Web Access Service on an ESX Host	13
Run the vSphere Web Access Service on vCenter Server	14
Connect to vSphere Web Access	14
Log Out of vSphere Web Access	14
3 Managing Virtual Machines with vSphere Web Access	15
Add a Virtual Machine to the Inventory	15
Create a Virtual Machine with vSphere Web Access	16
About VMware Remote Console	25
Managing VMware Tools	28
Virtual Machine Tasks, Alarms, and Events	30
Creating Virtual Machine Shortcuts	31
Upgrade the Virtual Machine Hardware Version	32
Change the Power State of a Virtual Machine	33
Delete a Virtual Machine	33
4 Configuring Virtual Machine Options and Resources	35
Changing the Hardware Configuration of Virtual Machines	35
Removing Hardware Components from a Virtual Machine	40
Changing Virtual Machine Settings and Options	43
5 Adding Hardware to a Virtual Machine	49
Add Hardware to a Virtual Machine	49
6 Creating and Managing Snapshots	57
When Not to Take a Snapshot	58
Snapshots and Logging Changes	58
Take a Snapshot	58
Revert to a Snapshot	59
Remove a Snapshot	59
Set Snapshot Power Off Options	59

7	Troubleshooting vSphere Web Access Errors	61
	Browser Service Unavailable Error 503	61
	VMware Remote Console Does Not Load in Internet Explorer	62
	VMware Remote Console Does Not Load in Firefox	63
	Problems Installing Software on a Guest Operating System	63
	Problems Performing Virtual Machine Power Operations	63
	Unsupported Version of Firefox	64
	Web Proxy Does Not Support IPv6 Addresses	64
	Index	67

Updated Information

This *vSphere Web Access Administrator's Guide* is updated with each release of the product or when necessary.

This table provides the update history of the *vSphere Web Access Administrator's Guide*.

Revision	Description
EN-000128-01	<ul style="list-style-type: none">■ The topic “Add a USB Controller to the New Virtual Machine,” on page 23 now states that connected USB devices cannot be used in a virtual machine.■ In topic “Modify a Network Adapter,” on page 39, step 2 now states selecting a network from the drop-down menu as the only option for configuring a network.■ Minor revisions in topic “Change Virtual Machine Settings Associated with the Host,” on page 44.■ Topic “Adding a Virtual Hard Disk,” on page 49 now mentions local and remote VMFS SANs as possible datastore locations.■ The topic “Add a Named Pipe Serial Port,” on page 53 now mentions Windows and Linux guests.■ The topic “Add a Passthrough SCSI Device,” on page 54 now mentions Windows and Linux guests.■ The topic “Add a USB Controller,” on page 55 now states that connected USB devices cannot be used in a virtual machine.
EN-000128-00	Initial release.

About This Book

This documentation provides information on how to create, configure, and manage virtual machines for VMware® ESX and VMware® vCenter Server by using VMware® vSphere Web Access.

Intended Audience

This book is intended for anyone who wants to install, upgrade, or use ESX. The information in this book is written for experienced Windows or Linux system administrators who are familiar with virtual machine technology and datacenter operations.

Document Feedback

VMware welcomes your suggestions for improving our documentation. If you have comments, send your feedback to docfeedback@vmware.com.

VMware vSphere Documentation

The vSphere documentation consists of the combined VMware vCenter Server and ESX/ESXi documentation set.

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Introducing VMware vSphere Web Access

1

VMware® vSphere Web Access is a browser-based application. You use it to manage virtual machines on ESX and vCenter Server deployments. You can use vSphere Web Access to give users access to the settings and guest operating systems of virtual machines.

This chapter includes the following topics:

- [“About vSphere Web Access,”](#) on page 9
- [“Key Features of vSphere Web Access,”](#) on page 10
- [“Meeting System Requirements for Clients Running vSphere Web Access,”](#) on page 10

About vSphere Web Access

You use a Web browser to open vSphere Web Access and to manage virtual machines stored on an ESX host or vCenter Server.

vSphere Web Access is intended for anyone who performs the following aspects of virtual machine management:

- System administrators who need to access virtual machines without a vSphere Client.
- People who use virtual machines as remote desktops.
- vSphere administrators who need to interact with virtual machines remotely.

The vSphere Web Access interface provides an overview of all of the virtual machines on an ESX host and vCenter Server. To manage virtual machines with vSphere Web Access, you can perform the following tasks:

- Use a browser to view hosts and virtual machine details.
- Perform power operations on virtual machines.
- Edit a virtual machine’s configuration and hardware.
- Generate VMware Remote Console URLs that users can use to access their virtual machines.
- Interact with the guest operating systems that are running on the virtual machines.
- Access ESX hosts and vCenter Servers from Linux systems.

vSphere Web Access focuses on virtual machine management and does not offer the full range of administrative tasks available through the vSphere Client.

Key Features of vSphere Web Access

vSphere Web Access has a set of key features that help you manage virtual machines.

- Access ESX hosts and vCenter Servers from Linux and Windows systems.
- Access virtual machines on ESX hosts and vCenter Server instances without installing the vSphere client.
- Create new virtual machines on ESX hosts.
- Configure existing virtual machine settings.
- Add virtual machines to the inventory.
- Remove virtual machines from the inventory.
- Perform power operations (start, stop, reset, suspend, and resume) on virtual machines.
- Monitor the operation of datacenters, ESX hosts, and virtual machines.
- Interact with the guest operating systems running within virtual machines that use the VMware Remote console.
- Generate URL and desktop shortcuts for virtual machines.
- Create and manage snapshots of virtual machines.
- Perform complete virtual machine snapshot hierarchy management
- Provide end users with access to virtual machines.
- Use client devices (such as CD/DVD drives) from your own computer to install software or copy data.

Meeting System Requirements for Clients Running vSphere Web Access

To run vSphere Web Access, you must have a client system that meets the hardware and software requirements and uses one of the supported Web browsers.

You can run vSphere Web Access on any system with a basic hardware configuration that has either a Windows or a Linux operating system installed. You must use Internet Explorer or Mozilla Firefox to run vSphere Web Access.

Hardware Requirements

You can run vSphere Web Access on any system that meets the minimum hardware requirements.

You must have the following minimum hardware requirements to run vSphere Web Access:

- Standard x86-based computer
- 266MHz processor (500MHz or more recommended)
- 128MB RAM (256MB or more recommended)
- 20MB (for Windows hosts) or 10MB (for Linux hosts) free disk space to install the VMware Remote Console browser plug-in

Operating System Requirements

You can run vSphere Web Access on Windows and Linux operating systems.

[Table 1-1](#) lists the supported Windows versions and Linux requirements.

Table 1-1. Supported Operating Systems

System	Requirements
Windows	<ul style="list-style-type: none"> ■ Microsoft Windows 2003 Web Edition Service Pack 1, Windows 2003 Standard Edition Service Pack 1, or Windows Server 2003 Enterprise Edition Service Pack 1 ■ Windows XP Professional Service Pack 3 or Windows XP Home Edition Service Pack 2 ■ Microsoft Windows 2000 Professional Service Pack 4, Windows 2000 Server Service Pack 4, or Windows 2000 Advanced Server Service Pack 4
Linux	<ul style="list-style-type: none"> ■ Linux kernel 2.2.14 or later ■ glibc 2.3.2 or later ■ XFree86-3.3.6 or later ■ gtk+2.0 or later ■ fontconfig (also known as xft) ■ libstdc++5 or later

Browser Requirements

You can use Microsoft Internet Explorer and Mozilla Firefox Web browsers to run vSphere Web Access.

VMware has certified vSphere Web Access with the following browsers. Other browsers are not, however, actively excluded. For additional requirements, see your browser vendor's documentation. Your browser must include all security and stability updates that the vendor recommends.

- Internet Explorer 6.0, 7.0, or later for Microsoft Windows
- Mozilla Firefox 2.0, 3.0, or later for Microsoft Windows
- Mozilla Firefox 2.0, 3.0, or later for Linux

Getting Started with vSphere Web Access

2

The vSphere Web Access service is installed when you install ESX 4.0 or vCenter Server 4.0, but is not running by default. Before you log in and start managing virtual machines, you must start the vSphere Web Access service on your ESX or vCenter Server instance.

This chapter includes the following topics:

- [“Run the vSphere Web Access Service on an ESX Host,”](#) on page 13
- [“Run the vSphere Web Access Service on vCenter Server,”](#) on page 14
- [“Connect to vSphere Web Access,”](#) on page 14
- [“Log Out of vSphere Web Access,”](#) on page 14

Run the vSphere Web Access Service on an ESX Host

You must run the vSphere Web Access service in the ESX host before you use your Web browser to connect. If the service is not currently running, you cannot log in.

Prerequisites

You must have root privileges to check the status and run the vSphere Web Access service.

Procedure

- 1 Log in to the ESX host using root privileges.
- 2 Type the command to check whether the Web Access service is running.

```
service vmware-webAccess status
```

A message appears that says whether the service is running.
- 3 (Optional) If vSphere Web Access is not running, type the command to start Web Access.

```
service vmware-webAccess start
```

What to do next

You can now use vSphere Web Access to log in to the ESX host.

Run the vSphere Web Access Service on vCenter Server

You must run the vSphere Web Access service on vCenter Server before you use your Web browser to connect. If the service is not currently running, you cannot log in.

Prerequisites

You must use administrator privileges to log in to your vCenter Server.

Procedure

- 1 In the vCenter Server Desktop, right-click **My Computer** and select **Manage**.
The Computer Management window appears.
- 2 Expand **Services and Applications** and select **Services**.
- 3 Locate VMware VirtualCenter Management Webservices on the list and check whether the service is running.
- 4 If the service is not running, right-click **VMware VirtualCenter Management Webservices** and select **Start**.

What to do next

You can now use vSphere Web Access to log in to vCenter Server.

Connect to vSphere Web Access

You can use vSphere Web Access to connect to an ESX host or vCenter Server.

Prerequisites

Before you connect to vSphere Web Access, make sure that the vSphere Web Access service is running. You must also have a compatible Web browser as well as access rights to the ESX host or vCenter Server.

Make sure that your Web proxy supports IPv6 addresses before you use vSphere Web Access to connect to an ESX host or vCenter Server with an IPv6 address.

Procedure

- 1 Start your Web browser.
- 2 Enter the URL of your ESX host or your vCenter Server installation.
https://<host or server name>/ui
- 3 In the Log In window, enter your user name and password and click **Log In**.

IMPORTANT If you have a pop-up blocker enabled, a message appears that says a pop-up blocker was detected. Disable your pop-up blocker to use client devices.

The vSphere Web Access main screen appears.

Log Out of vSphere Web Access

You can close the running vSphere Web Access instance by logging out of the ESX host or vCenter Server.

Procedure

- ◆ In the window or tab where vSphere Web Access is running, click **Log Out** in the upper-right corner.
You are logged out and the connection with the ESX host or vCenter Server is closed.

Managing Virtual Machines with vSphere Web Access

3

You can use vSphere Web Access to add, create, and delete virtual machines. You can also install a guest operating system and VMware Tools, and create virtual machine shortcuts for virtual machine users.

This chapter includes the following topics:

- [“Add a Virtual Machine to the Inventory,”](#) on page 15
- [“Create a Virtual Machine with vSphere Web Access,”](#) on page 16
- [“About VMware Remote Console,”](#) on page 25
- [“Managing VMware Tools,”](#) on page 28
- [“Virtual Machine Tasks, Alarms, and Events,”](#) on page 30
- [“Creating Virtual Machine Shortcuts,”](#) on page 31
- [“Upgrade the Virtual Machine Hardware Version,”](#) on page 32
- [“Change the Power State of a Virtual Machine,”](#) on page 33
- [“Delete a Virtual Machine,”](#) on page 33

Add a Virtual Machine to the Inventory

You can add an existing virtual machine to the inventory of the ESX host or vCenter Server.

Procedure

- 1 In the **Menu** toolbar, select **Virtual Machine > Add Virtual Machine To Inventory**.

The Add Existing Virtual Machine window opens.

- 2 Browse for the `.vmx` file of the virtual machine to add and click **OK**.

