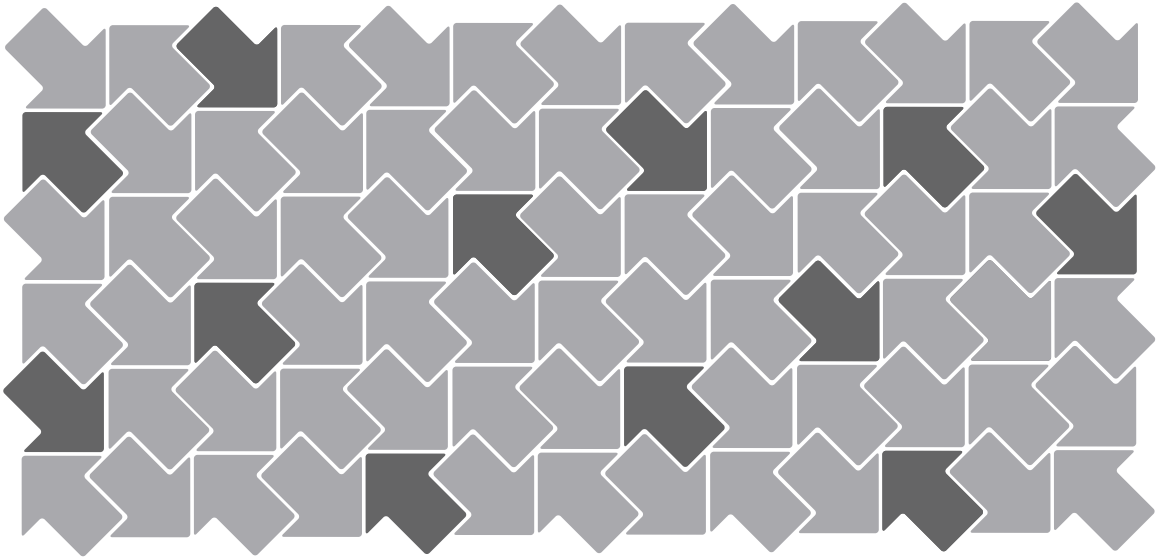
Virtual Infrastructure Web Access Administrator's Guide

ESX Server 3.0.1 and VirtualCenter Server 2.0.1



vmware®

Virtual Infrastructure Web Access Administrator's Guide
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Contents

Preface

This preface describes the contents of the *Virtual Infrastructure Web Access Administrator's Guide* and provides pointers to VMware® technical and educational resources.

This preface contains the following topics:

About This Book

This manual, the *Virtual Infrastructure Web Access Administrator's Guide*, provides information on how to configure virtual machines for ESX Server and VirtualCenter Server.

Revision History

This manual is revised with each release of the product or when necessary. A revised version can contain minor or major changes. Table P-1 provides you with the revision history of this manual.

Table P-1. Revision History

Revision	Description
20060615	ESX Server 3.0 and VirtualCenter 2.0 version of the *Virtual Infrastructure Web Access Administrator's Guide*. This is the first edition of this manual.
20060925	ESX Server 3.0.1 and VirtualCenter 2.0.1 version of the *Virtual Infrastructure Web Access Administrator's Guide*. This edition includes minor changes to virtual hardware configuration information.

Intended Audience

The information presented in this manual is written for experienced system administrators who are familiar with Windows or Linux virtual machine technology and datacenter operations.

Document Feedback

If you have comments about this documentation, submit your feedback to:

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VMware Infrastructure Documentation

The VMware Infrastructure documentation consists of the combined VirtualCenter and ESX Server documentation set.

You can access the most current versions of this manual and other books by going to:

http://www.vmware.com/support/pubs

Conventions

Table P-2 illustrates the typographic conventions used in this manual.

Table P-2. Conventions Used in This Manual

Style	Elements
Blue (online only)	Cross-references and email addresses
Blue boldface (online only)	Links
Black boldface	User interface elements such as button names and menu items
`Monospace`	Commands, filenames, directories, and paths
`Monospace bold`	User input
Italic	Document titles, glossary terms, and occasional emphasis
< Name >	Variable and parameter names

Abbreviations Used in Graphics

The graphics in this manual use the abbreviations listed in Table P-3.

Table P-3. Abbreviations

Abbreviation	Description
VC	VirtualCenter
VI	Virtual Infrastructure Client

Table P-3. Abbreviations

Abbreviation	Description
server	VirtualCenter Server
database	VirtualCenter database
host*n*	VirtualCenter managed hosts
VM#	Virtual machines on a managed host
user#	User with access permissions
dsk#	Storage disk for the managed host
datastore	Storage for the managed host
SAN	Storage area network type datastore shared between managed hosts
tmplt	Template

Technical Support and Education Resources

The following sections describe the technical support resources available to you.