The virtual machine is added to the inventory.

What to do next

You can now power on the virtual machine and use the guest operating system.

Create a Virtual Machine with vSphere Web Access

You can use vSphere Web Access to create virtual machines and add devices to the hardware configuration of a machine.

Prerequisites

You must connect to an ESX host to use the Create Virtual Machine wizard.

In the **Menu** toolbar, select **Virtual Machine > Create Virtual Machine** to start the Create Virtual Machine wizard.

Procedure

- 1 [Specify a Name and a Location for the New Virtual Machine](#) on page 17
You can name the new virtual machine. You can also select the datastore in which to save virtual machine files.
- 2 [Select a Guest Operating System for the New Virtual Machine](#) on page 17
You can select the type of guest operating system to install on the new virtual machine. Examples include Windows, Novel Netware, Solaris, Linux, and other operating systems.
- 3 [Specify the Amount of Memory and the Number Of Processors](#) on page 17
You can specify the amount of memory to allocate for a new virtual machine. You can also specify the number of processors to use.
- 4 [Add a Hard Disk to the New Virtual Machine](#) on page 18
You can add a hard disk to the new virtual machine by creating a new virtual hard disk or by using a virtual hard disk from another virtual machine.
- 5 [Add a Network Adapter to the New Virtual Machine](#) on page 20
You can set up a network in your virtual machine by adding a network adapter.
- 6 [Add a CD or DVD Drive to the New Virtual Machine](#) on page 20
You can connect a virtual CD/DVD drive to a physical drive. You can also use an ISO image that is located on the host file system.
- 7 [Add a Floppy Drive to the New Virtual Machine](#) on page 22
You can add a floppy drive to the virtual machine. You can use a physical floppy drive, a floppy image, or a newly created image stored on the host file system.
- 8 [Add a USB Controller to the New Virtual Machine](#) on page 23
You can add a USB controller to a virtual machine. However, you cannot attach and use USB devices in a virtual machine.
- 9 [Review the New Virtual Machine Hardware Configuration](#) on page 23
Before you complete the creation of a virtual machine, you can review the hardware configuration and also add hardware to the virtual machine.
- 10 [Install a Guest Operating System](#) on page 24
A new virtual machine is like a physical computer with a blank hard disk. Before you can use it, you must partition and format the virtual disk and install an operating system. The operating system's installation program might handle the partitioning and formatting steps for you.

What to do next

You can now power on the virtual machine and start using the guest operating system by starting the VMware Remote Console.

Specify a Name and a Location for the New Virtual Machine

You can name the new virtual machine. You can also select the datastore in which to save virtual machine files.

Procedure

- 1 On the Name and Location page, enter the virtual machine name in the Name field.
- 2 Select the datastore to save the virtual machine files and click **Next**.

The assigned name of the virtual machine appears in the Inventory panel when you are finished configuring the machine.

Select a Guest Operating System for the New Virtual Machine

You can select the type of guest operating system to install on the new virtual machine. Examples include Windows, Novel Netware, Solaris, Linux, and other operating systems.

Procedure

- 1 On the Guest Operating System page, select the type of operating system from the Operating System list.
- 2 In the **Version** drop-down menu, select the specific operating system.
- 3 (Optional) Click **Product Compatibility** and select the hardware version to use for the new virtual machine.

Hardware version 7.0 is the default.

- 4 Click **Next**.

ESX uses your selection to do the following:

- Select appropriate default values, such as the amount of memory needed.
- Name files associated with the virtual machine.
- Adjust settings for optimal performance.
- Work around special behaviors and known issues within a guest operating system.

Specify the Amount of Memory and the Number Of Processors

You can specify the amount of memory to allocate for a new virtual machine. You can also specify the number of processors to use.

The maximum amount of memory per virtual machine is 255GB for hardware version 7.0.

Procedure

- 1 In the Processors section on the Memory and Processors page, allocate memory for the virtual machine.

Option	Description
Enter Custom Memory Amount	Enter an amount of memory in the Size field. IMPORTANT Do not enter a value lower than the recommended minimum. This could prevent the guest operating system from running.
Recommended Size	Allocates the memory size that VMware recommends.

Option	Description
Recommended Minimum	Allocates the minimum memory size that VMware recommends.
Recommended Maximum	Allocates the maximum memory size that VMware recommends.

- 2 In the Processors section, select the number of processors to use in the **Count** drop-down menu.

IMPORTANT VMware recommends that you do not reconfigure the number of processors after you install the guest operating system.

- 3 Click **Next**.

Add a Hard Disk to the New Virtual Machine

You can add a hard disk to the new virtual machine by creating a new virtual hard disk or by using a virtual hard disk from another virtual machine.

Procedure

- ◆ On the Hard Disk page, select to create a new virtual disk or use an existing one.

Option	Action
Create a New Virtual Disk	Adds a blank disk to the virtual machine.
Use an Existing Virtual Disk	Reuses or shares a hard disk from another virtual machine.
Don't Add a Hard Disk	Skips the step of adding a hard disk.

The Properties page appears. If you selected to not add a hard disk, the Network Adapter page appears.

Customize the New Virtual Disk

You can specify the capacity of the new hard disk, where it is located, the running mode of the disk, the disk device type, and the write caching policy.

Procedure

- 1 On the Hard Disk page, click **Create a New Virtual Disk** to customize it.
- 2 On the Properties page, enter the capacity of the new virtual disk in the **Capacity** text box.

You can specify the capacity in megabytes or gigabytes by selecting **MB** or **GB** from the drop-down menu.

NOTE Set the maximum size of the disk to a value between 1MB and 2047GB. You can set the virtual disk size to 2047GB only when the block size of the file system is set to 8MB. For more information about block size and maximum file values, see *Configuration Maximums for VMware vSphere 4.0*.

- 3 To specify a different location for the new virtual disk, click **Browse** in the Location field.

The virtual disk is stored as a `.vmdk` file on the selected datastore.

- 4 To run the disk in independent mode, click **Disk Mode**, select **Independent**, and click the appropriate option.

Option	Action
Persistent	Disks in persistent mode behave like conventional disks on your physical computer. All data written to a disk in persistent mode is written permanently to the disk.
Nonpersistent	Changes to disks in nonpersistent mode are discarded when you power off or reset the virtual machine. Nonpersistent mode enables you to restart the virtual machine with a virtual disk in the same state every time. Changes to the disk are written to and read from a redo log file that is deleted when you power off or reset.

- 5 To specify the adapter type and a device node for the virtual disk, click **Virtual Device Node**.
- In the **Adapter** drop-down menu, select the adapter type.
 - In the **Device** drop-down menu, select an available device node.
- 6 To change the write caching policies for the virtual disk, click **Policies** and select the appropriate option.

Option	Action
Optimize for safety	Saves all changes to the virtual disk before notifying the system.
Optimize for performance	Acknowledges changes to the virtual disk immediately, but saves them at a later time.

- 7 Click **Next**.

The virtual disk is now configured and added to the hardware of the virtual machine.

Browse for an Existing Virtual Disk

You can use an existing virtual disk for the virtual machine that you are creating. You can also customize the existing virtual disk.

Procedure

- On the Hard Disk page, click **Use an Existing Virtual Disk** to customize it.
- On the Properties page, click **Browse** to locate an existing virtual disk.
- To run the disk in independent mode, click **Disk Mode**, select **Independent**, and click the appropriate option.

Option	Action
Persistent	Disks in persistent mode behave like conventional disks on your physical computer. All data written to a disk in persistent mode is written permanently to the disk.
Nonpersistent	Changes to disks in nonpersistent mode are discarded when you power off or reset the virtual machine. Nonpersistent mode enables you to restart the virtual machine with a virtual disk in the same state every time. Changes to the disk are written to and read from a redo log file that is deleted when you power off or reset.

- 4 To specify the adapter type and a device node for the virtual disk, click **Virtual Device Node**.
- In the **Adapter** drop-down menu, select the adapter type.
 - In the **Device** drop-down menu, select an available device node.

- To change the write caching policies for the virtual disk, click **Policies** and select the appropriate option.

Option	Action
Optimize for safety	Saves all changes to the virtual disk before notifying the system.
Optimize for performance	Acknowledges changes to the virtual disk immediately, but saves them at a later time.

- Click **Next**.

Add a Network Adapter to the New Virtual Machine

You can set up a network in your virtual machine by adding a network adapter.

Prerequisites

Before you add a network adapter, make sure that your ESX host has port groups configured to which the virtual machine can connect.

Procedure

- On the Network Adapter page, click **Add a Network Adapter**.
- On the Properties page, select the virtual network to connect to from the **Network Connection** drop-down menu.
- To connect the network adapter to the network when you power on the virtual machine, select the **Connect at Power On** check box.

This option is selected by default.

- Click **Next**.

The network adapter is now configured and is added to the virtual machine hardware.

Add a CD or DVD Drive to the New Virtual Machine

You can connect a virtual CD/DVD drive to a physical drive. You can also use an ISO image that is located on the host file system.

Procedure

- On the CD/DVD Drive page, select to use a physical drive or an ISO image for the new CD or DVD drive.

Option	Action
Use a Physical Drive	Uses a physical CD or DVD drive on the host system.
Use an ISO Image	Uses an ISO image file located on the host file system for the new device.
Don't Add a CD/DVD Drive	Skips the step of adding a CD or DVD drive.

The Properties page appears. If you are not adding a CD or DVD drive, the Floppy Drive page appears.

Use a Physical CD or DVD Drive to Connect to the New Virtual Machine

You can select a physical CD or DVD drive on the host to connect to the virtual machine.

A virtual CD or DVD drive is associated with a specific SCSI or IDE device node. The type of device does not have to match the type of device on the host. You can configure an IDE CD or DVD drive on the host as a virtual SCSI CD or DVD drive. You can configure a SCSI CD or DVD drive on the host as a virtual IDE CD or DVD drive. To burn disks with the drive, match the bus types with the physical drive so that they are both IDE or SCSI.

To boot from a virtual CD/DVD drive, you must configure it as an IDE drive.

Prerequisites

You must have a disk in the drive that you select to access the media.

Procedure

- 1 On the CD/DVD Drive page, select **Use a Physical Drive** to customize the drive.
- 2 On the Properties page, select the physical CD or DVD drive to use from the **Host CD/DVD Drive** drop-down menu.
- 3 To connect the new virtual CD or DVD drive when you power on the virtual machine, select the **Connect at Power On** check box.

This option is selected by default.

- 4 To specify the adapter type and a device node for the virtual disk, click **Virtual Device Node**.
 - a In the **Adapter** drop-down menu, select the adapter type.
 - b In the **Device** drop-down menu, select an available device node.
- 5 Click **Next**.

Use an ISO Image for the New CD or DVD Drive

You can use an ISO image file for the CD or DVD drive of the new virtual machine.

A virtual CD or DVD drive is associated with a specific SCSI or IDE device node. The type of device does not have to match the type of device on the host. You can configure an IDE CD or DVD drive on the host as a virtual SCSI CD or DVD drive. You can configure a SCSI CD or DVD drive on the host as a virtual IDE CD or DVD drive. To burn disks with the drive, match the bus types with the physical drive so that they are both IDE or SCSI.

To boot from a virtual CD/DVD drive, you must configure it as an IDE drive.

Procedure

- 1 On the CD/DVD drive page, select **Use an ISO Image**.
- 2 On the Properties page, click **Browse** to locate the ISO image to use for the virtual CD or DVD drive.
- 3 To connect the new virtual CD or DVD drive when you power on the virtual machine, select the **Connect at Power On** check box.

This option is selected by default.

- 4 To specify the adapter type and a device node for the virtual disk, click **Virtual Device Node**.
 - a In the **Adapter** drop-down menu, select the adapter type.
 - b In the **Device** drop-down menu, select an available device node.
- 5 Click **Next**.

Add a Floppy Drive to the New Virtual Machine

You can add a floppy drive to the virtual machine. You can use a physical floppy drive, a floppy image, or a newly created image stored on the host file system.

Procedure

- ◆ On the Floppy Drive page, select to use a physical drive or a floppy image for the new floppy drive.