Self-Service Support

Use the VMware Technology Network (VMTN) for self-help tools and technical information:

- Product information – **http://www.vmware.com/products/**
- Technology information – **http://www.vmware.com/vcommunity/technology**
- Documentation – **http://www.vmware.com/support/pubs**
- VMTN Knowledge Base – **http://www.vmware.com/support/kb**
- Discussion forums – **http://www.vmware.com/community**
- User groups – **http://www.vmware.com/vcommunity/usergroups.html**

For more information about the VMware Technology Network, go to **http://www.vmtn.net**.

Online and Telephone Support

Use online support to submit technical support requests, view your product and contract information, and register your products. Go to **http://www.vmware.com/support**.

Customers with appropriate support contracts should use telephone support for the fastest response on priority 1 issues. Go to **http://www.vmware.com/support/phone_support.html**.

Support Offerings

Find out how VMware support offerings can help meet your business needs. Go to **http://www.vmware.com/support/services**.

VMware Education Services

VMware courses offer extensive hands-on labs, case study examples, and course materials designed to be used as on-the-job reference tools. For more information about VMware Education Services, go to **http://mylearn1.vmware.com/mgrreg/index.cfm**.

Introducing VMware Virtual Infrastructure Web Access

1

This chapter introduces Virtual Infrastructure (VI) Web Access components and operations. This chapter contains the following topics:

What Is Virtual Infrastructure Web Access?

VI Web Access is a browser-based application designed to manage virtual machines on ESX Server and VirtualCenter deployments. This version of VI Web Access focuses on virtual machine management, and pays attention to:

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

The VI Web Access interface provides a powerful overview of all the virtual machines on an ESX Server system and VirtualCenter Server. Using Virtual Infrastructure Web Access to manage virtual machines, you can:

- View hosts and the virtual machine details using a Web browser
- Perform power operations on virtual machines
- Edit a virtual machine's configuration and hardware
- Generate Remote Console URLs that users can utilize to access their virtual machines
- Interact with the guest operating systems running within the virtual machines
- Access ESX Server hosts and VirtualCenter Servers from Linux systems

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

Key Features

The key features of VI Web Access are described below.

Virtual Machine Management

Users can access virtual machine status information and power controls by connecting directly to an ESX Server host or a VirtualCenter Server.

Users can interact with virtual machines using the keyboard and mouse in window or full screen mode from any compatible web browser.

Remote Console URLs

Users can share virtual machines with customized controls and environments using ordinary Web browser URLs.

Each URL provides direct access to a specific virtual machine from supported Web browsers.

Usability

Administrators can provide end users with access to virtual machines.

Users can access virtual machines on ESX Server hosts and VirtualCenter Servers without installing the Virtual Infrastructure client.

Users and Administrators can use VI Web Access to access ESX Server hosts and VirtualCenter Servers from both Linux and Windows systems.

Client devices allow people to use Floppy and CD/DVD Drives from their own computers to install software or copy data.

Simplified Remote Console Use

People can complete their work without distractions by customizing remote console URLs that present only as many user interface controls as necessary.

System Requirements and Web Browser Configuration

2

This chapter introduces VI Web Access components and operations. This chapter contains the following topics:

Virtual Infrastructure Web Access Requirements

The following sections outline the system and browser requirements for using VI Web Access:

System Requirements

PC Hardware

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

Operating Systems

Windows

- 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 2 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

- Linux kernel 2.2.14 or higher
- glibc 2.3.2 or higher
- XFree86-3.3.6 or higher
- gtk+2.0 or higher
- fontconfig (also known as xft)
- libstdc++5 or higher

Browser Requirements

To access VMware Virtual Infrastructure Web Access, you should be running one of the following:

- Internet Explorer 6.0
- Mozilla Firefox 1.0.8 or higher for Microsoft Windows
- Mozilla Firefox 1.0.8 or higher for Linux

NOTE Other browsers are not actively excluded, but VMware has certified VI Web Access with only the browsers listed above. Please refer to your browser vendor's own documentation for additional requirements. For the best experience, make sure your browser includes all of the security and stability updates recommended by its vendor.

Installing Virtual Infrastructure Web Access

VI Web Access is automatically installed when ESX Server is installed. On VirtualCenter Server, VI Web Access can be installed from the VirtualCenter Server Windows setup package.

Running and Configuring Virtual Infrastructure Web Access Service

To connect to an ESX Server host or VirtualCenter Server with VI Web Access, the VI Web Access service must be running on the host or server. VI Web Access connections are available by default with ESX Server and VirtualCenter Server.