Option	Action
Use a Physical Drive	Uses a physical floppy drive on the host.
Use a Floppy Image	Uses a floppy image stored on the host file system.
Create a New Floppy Image	Creates a new floppy image and uses it for the new virtual drive.
Don't Add a Floppy Drive	Skips the step of adding a floppy drive.

The Properties page for the new floppy drive appears. If you are not adding a floppy drive, the USB Controller page appears.

Use a Physical Floppy Drive to Connect to the New Virtual Machine

You can connect a physical floppy drive to the new virtual machine.

Prerequisites

To access the media, you must have a floppy disk in the drive that you select.

Procedure

- 1 On the Floppy Drive page, select **Use a Physical Drive** to customize the drive.
- 2 On the Properties page, select an available floppy drive from the **Host Floppy Drive** drop-down menu.
- 3 To connect the new virtual floppy drive when you power on the virtual machine, select the **Connect at Power On** check box.

This option is selected by default.

- 4 Click **Next**.

Use a Floppy Image for the New Floppy Drive

You can give the new guest operating system access to an existing floppy drive image located on the host file system.

Procedure

- 1 On the Floppy Drive page, you must select **Use a Floppy Image**.
- 2 On the Properties page, click **Browse** to locate a floppy image file.
- 3 To mount the floppy drive image when you power on the virtual machine, select the **Connect at Power On** check box.

This option is selected by default.

- 4 Click **Next**.

The floppy drive image is mounted when you start the guest operating system for the first time.

Create a New Floppy Image for the Virtual Floppy Drive

You can create a new floppy image to use for the floppy drive.

Procedure

- 1 On the Floppy Drive page, you must select **Create a New Floppy Image**.
- 2 On the Properties page, click **Browse** to specify a location for the new floppy drive image.
- 3 To connect the new virtual floppy drive when you power on the virtual machine, select the **Connect at Power On** check box.

This option is selected by default.

- 4 Click **Next**.

The floppy drive image is mounted when you start the guest operating system for the first time.

Add a USB Controller to the New Virtual Machine

You can add a USB controller to a virtual machine. However, you cannot attach and use USB devices in a virtual machine.

Procedure

- ◆ On the USB Controller page, select whether to add a USB controller to the virtual machine.

Option	Action
Add a USB Controller	Adds a USB controller to the hardware configuration of the virtual machine
Don't Add a USB Controller	Skips the step of adding a USB controller

Review the New Virtual Machine Hardware Configuration

Before you complete the creation of a virtual machine, you can review the hardware configuration and also add hardware to the virtual machine.

Procedure

- 1 On the Ready to Complete page, review the hardware configuration.
- 2 To add hardware, click **More Hardware** and select a hardware device type to add.

Option	Description
Hard Disk	Adds a hard disk.
Network Adapter	Adds a network adapter.
CD/DVD Drive	Adds a CD or DVD drive.
Floppy Drive	Adds a floppy drive.
Serial Port	Adds a serial port.
Parallel Port	Adds a parallel port.
Passthrough SCSI Device	Adds a SCSI device.
USB Controller	Unavailable if you already added a USB controller.

- 3 To power on the virtual machine after you complete the wizard, select the **Power on your new virtual machine now** check box.
- 4 To create the virtual machine with the listed hardware components, click **Finish**.

The new virtual machine is added to the list of virtual machines on the ESX host.

Install a Guest Operating System

A new virtual machine is like a physical computer with a blank hard disk. Before you can use it, you must partition and format the virtual disk and install an operating system. The operating system's installation program might handle the partitioning and formatting steps for you.

IMPORTANT Do not install a 64-bit operating system after you select a 32-bit guest operating system type.

In some host configurations, the virtual machine cannot boot from the installation CD. In this case, you can create an ISO image from the installation CD and install from the ISO image.

If you are using a PXE server to install the guest operating system over a network connection, you do not need the operating system installation media. When you power on the virtual machine, the virtual machine detects the PXE server.

For information about your specific guest operating system, see the *Guest Operating System Installation Guide*.

Prerequisites

Before you begin, you must add a CD or DVD drive to the virtual machine. The CD or DVD drive must use the installation CD or an ISO image with the guest operating system.

If you are replacing an operating system, click **Configure VM** in the Commands section on the **Summary** tab to change the guest operating system for the virtual machine.

Procedure

- 1 Log in to vSphere Web Access.
- 2 Select the virtual machine from the Inventory panel.
- 3 Click **Power On** to power on the virtual machine.
- 4 Click the **Console** tab to use the VMware Remote Console to complete the guest operating system installation.
- 5 (Optional) To change the boot order of the disk devices in the virtual machine BIOS, press F2 when prompted during the virtual machine startup.
- 6 Follow the instructions that the operating system vendor provides.
- 7 (Optional) If you are using an ISO image that spans multiple files, you are prompted to insert the next CD.
 - a Click the **Summary** tab.
 - b In the Hardware section, click the CD/DVD drive's icon and select **Edit**.
 - c In the Connection section, click **Browse** to locate the next ISO image file and click **OK**.
 - d Click the **Console** tab to return to VMware Remote Console.
 - e In the guest operating system, click **OK** or respond to the prompt so that the installation can continue.
 - f Repeat these steps for additional files.

What to do next

Install VMware Tools, as described in [“Install VMware Tools on the Guest Operating System,”](#) on page 28.

About VMware Remote Console

You use VMware Remote Console to connect remotely to the virtual machine's mouse, keyboard, and screen. This allows you to use them as if you have the guest operating system installed on your local computer.

VMware Remote Console is a browser plug-in that you can use with Microsoft Internet Explorer and Mozilla Firefox.

VMware Remote Console opens in a separate window. You can keep VMware Remote Console running even if you close your browser. You can open more than one console to interact with the operating systems of several virtual machines at the same time.

Install the VMware Remote Console Plug-In for Mozilla Firefox

The VMware Remote Console plug-in enables you to use the Firefox browser to interact with the virtual machine.

Prerequisites

To install the plug-in, vSphere Web Access must be running on vCenter Server or on the ESX host to which you are connecting.

You must have administrator privileges to install the VMware Remote Console plug-in.

Make sure that Mozilla Firefox allows pop-up windows during the installation.

Procedure

- 1 In Firefox, type the URL for vSphere Web Access.
`https://<vmwarehost.yourdomain.com>/ui`
- 2 Log in to vSphere Web Access using the user name and password for the host to which you are connecting.
- 3 Select a virtual machine from the Inventory panel.
- 4 Click the **Console** tab.
If the plug-in is not already installed, a warning message appears.
- 5 Click **Install plug-in**.
The Software Installation window appears.
- 6 In the Software Installation window, click **Install now**.
- 7 Restart Firefox to complete the installation.

What to do next

You can use Mozilla Firefox to open VMware Remote Console and use the guest operating system of a virtual machine.

Install the VMware Remote Console Plug-In for Internet Explorer

You can install the VMware Remote Console plug-in for Internet Explorer and use the browser to interact with a virtual machine.

Prerequisites

To install the plug-in, vSphere Web Access must be running on vCenter Server or on the ESX host to which you are connecting.

You must have administrator privileges to install the VMware Remote Console plug-in.

Procedure

- 1 In Internet Explorer, type the URL for vSphere Web Access.
https://<vmwarehost.yourdomain.com>/ui
- 2 Log in to vSphere Web Access using the user name and password for the host to which you are connecting.
- 3 Select a virtual machine from the Inventory panel.
- 4 Click the **Console** tab.
If the plug-in is not already installed, a warning message appears.
- 5 In the warning message, click **Install plug-in**.
The File Download - Security Warning window appears and asks if you want to run or save the file.
- 6 Click **Run** and on the Internet Explorer - Security Warning window click **Run** again.
- 7 On the Welcome page, click **Install**.
- 8 When the installation is complete, click **Finish**.

The VMware Remote Console plug-in for Internet Explorer is now installed.

What to do next

You can use Internet Explorer to open VMware Remote Console to use the guest operating system of a virtual machine.

Start VMware Remote Console

You can use the VMware Remote Console to interact with the guest operating system of a virtual machine.

Procedure

- 1 In the Inventory panel, select the powered-on virtual machine.
- 2 Click the **Console** tab.
- 3 To open VMware Remote Console, click inside the black area.

VMware Remote Console opens.

What to do next

You can now work with the guest operating system of the selected virtual machine by clicking in the VMware Remote Console window.

Set the VMware Remote Console View

You can set the preferences for the VMware Remote Console view, such as setting screen size and toolbar options.

Procedure

- ◆ Select one of the following options to customize the appearance of the VMware Remote Console.

Option	Action
Run Your Virtual Machine in Full Screen Mode	On the VMware Remote Console window, click Maximize.
Hide the VMware Remote Console Toolbar	On the VMware Remote Console toolbar, click the pushpin so that it is in a horizontal position.

Option	Action
Make the VMware Remote Console Toolbar Always Visible	Move the pointer to the top of the screen and click the pushpin at the end of the toolbar so that it is in a diagonal position.
Run a Virtual Machine in a Separate Window	While the VMware Remote Console is in full screen mode, press Ctrl+Alt to switch back to a separate window.

Use Client Devices with VMware Remote Console

You can use your local physical drives on virtual machines that you open with vSphere Web Access. You can also use ISO and floppy images located on your local system.

Several virtual machines can use a single drive at the same time. To eject the disk from the physical drive, you must first disconnect the drive from all virtual machines that are using it.

Connect Client Devices to a Virtual Machine

You can access your local CD/DVD and floppy drives from the virtual machine with VMware Remote Console.

Prerequisites

In Linux, make sure that the device you are connecting to is not mounted or in use.

Procedure

- 1 In the VMware Remote Console window, select **Devices > <Device Name> > Connect to <path_to_device>**.
- 2 Insert the disk media in the client device and access it from the guest operating system.

Your local CD/DVD media is connected to the virtual machine.

Connect Client Device Image Files to a Virtual Machine

You can access your local image drive files (.iso or .flp) on a virtual machine with VMware Remote Console.

Prerequisites

In Linux, make sure that the image device files that you use are not mounted or in use.

Procedure

- 1 In the VMware Remote Console window, select **Devices > <Device Name> > Connect to Disk Image File**.
- 2 In the Choose Image dialog box, browse for the .iso or .flp file to connect to the virtual machine.

Quit VMware Remote Console

You can close VMware Remote Console and disconnect from the virtual machine when you want to stop working with the guest operating system.

When you quit VMware Remote Console, your virtual machine remains powered-on.

Procedure

- ◆ In the VMware Remote Console window, select **VMware Remote Console > Disconnect and Exit**.

Troubleshoot Virtual Machines Using VMware Remote Console

You can use the VMware Remote Console to troubleshoot virtual machine errors or nonresponsive guest operating systems.

Procedure

- ◆ Select an option to troubleshoot a specific virtual machine issue.

Option	Action
View the Virtual Machine Message Log	In the VMware Remote Console window, select VMware Remote Console > Troubleshoot > Message Log .
Send Ctrl+Alt+Delete to the Guest Operating System	In the VMware Remote Console window, select VMware Remote Console > Troubleshoot > Send Ctrl+Alt+Del .
Reset Your Virtual Machine	In the VMware Remote Console window, select VMware Remote Console > Troubleshoot > Reset .
Suspend and Exit Your Virtual Machine	In the VMware Remote Console window, select VMware Remote Console > Troubleshoot > Suspend and Exit .
Power Off and Exit Your Virtual Machine	In the VMware Remote Console window, select VMware Remote Console > Troubleshoot > Power Off and Exit .

VMware Remote Console Keyboard Shortcuts

The VMware Remote Console has several keyboard shortcuts that you can use when you work with the guest operating system of a virtual machine.

[Table 3-1](#) lists the available keyboard shortcuts.

Table 3-1. VMware Remote Console Keyboard Shortcuts

Keyboard Shortcut	Action
Ctrl+Alt	<ul style="list-style-type: none"> ■ Transfers mouse and keyboard input from the virtual machine to the local machine ■ Switches from full screen mode to running the VMware Remote Console in a separate window
Ctrl+G	Transfers mouse and keyboard input from the local machine to the virtual machine
Ctrl+Alt+Insert	Sends a Ctrl+Alt+Del signal to the virtual machine
Ctrl+Alt+Enter	Switches between full screen mode and running VMware Remote Console in a separate window

Managing VMware Tools

VMware Tools is a suite of utilities that improves the performance of guest operating systems and enhances virtual machine management. For best results, install VMware Tools in all of your guest operating systems.

Install VMware Tools on the Guest Operating System

After you install your guest operating system, you can install VMware Tools to enhance the performance and interaction with the virtual machine.

Procedure

- 1 Power on the virtual machine.
- 2 In the Status section of the virtual machine's **Summary** tab, select **Install VMware Tools**.
- 3 (Optional) To automatically check for updates of VMware Tools every time the virtual machine is powered on, select the **Upgrade VMware Tools automatically** check box in the Install VMware Tools window.

- 4 Click **Install** to start the Installation wizard.

vSphere Web Access connects the virtual machine's CD drive to an installation file on the ESX host machine or vCenter Server. If autorun is enabled in your guest operating system (the default setting for Windows operating systems), a dialog box appears asking if you want to install VMware Tools.

- 5 Click the **Console** tab and use the guest operating system to complete the installation.
- 6 Restart the guest operating system when prompted.

VMware Tools is installed.

Upgrade VMware Tools

If you upgrade to a newer version of ESX or vCenter Server, you can upgrade the VMware Tools version on the virtual machine.

Procedure

- 1 In the Status section of the virtual machine's **Summary** tab, click **Upgrade VMware Tools**.
- 2 In the Upgrade VMware Tools window, select an option and click **Upgrade**.

Option	Action
Automatic VMware Tools Upgrade	Upgrades VMware Tools automatically without user interaction.
Interactive VMware Tools Upgrade	Allows you to select the VMware Tools components to install.

- If you selected an automatic upgrade, the installation program installs VMware Tools and might reboot the guest operating system.
 - If you selected an interactive upgrade, the installation program mounts the VMware Tools image file in the guest operating system virtual CD/DVD drive.
- 3 (Optional) If you selected Interactive VMware Tools Upgrade, in the guest operating system, open the CD/DVD drive and follow the VMware Tools installation instructions to complete the upgrade process.

Change the VMware Tools Settings on Windows

You can change VMware Tools settings in Windows by running the VMware Tools Control Panel.

Prerequisites

In Windows Vista, you must log in as an administrator to open the VMware Tools Control Panel.

Procedure

- 1 In the guest operating system, select **Start > Settings > Control Panel**.
- 2 In the Control Panel, double-click the **VMware Tools** icon.
- 3 To change the VMware Tools properties, use the tabs in this dialog box.

Change the VMware Tools Settings on a Linux, Solaris, or FreeBSD Operating System

You can change the VMware Tools properties by running the VMware Tools command in the command line.

Prerequisites

You must use the operating system graphical interface mode, to run VMware Tools.

To shrink virtual disks or to change any VMware Tools scripts, you must run VMware Tools as the root user.

Procedure

- 1 Boot the guest operating system and launch your graphical environment.
- 2 Open the command line and start the VMware Tools background application.

```
vmware-toolbox &
```

The VMware Tools dialog box appears.

- 3 To change the VMware Tools properties, use the tabs in the dialog box.

Virtual Machine Tasks, Alarms, and Events

All virtual machines have log files for events, tasks, and alarms. You can view them to gather information about possible failures or malfunctions that might occur because of lack of resources.

Virtual machine events can be ESX queries, errors, or other events like powering on or powering off the virtual machine. Events inform you of anything that occurs during the lifetime of a virtual machine.

Virtual machine alarms are notifications that are triggered when specific events happen to a virtual machine. A virtual machine alarm can be CPU usage that exceeds the designated usage. Depending on the severity of the alarm, you can make a decision to move a virtual machine to another host or add additional hardware to the current host.

Tasks are high-level actions, such as powering on a virtual machine, that the user performs manually or that you schedule to perform at a certain time. You can only view scheduled tasks. You cannot schedule tasks with vSphere Web Access.

View Virtual Machine Alarms

You can view the list of alarms that occur for a virtual machine. Depending on the severity of the alarm, you can decide to take action to prevent the lack of resources or system overload.

The **Alarms** tab is available only when you use vSphere Web Access to connect to vCenter Server.

Procedure

- 1 In the Inventory panel, select a virtual machine.
- 2 Select the **Alarms** tab from the virtual machine panel.
A list of alarms appears, sorted in reverse chronological order.
- 3 (Optional) Change the sorting order of the alarms.

Option	Action
Triggered	Sorts the alarms in chronological order
Status	Sorts the alarms by their status
Object	Sorts the alarms alphabetically by the name of the object they refer to
Name	Sorts the alarms alphabetically by the name of the alarm
Double-click the alarm name in the list	View more details about a specific alarm

View the Tasks Assigned to a Virtual Machine

You can view the assigned tasks for a virtual machine.

You cannot assign tasks by using vSphere Web Access.

Procedure

- 1 In the Inventory panel, select a virtual machine.
- 2 Select the **Tasks** tab from the virtual machine panel.
A list of tasks appears in reverse chronological order.
- 3 (Optional) Change the sorting order of the tasks.

Option	Action
Triggered	Sorts the tasks in chronological order
Status	Sorts the tasks alphabetically by their status
Object	Sorts the tasks alphabetically by the name of the object they are assigned to
Triggered By	Sorts the tasks alphabetically by the name of the user that scheduled them
Double-click the task name in the list	View more details about a specific task

View Virtual Machine Events

The event log contains data about the time and the severity of the event, and a short description of the nature of the event. The event log draws its data from the log file stored in the directory of the virtual machine.

Procedure

- 1 In the Inventory panel, select a virtual machine.
- 2 Select the **Events** tab from the virtual machine panel.
A list of the events of the virtual machine appears in reverse chronological order.
- 3 (Optional) Change the sorting order of the events.

Option	Action
Triggered	Sorts the events in chronological order
Severity	Sorts the events by their severity status
Description	Sorts the events alphabetically by their description
Double-click the event name in the list	Presents more details about a specific events

Creating Virtual Machine Shortcuts

You can create a shortcut of a virtual machine. A shortcut enables users to interact directly with the guest operating system from a Web browser. You can also configure the shortcut to give permissions to see other virtual machines or limit the access only to one virtual machine's workspace.

You can create Web and desktop shortcuts by using vSphere Web Access.

Create a Web Shortcut

Administrators can create a customized Web shortcut to share with other users. You can create a shortcut that displays only the **Console** tab, enables or disables access to the workspace, or enables or disables access to the virtual machine inventory.

Procedure

- 1 In the Inventory panel, select the virtual machine from which to generate a Web shortcut.
- 2 In the Commands section of the **Summary** tab, click **Generate Virtual Machine Shortcut**.

- 3 Click **Customize Web Shortcut** and select the options for this shortcut.

Option	Action
Limit workspace view to the console	Provides access to the virtual machine Console tab while hiding other details, like event logs.
Limit view to a single virtual machine	Disables navigation to another machine in the inventory.
Obfuscate this URL	Generate a URL that is difficult to read.

- 4 Copy the Web shortcut for future use.
- 5 Click **OK**.

What to do next

To test a Web shortcut, use a different browser or computer. If you use your active vSphere Web Access browser session to test the Web shortcut, you must close all instances of that browser before you can log back in to vSphere Web Access with full user interface capabilities.

Create a VMware Remote Console Desktop Shortcut

After you install the VMware Remote Console plug-in, you can create a desktop shortcut to start VMware Remote Console and connect to the virtual machine.

NOTE When you use Internet Explorer, you must restart the Web browser after you install VMware Remote Console and before you create the VMware Remote Console desktop shortcut. If you do not restart Internet Explorer, you receive a JavaScript error and the shortcut is not created.

Prerequisites

You must install the VMware Remote Console plug-in for your browser.

Procedure

- 1 In the Inventory panel, select the virtual machine from which to generate a desktop shortcut.
- 2 In the Commands section of the **Summary** tab, click **Generate Virtual Machine Shortcut**.
- 3 In the Desktop Shortcut section, click **Install Desktop Shortcut to <Virtual Machine>**.
- 4 Confirm that you want to create the shortcut when prompted.
The shortcut is created on the desktop.
- 5 Click **OK**.

A shortcut to the virtual machine appears on your desktop.

What to do next

You can use the desktop shortcut for quick access to the virtual machine.

Upgrade the Virtual Machine Hardware Version

If you created virtual machines with an earlier version of ESX or another VMware product, you can upgrade the virtual machine version.

Procedure

- 1 Log in to ESX.
- 2 In the Inventory, select and power off the virtual machine.

- 3 Click **Upgrade Virtual Machine** in the Status section of the workspace.
- 4 Click **OK** to confirm that you want to upgrade the virtual machine.

After the virtual machine version is updated, you can configure it to use the features supported with the new version.





Change the Power State of a Virtual Machine

Depending on your permissions, you can use vSphere Web Access to change the power state of the virtual machine.

If you installed VMware Tools on a virtual machine, you can use the **Reset**, **Power Off**, and **Suspend** buttons to restart, shut down, and suspend the guest operating system.

Procedure

- ◆ To change a virtual machine's power state, click the button in the toolbar for that power state.

Option	Action
	Powers off the virtual machine.
	Suspends the virtual machine.
	Powers on the virtual machine.
	Resets the virtual machine.

Delete a Virtual Machine

You can remove a virtual machine from the inventory or completely delete the virtual machine.

If you remove the virtual machine from the inventory, the virtual machine files are not deleted from the hard disk.

Procedure

- 1 In the Inventory panel, select and power off the virtual machine.
- 2 Select **Virtual Machine > Remove Virtual Machine** to remove only the virtual machine from the inventory.
- 3 Select **Delete this virtual machine's files from the disk** to delete all of the virtual machine's files from the disk.
- 4 Click **OK**.

The virtual machine is deleted from the inventory.

Configuring Virtual Machine Options and Resources

4

You can use vSphere Web Access to configure a virtual machine's hardware configuration, power options, and advanced virtual machine settings.

Access to a virtual machine's options and settings depends on the user permissions that you have to the virtual machine's configuration file. The permissions determine whether you can browse, interact, configure, or administer a virtual machine.

Depending on your permissions and the state of the virtual machine, you might not be able to configure some options.

Permissions are configured with the vSphere Client.

This chapter includes the following topics:

- [“Changing the Hardware Configuration of Virtual Machines,”](#) on page 35
- [“Removing Hardware Components from a Virtual Machine,”](#) on page 40
- [“Changing Virtual Machine Settings and Options,”](#) on page 43

Changing the Hardware Configuration of Virtual Machines

You can configure each hardware component of a virtual machine.

In some cases, the virtual machine must be powered off to configure it.

NOTE Do not edit the virtual machine configuration file directly. Instead, use the **Advanced** tab of the VM Configuration dialog box.

Change the Number of Processors in a Virtual Machine

You can change the number of virtual processors that your virtual machine uses.



CAUTION Changing the number of processors after the guest operating system is installed might make the virtual machine unstable.

Procedure

- 1 Shut down the guest operating system and power off the virtual machine to modify.
- 2 In the Inventory panel, select the virtual machine.
- 3 In the Hardware section on the **Summary** tab, in the **Processors** drop-down menu, select **Edit**.
- 4 In the **Processor Count** drop-down menu, select the number of processors.
- 5 Click **OK**.

Change Memory Allocation in a Virtual Machine

You can change the memory allocation for each virtual machine.

Procedure

- 1 Shut down the guest operating system and power off the virtual machine to modify.
- 2 In the Inventory panel, select the virtual machine.
- 3 In the Hardware list on the **Summary** tab, in the Memory drop-down menu, select **Edit**.
- 4 To ensure that the virtual machine will boot, allocate at least the recommended minimum memory.
- 5 Click **OK**.

Configure a CD/DVD Drive to Use a Host CD/DVD Media

You can configure a virtual CD/DVD drive to connect to a CD/DVD drive installed on the host system.

Procedure

- 1 In the Hardware section of the **Summary** tab, select the CD/DVD drive from the drop-down menu and click **Edit**.
- 2 In the CD/DVD Drive window, select **Host Media**.
- 3 Make the appropriate changes in the Device Status section to change the status of the CD/DVD drive.
- 4 Select **Physical Drive** in the Connection section to make changes to the physical drive
 - a Select the optical drive to use from the drop-down menu.
 - b If you are using a physical drive, select **Use ATAPI emulation** or **Access the drive directly**.
Use ATAPI emulation if you cannot access the CD/DVD drive. The emulation mode works only with data disks.
- 5 In the Connection section, select **ISO image**, click **Browse** and locate the .iso file to use an ISO image.
- 6 In the Virtual Device Node section, select the adapter type and the appropriate device to change the adapter type.
This option is available only when the virtual machine is powered off.
- 7 Click **OK**.

Configure a CD/DVD Drive to Use a Client CD/DVD Media

You can configure the virtual CD/DVD drive to connect to a CD/DVD device on the client system.

Procedure

- 1 In the Hardware section of the **Summary** tab, select the CD/DVD drive from the drop-down menu and click **Edit**.
- 2 In the CD/DVD Drive window, select **Client Media**.
- 3 In the Virtual Device Node section, select the adapter type and the appropriate device to change the adapter type.
You must power off the virtual machine to change the adapter.
- 4 Click **OK**.

Configure a Floppy Drive to Use a Host Floppy Media

You can configure a virtual floppy drive to connect to a physical floppy drive installed on the host system.

Procedure

- 1 In the Hardware section of the **Summary** tab, select the floppy drive from the drop-down menu and click **Edit**.
- 2 In the Floppy Drive window, select **Host Media**.
- 3 To change the status of the floppy drive, make the appropriate changes in the Device Status section.
- 4 To change the connection settings, in the Connection section, select an option.

Option	Description
Physical Drive	Allows you to select a physical floppy drive installed on the host system. Available only when the virtual machine is powered off.
Floppy Image	Allows you to use an existing floppy image located on the host.
New Floppy Images	Allows you to create a floppy image on the host.

- 5 Click **OK**.

Configure a Floppy Drive to Use a Client Floppy Media

You can configure the virtual floppy drive to connect to a floppy device on the client system.

Procedure

- 1 In the Hardware section of the **Summary** tab, select the floppy drive from the drop-down menu and click **Edit**.
- 2 In the Floppy Drive window, select **Client Media**.
- 3 Click **OK**.

Modify a Hard Disk

You can modify some of the settings of an existing hard disk on a virtual machine or remove it from your virtual machine. You can also view the file allocation options, but you cannot change them.

Procedure

- 1 In the Inventory panel, select the virtual machine.
- 2 Shut down the guest operating system.
- 3 In the Hardware section of the **Summary** tab, click the hard disk to modify and select **Edit**.
- 4 To increase capacity on growable disks, click **Increase Capacity** and enter a new value for the **Increase By** or **New Capacity** option.

If you have a snapshot of the disk, you must delete it to change the disk capacity.

NOTE You can only change the capacity of SCSI disks.

- 5 In the Virtual Device Node section, select the adapter type and the appropriate device to change the adapter type.

- To run the disk in independent mode, click **Disk Mode**, select **Independent**, and click the appropriate option.

Option	Action
Persistent	Disks in persistent mode behave like conventional disks on your physical computer. All data written to a disk in persistent mode is written permanently to the disk.
Nonpersistent	Changes to disks in nonpersistent mode are discarded when you power off or reset the virtual machine. Nonpersistent mode enables you to restart the virtual machine with a virtual disk in the same state every time. Changes to the disk are written to and read from a redo log file that is deleted when you power off or reset.

- To change the write caching policies for the virtual disk, click **Policies** and select the appropriate option.

Option	Action
Optimize for safety	Saves all changes to the virtual disk before notifying the system.
Optimize for performance	Acknowledges changes to the virtual disk immediately, but saves them at a later time.

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

Modify a SCSI Device

You can change the SCSI connection settings and the device type and device node to use for a particular SCSI device.

Procedure

- In the Inventory panel, select the virtual machine to modify.
- In the Hardware section on the **Summary** tab, select the SCSI device to modify and click **Edit**.
- In the Connection drop-down menu, specify the physical device.
- In the Virtual Device section, specify the adapter type and the device node.
- Click **OK**.

The SCSI device is now reconfigured.

Modify a SCSI Controller

You can edit the settings of a SCSI controller attached to a virtual machine.

The available SCSI controller device types are BusLogic and LSI Logic parallel interfaces.

For hardware version 7.0 virtual machines, you can also select an LSI SAS serial attached storage interface.

Procedure

- In the Inventory panel, select and power off the virtual machine.
- In the Hardware section of the **Summary** tab, click the SCSI controller and select **Edit**.
- Click **Modify device type** to change the SCSI controller device type.
- Click **OK**.

The SCSI controller is reconfigured.

Modify a Network Adapter

You can connect virtual network adapters to a labeled network in much the same way that you connect physical network adapters by cables to wall jacks. By choosing a labeled network for an adapter, you enable the guest operating system to reach the resources of the specified network.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Hardware section of the **Summary** tab, select the network adapter to modify, and click **Edit**.
- 3 Select **Connect at power on** to connect to this network when the virtual machine is powered on.
- 4 In the Network Connection section, select the virtual network to use.
- 5 In the MAC Address section, select how to generate the machine's MAC address.

Option	Description
Generated by the host	The host generates the MAC address.
Manual	Allows you to manually change the MAC address.

- 6 Click **OK** to save your changes.

What to do next

Make sure that the guest operating system uses an appropriate IP address on the new network. If the guest is using DHCP, release and renew the IP address. If the IP address is static, verify that the guest has an address on the correct virtual network.

Modify a Parallel Port

You can edit the configuration of an existing parallel port to run tests or to use physical devices connected to the host system.

Procedure

- 1 In the Inventory panel, select the virtual machine.
- 2 Shut down the guest operating system and power off the virtual machine.
- 3 In the Hardware section of the **Summary** tab, select the parallel port to modify and click **Edit**.
- 4 Select the **Connect at power on** check box to connect the parallel port when the virtual machine is powered on.
- 5 In the Connection section, select to use a physical parallel port or to use parallel port data file for tests.

Option	Action
Physical	Select the available host parallel port from the drop-down menu.
File	Select and click Browse to save parallel port data to a new file or to locate an existing output file.

- 6 Click **OK** to save your changes.

Modify a Serial Port

You can change the configuration of an existing serial port. You can configure the serial port to connect to a physical serial port on the host machine, to send output data to a file, or use it to create a named pipe.

Procedure

- 1 In the Inventory panel, select the virtual machine.
- 2 Shut down the guest operating system and power off the virtual machine.
- 3 In the Hardware section of the **Summary** tab, select the serial port to modify and click **Edit**.
- 4 Select **Connect at power on** to connect to the serial port when the virtual machine is powered on.
- 5 Select the type of the serial port to use.

Option	Description
Physical	Allows you to use a host serial port.
File	Allows you to send data to a selected output file.
Named Pipe	Allows you to create a pipe. <ol style="list-style-type: none"> a Enter the path and file for the pipe. b In the Near End drop-down menu, select an option. <ul style="list-style-type: none"> ■ To start the far end of the connection first, select Is a client. ■ To start the end of the connection first, select Is a server. c In the Far End drop-down menu, select an option. <ul style="list-style-type: none"> ■ If the application that the virtual machine connects to is located on another virtual machine on the host, select Is a virtual machine. ■ If the application that the virtual machine connects to is running directly on the host, select Is an application.

- 6 Select the **Yield CPU on poll** check box to have the kernel in the target virtual machine use the virtual serial port in polled mode, not interrupt mode.
- 7 Click **OK** to save your changes.

Removing Hardware Components from a Virtual Machine

If your virtual machine has a hardware component that you do not use, you can remove it from the virtual machine configuration. You might also need to delete a component to reuse its physical counterpart in another virtual machine.

Remove a CD/DVD Drive from a Virtual Machine

You can remove any CD/DVD drive from a virtual machine.

Procedure

- 1 In the Inventory panel, select the virtual machine.
- 2 Shut down the guest operating system and power off the virtual machine.
- 3 In the Hardware section of the **Summary** tab, click the CD/DVD drive to remove and select **Remove**.
- 4 Click **Yes** in the confirmation dialog box.

The CD/DVD drive is removed from the virtual machine hardware configuration.

Remove a Floppy Drive from a Virtual Machine

If you do not need to use a floppy drive in the guest operating system, you can remove it from the virtual machine hardware configuration.

Procedure

- 1 In the Inventory panel, select the virtual machine.
- 2 Shut down the guest operating system and power off the virtual machine.
- 3 In the Hardware section of the **Summary** tab, click the floppy drive and select **Remove**.
- 4 Click **Yes** in the confirmation dialog box.

The floppy drive is removed from the virtual machine hardware configuration.

Remove a Hard Disk from a Virtual Machine

If you have a hard disk you do not use, you can delete it from the virtual machine hardware configuration.

Prerequisites

To remove an IDE hard disk, you must power off the virtual machine.

Procedure

- 1 In the Inventory panel, select the virtual machine.
- 2 In the **Hardware** section of the **Summary** tab, click the hard disk to remove and select one of the options.

Option	Description
Remove	Removes the hard disk from the virtual machine. Keeps the virtual disk files on the host system. You can use the hard disk files in another virtual machine.
Delete from Disk	Removes the hard disk from the virtual machine. Deletes the associated disk files from the host system.

- 3 Click **Yes** in the confirmation dialog box.

The hard disk is removed from the virtual machine hardware configuration.

Remove a SCSI Device from a Virtual Machine

You can delete a SCSI device from a virtual machine.

Procedure

- 1 In the Inventory panel, select the virtual machine.
- 2 Shut down the guest operating system and power off the virtual machine.
- 3 In the Hardware section of the **Summary** tab, select the SCSI device from the drop-down menu and click **Remove**.
- 4 Click **Yes** in the confirmation dialog box.

The SCSI device is removed from the virtual machine hardware configuration.

Remove a Network Adapter from a Virtual Machine

You can remove a network adapter from the virtual machine.

Prerequisites

Power off the virtual machine.

Procedure

- 1 In the Inventory panel, select the virtual machine.
- 2 Shut down the guest operating system and power off the virtual machine.
- 3 On the **Summary** tab, select the network adapter to remove and click **Remove**.
- 4 Click **Yes** in the confirmation dialog box.

The network adapter is removed from the virtual machine hardware configuration.

Remove a Parallel Port from a Virtual Machine

You can remove a parallel port from the virtual machine configuration.

Procedure

- 1 In the Inventory panel, select the virtual machine.
- 2 Shut down the guest operating system and power off the virtual machine.
- 3 In the Hardware section of the **Summary** tab, select the parallel port to remove and click **Remove**.
- 4 Click **Yes** in the confirmation dialog box.

The parallel port is removed from the virtual machine hardware configuration.

Remove a Serial Port from a Virtual Machine

You can remove a serial port from the virtual machine.

Prerequisites

Power off the virtual machine.

Procedure

- 1 In the Inventory panel, select the virtual machine.
- 2 Shut down the guest operating system and power off the virtual machine.
- 3 In the Hardware section of the **Summary** tab, select the serial port and click **Remove**.
- 4 Click **Yes** in the confirmation dialog box.

The serial port is removed from the virtual machine hardware configuration.

Remove a USB Controller from a Virtual Machine

You can remove the USB controller from a virtual machine if you do not use USB devices in the virtual machine.

Procedure

- 1 In the Inventory panel, select the virtual machine.
- 2 Shut down the guest operating system and power off the virtual machine.

- 3 In the Hardware section of the **Summary** tab, select the USB controller and click **Remove**.
- 4 Click **Yes** in the confirmation dialog box.

The USB controller is removed from the virtual machine hardware configuration.

Changing Virtual Machine Settings and Options

You can adjust general settings, power options, snapshot options, and advanced options for each selected virtual machine.

Change the Name and Guest Operating System of a Virtual Machine

You can change the name and the guest operating system of a virtual machine.

Procedure

- 1 In the Commands section of the **Summary** tab, click **Configure VM**.
- 2 Click the **General** tab.
- 3 In the Virtual Machine Name field, enter a new name for the virtual machine.
- 4 In the Guest Operating System section, change the guest operating system for the virtual machine.

NOTE Do not change the guest operating system if you do not plan to install a new guest operating system on this virtual machine.

- 5 Click **OK**.

The name and the guest operating system of the virtual machine are reconfigured.

Change Virtual Machine Power Settings

Power control options allow you to define actions that occur when you change the power state of a virtual machine.

Procedure

- 1 In the Commands section of the virtual machine's **Summary** tab, click **Configure VM**.
- 2 Click the **Power** tab.
- 3 Select the default power off command for the virtual machine.

Option	Description
Power Off	Powers off the virtual machine without a clean shutdown of the guest operating system services.
Shut Down Guest	Shuts down the guest before powering off the virtual machine.

When VMware Tools is not installed, the default action is to power off the virtual machine without shutting down the guest. When VMware Tools is installed, the default action is to shut down the guest before powering off the virtual machine.

- 4 Select the default suspend option for the virtual machine.

Option	Description
Suspend	Suspends the virtual machine without suspending the guest operating system.
Suspend Guest	Suspends the guest before suspending the virtual machine.

When VMware Tools is not installed, the default action is to suspend the virtual machine without suspending the guest. When VMware Tools is installed, the default action is to suspend the guest before suspending the virtual machine.

- 5 Select the default reboot option for the virtual machine.

Option	Description
Reboot	Restarts the virtual machine without rebooting the guest.
Reboot Guest	Restarts the guest before rebooting the virtual machine.

When VMware Tools is not installed, the default action is to reset the virtual machine without shutting down the guest. When VMware Tools is installed, the default action is to shut down the guest before resetting the virtual machine.

- 6 In the VMware Tools Scripts section, select one or more of the options for when to run a VMware Tools script.
- 7 In the BIOS Setup section, select the **Enter the BIOS setup screen the next time the virtual machine boots** check box to go directly to the BIOS setup screen the next time the virtual machine is powered on.
After the next power on, this setting is deactivated.
- 8 In the Advanced section, select one or both of the VMware Tools options.
- 9 Click **OK**.

The virtual machine power settings are reconfigured.

Change Virtual Machine Settings Associated with the Host

You can configure the automatic startup and shutdown properties as well as the delay settings for virtual machines.

The startup and shutdown settings are associated with the ESX host configuration and can be changed only when you use vSphere Web Access to connect to an ESX host.

Prerequisites

You must log in to an ESX host to configure the virtual machine startup and shutdown settings.


Required privilege: **Host.Configuration.Virtual Machine Auto-Start Configuration**.

Procedure

- 1 In the Inventory panel, select the ESX host.
- 2 Click the **Summary** tab and click **Edit Virtual Machine Startup/Shutdown Settings** in the Commands section.

The Virtual Machine Startup/Shutdown Settings dialog box opens.

- 3 Select the **Allow virtual machines to start and stop automatically with the system** check box.
- 4 (Optional) Select the **Start next VM immediately if the VMware Tools start** check box to have the virtual machine boot immediately after VMware Tools start.

- 5 (Optional) To have the operating system start after a brief delay, enter a **Default Startup Delay** time.
This delay allows time for VMware Tools or the booting system to run scripts.
 - 6 Select a shutdown action.
 - 7 (Optional) To delay shutdown for each virtual machine by a certain amount of time, enter a **Default Shutdown Delay** value.
This shutdown delay applies only if the virtual machine did not already shut down before the delay period elapses. If the virtual machine shuts down before that delay time is reached, the next virtual machine starts shutting down.
 - 8 Use **Move Up** and **Move Down** to specify the order in which the virtual machines start when the system starts.
 - 9 To configure user-specified autostartup and autosutdown behavior for any virtual machine, select the virtual machine in the list and click **Edit**.
 - a In the Startup Settings section, select one of the options.
 - Select **Use default**.
 - Select **Use specified settings**, enter a Startup Delay time in seconds, and select or deselect the **Continue immediately if the VMware Tools start** check box.
 - b In the Shutdown Settings section, select one of the options.
 - Select **Use default**.
 - Select **Use specified settings**, enter a Shutdown Delay time in seconds, and select a shutdown action from the **Perform shutdown action** drop-down menu.
-
-  **CAUTION** You must enter a value in the Shutdown Delay time text field when you change the shutdown action. The text field cannot be empty. If you do not enter a delay time, you cannot save the shutdown action changes. Also, if you change the shutdown action setting when accessing the setting from outside the vSphere Client, that change is not reflected in the Autostart Settings manager if you did not also set the shutdown delay to a nonnegative value.
-
- c Click **OK** to accept the changes to the autostartup and autosutdown settings of the selected virtual machine.
- 10 Click **OK** again to accept the changes to the startup and shutdown settings of the ESX host.

Changing Virtual Machine Advanced Settings

You can use vSphere Web Access to configure more advanced settings of virtual machine management. Advanced settings include log management, enabling or disabling acceleration, paravirtualization support, MMU support, and modifying virtual machine configuration files.

You can configure the following advanced settings:

- What kind of information is collected while ESX or vCenter Server is running.
- Enabling and disabling logging.
- Disabling acceleration if a program cannot run in your virtual machine.
- Enabling Virtual Machine Interface (VMI) paravirtualization to increase performance on hosts that support paravirtualization.

- Specifying whether and how virtualized MMU support is used.
- Modifying virtual machine configuration file parameters.

NOTE Do not change any configuration file parameters unless you are instructed to do so in the documentation or by VMware technical support.

Change Virtual Machine Runtime Settings

You can configure virtual machine runtime settings, such as logging, disabling acceleration, record debugging information, enabling VMI paravirtualization, and virtualized Memory Management Unit (MMU) settings.

Procedure

- 1 In the Commands section of the virtual machine's **Summary** tab, click **Configure VM**.
- 2 Click the **Advanced** tab.
- 3 In the Settings section, select any of the options.

Option	Description
Record runtime information	Collects debugging and performance information. You can use this information to troubleshoot problems.
Enable logging	Enables event logging.
Disable acceleration	Disables acceleration in the virtual machine. You might want to temporarily disable acceleration if you are installing or starting a program in a virtual machine and the program stalls, fails, or reports that it is running under a debugger. Disabling acceleration slows virtual machine performance, so when you no longer have a problem, deselect Disable acceleration .
Support VMI Paravirtualization	If you have a VMware VMI 3.0-enabled kernel in a Linux guest, VMI paravirtualization improves virtual machine performance. For more information about paravirtualization, see http://www.vmware.com/interfaces/paravirtualization.html . Available VMI-enabled kernels include Ubuntu 7.04 (Feisty) or later. Use the standard image for 32-bit Intel x86 systems. VMI currently supports only 32-bit guests. NOTE Only hardware version 7.0 virtual machines support VMI.

- 4 In the Virtualized MMU section, select an option.
Recent CPUs can virtualize the MMU. Virtualizing the MMU generally improves virtual machine performance. In some instances, it might be preferable not to virtualize the MMU.
- 5 Click **OK**.

The virtual machine runtime settings are reconfigured.

Add a Parameter to the Virtual Machine Configuration File

You can add parameters to a virtual machine's configuration file.

NOTE Do not edit the configuration file manually.

Procedure

- 1 In the Commands section of the virtual machine's **Summary** tab, click **Configure VM**.
- 2 Click the **Advanced** tab.

- 3 In the Configuration Parameters section, click **Add New Entry** and enter information in the fields.
- 4 Click **OK** and click **OK** again to save your changes.

Edit a Parameter in the Virtual Machine Configuration File

You can change the values of parameters included in the virtual machine's configuration file.

Procedure

- 1 In the Commands section of the virtual machine's **Summary** tab, click **Configure VM**.
- 2 Click the **Advanced** tab.
- 3 In the Configuration Parameters section, select the parameter, click **Edit**, and enter the new value in the **Value** field.
- 4 Click **OK** and click **OK** again to save your changes.

Adding Hardware to a Virtual Machine

You can add different types of virtual devices to a virtual machine and connect them to their physical counterparts.

Add Hardware to a Virtual Machine

Use the Add Hardware wizard to add new hardware to a virtual machine.

Prerequisites

Before you add hardware, power off the virtual machine. If you are adding a SCSI hard disk, you can leave the virtual machine powered on.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 On the Hardware Type page, select the type of hardware to add.

Adding a Virtual Hard Disk

You can add more than one virtual disk to a virtual machine.

You can store virtual disks as files in a datastore, which can be located on the local file system or a remote VMFS SAN datastore. You can store an IDE virtual disk or a SCSI virtual disk on either an IDE physical hard disk or on a SCSI physical hard disk.

You can add a SCSI virtual disk to a powered-on virtual machine with hardware versions earlier than 7.0. For earlier virtual machine hardware versions, you can add a SCSI virtual disk when the virtual machine is powered on only if a SCSI controller with an available slot already exists. SCSI controllers are created when you add a SCSI virtual disk or a passthrough SCSI device to the virtual machine. For virtual machines with hardware versions earlier than 7.0, you cannot create SCSI controllers when the virtual machine is powered on.

You cannot add an IDE virtual disk when the virtual machine is powered on.

NOTE If you have a Windows NT 4.0 guest with a SCSI virtual disk, you cannot add an additional SCSI disk and an IDE disk to the configuration.

Add a Hard Disk

You can add a new or an existing virtual disk to your virtual machine.

Prerequisites

Before you begin, make sure that you understand the hard disk types and properties settings in [“Adding a Virtual Hard Disk,”](#) on page 49.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 Click **Hard Disk**.
- 4 Select whether to create a virtual disk or to use an existing one.
- 5 On the Properties page, change the default values as needed and click **Next**.
- 6 On the Ready to Complete page, review the configuration summary and click **Finish**.

The virtual disk appears to your guest operating system as a new blank hard disk.

What to do next

If you add a new virtual disk to the virtual machine, you can use the guest operating system's utilities to partition and format the disk.

Add a Network Adapter

You can add more than one network adapter to a virtual machine.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 Select **Network Adapter**.
- 4 On the Properties page, select the network connection type for the new network adapter.
- 5 Select whether to connect the network adapter when the virtual machine is powered on and click **Next**.
- 6 On the Ready to Complete page, review the network adapter settings and click **Finish**.

What to do next

Use the network adapter to set up new network connections.

Add a CD/DVD Drive

You can add four CD/DVD drives to your virtual machine. You can connect the virtual machine's drive to a physical drive or an ISO image on the host machine.

A virtual IDE CD/DVD drive can use a physical IDE drive or a physical SCSI drive.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 Click **CD/DVD Drive**.
- 4 In the Host Media section, select whether to connect to a physical drive or an ISO image on the host and click **Next**.
- 5 On the Properties page, specify which physical drive or which ISO image to use:
 - If you selected **Use a Physical Drive**, specify the drive to use.
 - If you selected **Use an ISO Image**, click **Browse** to navigate to a file with the .iso extension in an existing datastore.
- 6 (Optional) To connect the drive to the virtual machine when you power on, select **Connect at power on** (the default).
- 7 (Optional) In the Virtual Device Node section, select an adapter and device node from the drop-down menus.
- 8 Click **Next**.
- 9 In the Ready to Complete page, view the configuration summary and click **Finish**.

The guest operating system detects the new CD/DVD drive the next time you power on the virtual machine.

Add a Floppy Drive

You can use a physical floppy drive on the host or a floppy image file located on the host for the virtual drive.

You can add two floppy drives to your virtual machine.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 Click **Floppy Drive**.
- 4 Under Host Media, select an option to connect to a drive or floppy image on the host and click **Next**.
- 5 On the Properties page, specify which physical drive or floppy image to use:
 - If you selected **Use a Physical Drive**, select the drive to use.
 - If you selected **Use a Floppy Image** or **Create a New Floppy Image**, click **Browse** to select a location for a new file or navigate to a file with the .flp extension that is located on an existing datastore.
- 6 (Optional) To connect the drive to the virtual machine when you power on, select **Connect at Power On** (the default) and click **Next**.
- 7 On the Ready to Complete page, review the configuration summary and click **Finish**.

The guest operating system detects the new floppy drive the next time you power on the virtual machine.

Adding a Serial Port

You can set up the virtual serial port in a virtual machine to use a physical serial port on the host computer. You can also create an output file for the serial port or a named pipe.

Add a Physical Serial Port

You can use an external device in a virtual machine by adding a physical serial port to the machine.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 Click **Serial Port**.
- 4 Click **Use Physical Serial Port**.
- 5 On the Properties page, select a physical port from the drop-down menu.
- 6 (Optional) To connect this virtual machine to the host's serial port when the virtual machine is powered on, select **Connect at power on** (the default).
- 7 (Optional) Expand **I/O Mode** to select **Yield CPU on poll**.
The kernel in the target virtual machine uses the virtual serial port in polled mode, not interrupt mode.
This option applies only to Windows hosts.
- 8 Click **Next**.
- 9 On the Ready to Complete page, review the configuration summary and click **Finish**.

The operating system recognizes the new serial port the next time you power on the virtual machine.

Add an Output Serial Port

You can capture data that a running program sends by directing the output to an output serial port. You can read the output file to view the data.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 Click **Serial Port**.
- 4 Click **Use Output File** to send the output of an application that is running in the guest operating system to a file on the host machine.
- 5 On the Properties page, enter the path and filename for the output file or click **Browse** to navigate to the file.
- 6 (Optional) To connect this virtual machine to the host's output file when the virtual machine is powered on, select **Connect at power on** (the default).
- 7 (Optional) Expand **I/O Mode** to select **Yield CPU on poll**, which is deselected by default.
The kernel in the target virtual machine uses the virtual serial port in polled mode, not interrupt mode.
This option applies only to Windows hosts.

- 8 Click **Next**.
- 9 In the Ready to Complete page, review the configuration summary and click **Finish**.

The operating system recognizes the new serial port the next time you power on the virtual machine.

Add a Named Pipe Serial Port

You can add a named pipe serial port for connecting a virtual machine to an application or to another virtual machine that is running on the host system.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 Click **Serial Port**.
- 4 Click **Use Named Pipe**.
- 5 On the Properties page, enter the path and filename for the pipe.
 - On Windows guests: The pipe name must be in the format `\\.pipe\<namedpipe>`.
 - On Linux guests: The pipe name must be in the format `/tmp/<socket>` or another UNIX socket name.
- 6 For **Near End**, select whether the application running in the guest operating system functions as a server or a client.
 - Select **Is a server** to start this end of the connection first.
 - Select **Is a client** to start the far end of the connection first.
- 7 For **Far End**, specify where the application that the virtual machine connects to is located.
 - Select **Is a virtual machine** if the application that the virtual machine connects to is located on another virtual machine on the host.
 - Select **Is an application** if the application that the virtual machine connects to is running directly on the host machine.
- 8 (Optional) To connect to the named pipe when the virtual machine is powered on, select **Connect at Power On** (the default).
- 9 (Optional) Expand **I/O Mode** to select **Yield CPU on poll**, which is deselected by default.
The kernel in the target virtual machine uses the virtual serial port in polled mode, not interrupt mode.
This option applies to Windows hosts only.
- 10 Click **Next**.
- 11 In the Ready to Complete page, review the configuration summary and click **Finish**.

The operating system recognizes the new serial port the next time you power on the virtual machine.

Adding a Parallel Port

A variety of devices, including printers, scanners, dongles, and disk drives, use parallel ports. The virtual parallel port can connect to a parallel port or to a file on the host operating system.

Add a Physical Parallel Port

To use an external device connected to a physical parallel port in a virtual machine, you can add a virtual parallel port to a virtual machine.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 Click **Parallel Port**.
- 4 Click **Use a physical parallel port** to connect to a physical port on the host machine.
- 5 On the Properties page, select a physical port from the drop-down menu.
- 6 (Optional) To connect this virtual machine to the host's serial port when the virtual machine is powered on, select **Connect at power on** (the default) and click **Next**.
- 7 On the Ready to Complete page, review the configuration summary and click **Finish**.

The operating system detects the new parallel port the next time you power on the virtual machine.

Add an Output Parallel Port

You can capture data that a running program sends by directing the output to an output parallel port. You can view the data by reading the output file.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 Click **Parallel Port**.
- 4 Click **Output file**.
- 5 On the Properties page, type the path and filename for the output file or click **Browse** to navigate to the file.
- 6 (Optional) To connect this virtual machine to the host's serial port when the virtual machine is powered on, select **Connect at Power On** (the default) and click **Next**.
- 7 On the Ready to Complete page, review the configuration summary and click **Finish**.

The operating system detects the new parallel port the next time you power on the virtual machine.

Add a Passthrough SCSI Device

To map a virtual SCSI device on a virtual machine to a physical generic SCSI device on the host, add a generic SCSI device to the virtual machine.

You can add a SCSI device without powering off the virtual machine.

Prerequisites

You must have the following required permissions:

- On Windows guests, you must log in as a user with administrator access.
- On Linux guests, you must be logged in as a user who has read and write permissions to use the device.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 Click **Passthrough SCSI Device**.
- 4 Select a SCSI device to use.
A physical SCSI device must be attached to the device and it must be connected to the virtual machine.
- 5 (Optional) In the **Virtual Device Node** section, select a SCSI adapter and device node from the drop-down menus.
- 6 Click **Next**.
- 7 In the Ready to Complete page, review the configuration summary and click **Finish**.

The operating system recognizes the new SCSI device the next time you power on the virtual machine.

Add a USB Controller

You can add a USB controller to a virtual machine. You cannot attach and use USB devices in a virtual machine.

Procedure

- 1 In the Inventory panel, select the virtual machine to modify.
- 2 In the Commands section of the **Summary** tab, click **Add Hardware**.
The Add Hardware wizard opens.
- 3 Click **USB Controller**.
- 4 On the Ready to Complete page, review the configuration summary and click **Finish**.

Creating and Managing Snapshots

Snapshots preserve the current state of a virtual machine so that you can return to the state as needed. You can use snapshots as restoration points when you install update packages or different versions of a program.

A snapshot includes:

Memory state	Contents of the virtual machine's memory.
Settings state	Virtual machine settings.
Disk state	State of all the virtual machine's virtual disks.

When you revert to a snapshot, you return these items to the state that they were in at the time you took that snapshot. Snapshots operate on individual virtual machines.

Snapshots let you revert repeatedly to the same state without creating multiple virtual machines. With snapshots, you create backup and restore positions in a linear process. You can also preserve a baseline before diverging a virtual machine in a process tree.

You can take more than one snapshot of the same virtual machine. Using multiple snapshots, you can save different states for different work processes. You can take snapshots to 32 levels, but each level increases the time it takes to save or delete a snapshot. The amount of time depends on the amount of data and the RAM size of the virtual machine.

NOTE Snapshots are not available in versions before ESX 3.0. Snapshots of raw disks or RDM physical mode disks are not supported.

This chapter includes the following topics:

- [“When Not to Take a Snapshot,”](#) on page 58
- [“Snapshots and Logging Changes,”](#) on page 58
- [“Take a Snapshot,”](#) on page 58
- [“Revert to a Snapshot,”](#) on page 59
- [“Remove a Snapshot,”](#) on page 59
- [“Set Snapshot Power Off Options,”](#) on page 59

When Not to Take a Snapshot

It is best to take a snapshot when no applications in the virtual machine are sending transactions to other computers. The potential for problems is greatest if the virtual machine is sending transactions to or receiving transactions from another computer, especially in a production environment.

VMware recommends that you do not take a snapshot under the following conditions.

- When the virtual machine is downloading a file from a server on the network. After you take the snapshot, the virtual machine continues downloading the file, transmitting its progress to the server. If you revert to the snapshot, transmission between the virtual machine and the server is confused, and the file transfer fails.
- When an application in the virtual machine is sending a transaction to a database on a separate machine. If you revert to that snapshot, especially if you revert after the transaction starts but before it is committed, the database might become corrupted.

Snapshots and Logging Changes

After you create a snapshot, the virtual machine writes new data to redo log files. These files can become large as saved data continues to accumulate, until you take an action that affects the snapshot.

Different snapshot actions affect the redo log files differently.

- When you remove the snapshot, the changes accumulated in the redo log files are written permanently to the base virtual disk files.
- When you revert to the snapshot, the contents of the redo log files are discarded. Any subsequent changes are accumulated in new redo logs.
- If you take a snapshot when the virtual machine already has a snapshot, the changes accumulated in the redo log files are written permanently to the base virtual disk files. Any subsequent changes accumulate in new redo logs.

Take a Snapshot

You can take a snapshot while the virtual machine is powered on, powered off, or suspended.

Do not take a snapshot when the virtual machine is communicating with another computer.

NOTE If you require strong performance from virtual machines, consider defragmenting the guest operating system's drives before taking a snapshot. Use the guest operating system's defragmentation utility.

Prerequisites

To exclude virtual disks from snapshots, change the disk mode. For more information about changing the disk mode, see [“Modify a Hard Disk,”](#) on page 37.

If you are suspending a virtual machine, wait until the suspend operation has finished before taking a snapshot.

Procedure

- 1 In the Commands section of the virtual machine's **Summary** tab, expand the Snapshot command (if it is not already expanded) and click **Take Snapshot**.
- 2 Enter the name of the snapshot and any notes and click **OK**.

The snapshot is created.

Revert to a Snapshot

You can restore the virtual machine to the specific time when you took a snapshot. The current disk, settings, and memory states are discarded, and the virtual machine reverts to the disk, settings, and memory states of the snapshot.

Procedure

- 1 In the Commands section of the virtual machine's **Summary** tab, expand the Snapshot command (if it is not already expanded) and click **Manage Snapshots**.
- 2 In the Snapshots for <virtual_machine> window, select the snapshot to revert to, and click **Revert to snapshot**.
- 3 Click **Revert** in the confirmation dialog box.

You can also configure a virtual machine to automatically revert to a snapshot or ask you whether to revert to the snapshot whenever you power off the virtual machine. See [“Set Snapshot Power Off Options,”](#) on page 59.

Remove a Snapshot

Removing a snapshot writes the contents of the snapshot to the virtual disk. This action does not destroy any data in the virtual machine. Subsequently, any changes that you make when you run the virtual machine are written to the virtual disk.

Removing a snapshot when the virtual machine is powered off can take a long time, depending on the size of the snapshot file.

Procedure

- 1 Power off the virtual machine.
- 2 In the Commands section of the virtual machine's **Summary** tab, expand the Snapshot command (if it is not already expanded) and click **Manage Snapshots**.
- 3 In the Snapshots for <virtual_machine> window, select the snapshot and click **Delete Snapshot**.
- 4 Click **Delete** in the confirmation dialog box.

The snapshot is deleted.

Set Snapshot Power Off Options

You can have a virtual machine automatically revert to a snapshot or ask you whether to revert whenever you power off the virtual machine.

Reverting to a snapshot discards all changes. For example, an instructor might discard student answers for a computer lesson when a virtual machine is powered off at the end of class.

Procedure

- 1 In the Commands section of the virtual machine's **Summary** tab, click **Configure VM**.
- 2 Click the **Snapshot** tab.

- 3 In the When powering off section, select the snapshot behavior of the virtual machine when you power it off.

Option	Action
Just power off	Powers off without making any changes to the snapshot.
Revert to snapshot	Reverts to the current snapshot, so that the virtual machine always starts in the state it was in when the current snapshot was taken.
Ask me	When you power off a virtual machine, you are prompted to specify whether you want to power off or revert to the current snapshot.

- 4 Click **OK**.

The snapshot power off options are now configured.

Troubleshooting vSphere Web Access Errors

7

If you encounter problems when you run vSphere Web Access, you can use a troubleshooting scenario to fix the problem.

This chapter includes the following topics:

- [“Browser Service Unavailable Error 503,”](#) on page 61
- [“VMware Remote Console Does Not Load in Internet Explorer,”](#) on page 62
- [“VMware Remote Console Does Not Load in Firefox,”](#) on page 63
- [“Problems Installing Software on a Guest Operating System,”](#) on page 63
- [“Problems Performing Virtual Machine Power Operations,”](#) on page 63
- [“Unsupported Version of Firefox,”](#) on page 64
- [“Web Proxy Does Not Support IPv6 Addresses,”](#) on page 64

Browser Service Unavailable Error 503

Your browser might show an error saying that the vSphere Web Access service is unavailable.

Problem

vSphere Web Access does not open and the browser shows the 503 Service Unavailable error.

Cause

The vSphere Web Access service on the ESX host or vCenter Server is not configured to run automatically or failed to start properly.

Solution

Start vSphere Web Access service on your ESX host or vCenter Server instance.

ESX	<ol style="list-style-type: none"> 1 Log in to your ESX service console. 2 Enter service vmware-webAccess status to check the status of the host's vSphere Web Access service. 3 If the vSphere Web Access service is stopped, enter service vmware-webAccess start. <p>The vSphere Web Access service is now running on the ESX host.</p>
vCenter Server	<ol style="list-style-type: none"> 1 Log in to your vCenter Server instance. 2 In the vCenter Server Desktop, right-click My Computer and select Manage. <p>The Computer Management window appears.</p> <ol style="list-style-type: none"> 3 Expand Services and Applications and select Services. 4 Locate VMware VirtualCenter Management Webservices on the list and check whether the service is running. 5 If the service is not running, right-click VMware VirtualCenter Management Webservices and select Start. <p>The vSphere Web Access service is now running on vCenter Server.</p>

VMware Remote Console Does Not Load in Internet Explorer

If the Console does not load properly in your Microsoft Internet Explorer browser, you might need to troubleshoot the plug-in installation.

Problem	Solution
Old plug-in version	<ol style="list-style-type: none"> 1 In Windows, select Start > Settings > Control Panel > Add or Remove Programs. 2 In the list of programs, click VMware Remote Console Plug-in. 3 Click Click here for support information to see the version of the VMware Remote Console Plug-in. <p>The Version column for VMware Remote Console Plug-In should show 2.5.0.x.</p> <p>If any earlier version number appears, click Remove.</p> <ol style="list-style-type: none"> 4 Reinstall the plug-in.
Plug-in installation error	<ol style="list-style-type: none"> 1 Quit Internet Explorer. 2 Launch Internet Explorer again. 3 In the Internet Explorer window, type the vSphere Web Access URL. https://<vmwarehost.yourdomain.com>/ui 4 Select a virtual machine from the Virtual Machines list. 5 Click the Console tab. 6 When you are prompted to install the plug-in, click OK. <p>After the installation is complete, restart Internet Explorer.</p>

VMware Remote Console Does Not Load in Firefox

If VMware Remote Console does not load properly in your Mozilla Firefox browser, begin by troubleshooting the plug-in installation.

Problem	Solution
Old version of VMware Remote Console	<ol style="list-style-type: none"> In Firefox, select Tools > Add-ons. The VMware Remote Console plug-in should be version 2.5.0.x. If you have an earlier version, reinstall the plug-in.
VMware Remote Console installation error	<ol style="list-style-type: none"> Quit Firefox. Restart Firefox. Type the vSphere Web Access URL. https://<vmwarehost.yourdomain.com>/ui Select a virtual machine from the Virtual Machines list. Click the Console tab. When you are prompted to install the plug-in, click OK. After the installation is complete, restart Firefox.

Problems Installing Software on a Guest Operating System

Installing software on a guest operating system in vSphere Web Access might cause problems.

Problem	Cause	Solution
Guest operating system does not recognize installation media	ESX cannot access installation media	Make sure that ESX can access the media used for installing the software. Verify that the virtual machine has access to the CD-ROM drive, ISO image file, or floppy drive, as needed.
ESX stops responding when running applications	Enabled acceleration in the virtual machine causes the application to slow down. VMware recommends disabling acceleration only for passing the problem of running the program. After you pass the point where the program encountered problems, enable the acceleration option again.	<ol style="list-style-type: none"> Click the Summary tab of the virtual machine. In the Commands section, select Configure VM. In the VM Configuration window, click the Advanced tab and select the Disable acceleration checkbox.
Software Activation Key is invalid	Some applications use a product activation feature that creates a key. The key is based on the virtual hardware in the virtual machine where it is installed. Changes in the configuration of the virtual machine might require you to reactivate the software.	To minimize the number of significant changes in the virtual hardware, set the memory size and install VMware Tools.

Problems Performing Virtual Machine Power Operations

If you have problems performing power operations on a selected virtual machine, your Linux distribution might be missing libraries.

Problem

You cannot power on a virtual machine on your ESX host.

Cause

Libraries are missing in your Linux distribution.

Solution

To troubleshoot the issue, you must install the missing libraries.

- 1 Make sure that you have a dependency checker, such as `ldd` against `libmks.so`, `viewer`, and `remotemks` binaries.
- 2 Use the following commands to determine the missing libraries.

```
cd ~/.mozilla/plugins
ldd ./libmks.so | grep not
ldd ./viewer | grep not
ldd ./remotemks | grep not
```

- 3 Examine the output for missing libraries.
If these steps produce no output, all of the required libraries are available.
- 4 Install any libraries that are indicated as missing.

Unsupported Version of Firefox

You might have problems if you are using a version of Firefox that does not support running vSphere Web Access.

Problem

Firefox does not open vSphere Web Access.

Cause

Several causes might trigger this problem.

- Your Mozilla Firefox version does not support GTK.
- Your Mozilla Firefox browser installation was included in your Linux distribution. Some distributions package Firefox incorrectly and do not work with vSphere Web Access.

Solution

Download and install the latest version of Firefox from the Mozilla Web site.

Web Proxy Does Not Support IPv6 Addresses

If your ESX host or vCenter Server has an IPv6 address, your Web browser might show an error message and you cannot open vSphere Web Access.

Problem

You cannot open vSphere Web Access when your ESX host or vCenter Server has an IPv6 address. The Web browser might show the message `ERROR The requested URL could not be retrieved, While trying to retrieve the URL: http://<host or server name>:<port>`.

Cause

Your Web proxy does not support IPv6 addresses.

Solution

You can verify whether your Web proxy supports IPv6 addresses or disable the proxy in your Web browser application. [Table 7-1](#) shows how to stop using a Web proxy in your browser.

Table 7-1. Disable Your Web Proxy in Internet Explorer and Firefox

Browser	Action
Internet Explorer	<ol style="list-style-type: none"> 1 Select Tools > Internet Options. 2 Click the Connections tab and click LAN settings. 3 Deselect the Use a proxy server for your LAN check box and click OK.
Firefox	<ol style="list-style-type: none"> 1 Select Tools > Options. 2 Select the Advanced tab and select the Network subtab. 3 Click Settings, select the No proxy option, and click OK.

Index

A

- adding hardware
 - CD/DVD drive **50**
 - disk drive **51**
 - floppy drive **51**
 - hard disk **49, 50**
 - network adapter **50**
 - output parallel port **54**
 - output serial port **52**
 - parallel port **54**
 - physical parallel port **54**
 - physical serial port **52**
 - serial port **52**
 - USB controller **55**
- advanced settings
 - adding parameter **46**
 - editing parameter **47**

B

- browsers, supported **11**

C

- CD/DVD drive
 - adding **50**
 - configuring **36**
 - removing **40**
- client devices
 - connecting **27**
 - connecting drive image files **27**
 - defined **27**
- configuring
 - CD/DVD drive **36**
 - disk drive **37**
 - floppy drive **37**
 - hard disk **37**
 - memory allocation **36**
 - network adapter **39**
 - parallel port **39**
 - processors **35**
 - SCSI controller **38**
 - SCSI device **38**
 - serial port **40**
 - virtual machines **35**
- creating a virtual machine
 - adding a CD/DVD drive **20**
 - adding a floppy drive **22**

- adding a hard disk **18**
- adding a network adapter **20**
- adding a USB controller **23**
- browsing for an existing virtual disk **19**
- creating a new floppy image **23**
- customizing new virtual disk **18**
- reviewing the hardware configuration **23**
- selecting a guest operating system **17**
- specify memory amount and processors count **17**
- specify name and location **17**
- start wizard **16**
- using a floppy image **22**
- using a physical CD/DVD drive **20**
- using a physical floppy drive **22**
- using an ISO image for CD/DVD drive **21**

D

- disk drive
 - adding **51**
 - configuring **37**

E

- ESX host associated options **44**

F

- floppy drive
 - adding **51**
 - configuring **37**
 - removing **41**

G

- guest operating system
 - CD/DVD installation **24**
 - installing software **63**
 - ISO image install **24**
 - settings **43**

H

- hard disk
 - adding **49, 50**
 - configuring **37**
 - removing **41**
- hardware configuration
 - adding hardware **49**
 - CD/DVD drive **36**

- CD/DVD drive with client media **36**
- CD/DVD drive with host media **36**
- disk drive **37**
- floppy drive **37**
- floppy drive with client media **37**
- floppy drive with host media **37**
- hard disk **37**
- memory **36**
- network adapter **39**
- parallel port **39**
- processors **35**
- SCSI controller **38**
- SCSI device **38**
- serial port **40**
- hardware requirements **10**

L

- logging in **14**
- logging out **14**

M

- memory configuration **36**

N

- named pipe **53**
- network adapter
 - adding **50**
 - configuring **39**
 - removing **42**

O

- operating systems, supported **10**
- output parallel port, adding **54**
- output serial port, adding **52**

P

- parallel port
 - adding **54**
 - configuring **39**
 - removing **42**
- physical parallel port, adding **54**
- physical serial port, adding **52**
- pipe, named **53**
- power off, snapshot options **59**
- power settings **43**
- processors **35**

R

- runtime settings **46**

S

- SCSI controller **38**

- SCSI device
 - adding **54**
 - configuration **38**
 - removing **41**
- serial port
 - adding **52**
 - configuring **40**
 - removing **42**
- shrink virtual disks **29**
- shutdown settings, virtual machine **44**
- snapshot
 - conflicting activities **58**
 - logging changes **58**
 - power-off options **59**
 - removing **59**
 - reverting to **59**
 - taking **58**
 - understanding **57**
- startup and shutdown settings, virtual machine **44**
- startup settings, virtual machine **44**
- supported operating systems **10**
- system requirements
 - browser requirements **11**
 - hardware requirements **10**
 - operating system requirements **10**

T

- troubleshooting
 - error 503 **61**
 - installing software on a guest operating system **63**
 - power operations **63**
 - unsupported Firefox version **64**
 - VMware Remote Console installation **62, 63**
 - Web proxy does not support IPv6 **64**

U

- USB controller, adding **55**

V

- virtual disk shrinking **29**
- virtual machine
 - adding **15**
 - advanced settings **45**
 - alarms **30**
 - changing power state **33**
 - creating **16**
 - deleting **33**
 - Desktop shortcut **32**
 - ESX host associated options **44**
 - events **30, 31**
 - generating shortcuts **31**

- memory configuration **36**
- power settings **43**
- runtime settings **46**
- settings **43**
- startup and shutdown settings **44**
- tasks **30**
- upgrading hardware version **32**
- web shortcut **31**
- virtual machine name **43**
- VMware Remote Console
 - hide the toolbar **26**
 - installing in Firefox **25**
 - installing in Internet Explorer **25**
 - keyboard shortcuts **28**
 - make the toolbar always visible **26**
 - powering off virtual machines **28**
 - quitting **27**
 - resetting virtual machines **28**
 - running in a separate window **26**
 - running in full screen **26**
 - send Ctrl+Alt+Delete **28**
 - starting **26**
 - suspending virtual machines **28**
 - troubleshooting a virtual machine **28**
 - view log **28**
- VMware Tools
 - installing **28**
 - property settings in Windows **29**
 - running in Windows **29**
 - starting in Linux, Solaris or FreeBSD **29**
 - upgrading **29**
- vSphere Web Access features **9, 10**
- vSphere Web Access service
 - running on ESX **13**
 - running on vCenter Server **14**