Setting Virtual Infrastructure Web Access Passwords

Administrators must have a valid user name and password to access ESX Server hosts and VirtualCenter Servers using VI Web Access. The password defaults are as follows:

- **ESX Server** — The default user is root. The root password is configured during the installation of ESX Server.
- **VirtualCenter Server** — The default user is Administrator. The Administrator password is configured during the installation of VirtualCenter Server. Administrators can add users and groups to allow users access to VI Web Access.

For more information on setting passwords during installation, refer to the *VMware ESX Server Installation Guide*.

Installing the VMware Virtual Infrastructure Web Access Plug-In

To run VI Web Access, you must install the VMware Virtual Infrastructure plug-in. To install VMware Virtual Infrastructure ActiveX Control in Microsoft Internet Explorer

1 In the Internet Explorer window, type the VI Web Access URL:

<https://vmwarehost.yourdomain.com/ui>

2 Log in to VI Web Access using the user name and password for the host to which you are connecting.

3 Select a virtual machine from the Virtual Machines list.

4 Click the **Console** tab.

If prompted, click **Install** in the pop-up box. You may need to refresh your browser after installation.

To install the VMware Virtual Infrastructure plug-in in Mozilla Firefox for Linux and Windows

1 In the Firefox window, type the VI Web Access URL:

<https://vmwarehost.yourdomain.com/ui>

2 Log in to VI Web Access using the user name and password for the host to which you are connecting.

3 Select a virtual machine from the **Virtual Machines** list.

4 Click the **Console** tab.

5 Click **Install Plugin**.

The Plugin dialog box appears.

6 Click **Edit Options**.

7 Click **Allow**.

8 Click **Close**.

9 Click **Install Plugin**.

The software installation dialog box appears.

10 Click **Install Now**.

11 After the installation is complete, choose **View** > **Reload** to reload the page.

Troubleshooting

The following section walks you through common VI Web Access troubleshooting scenarios.

Troubleshooting Your VI Web Access Connection

If you are unable to connect to your ESX Server host using VI Web Access, you might need to restart the VI Web Access service on your host.

To troubleshoot VI Web Access service on an ESX Server host

1 Log directly into your ESX Server service console.

2 Enter `service vmware-webAccess status` to check the status of the host's VI Web Access service.

3 If VI Web Access service is stopped, enter `service vmware-webAccess start`.

If the **Console** does not load properly, you may need to troubleshoot the plug-in installation.

To check the plug-in version in Mozilla Firefox

1 Go to `about:plugins` in the browser

2 **VMware WebCenter Remote MKS Plug-in** should show version 2.0.1.0

3 If any other version number appears, you must re-install the plug-in

To check the plug-in version in Microsoft Internet Explorer

1 Go to **Tools** > **Internet Options**.

2 Click **Settings**.

3 Click **View Objects**.

4 The **Version** column for **QuickMksAxCtl** should show 2,0,1,0

5 If any other version number appears, right click **QuickMksAxCtl**, and select **Remove**.

6 Re-install the plug-in.

To troubleshoot the plug-in installation in Mozilla Firefox

1 Quit Firefox. Choose **File** > **Quit**.

2 Launch Firefox again.

3 In the Firefox window, type the VI 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**.

7 After the installation is complete, choose **View** > **Reload** to reload the page.

To troubleshoot the plug-in installation in Microsoft Internet Explorer

1 Quit Internet Explorer. Choose **File** > **Close**.

2 Launch Internet Explorer again.

3 In the Internet Explorer window, type the VI 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**.

7 After the installation is complete, choose **View** > **Refresh** to reload the page.

Troubleshooting Virtual Machine Power Operations

There are several reasons why you might be unable to power on a virtual machine.

- You are missing the required libraries.

  To correct this problem, you must use a dependency checker such as ldd against libmks.so, viewer, and remotemks binaries. Take the following steps to determine the missing libraries.

  a cd into `~/.mozilla/plugins`

  b ldd `./libmks.so | grep not`

  c ldd `./viewer | grep not`

  d ldd `./remotemks | grep not`

  The output from steps b, c, and d indicate missing libraries. If these steps produce no output, all required libraries are available.

- You are running a non-GTK Mozilla browser.

To correct this problem, use a GTK-based Mozilla browser, available at **www.mozilla.org**.

- You are running a version of Firefox that came with your Linux distribution. Some distributions package Firefox incorrectly, and the resulting package does not work with VI Web Access.

  To correct this problem, get the latest version of Firefox from **www.mozilla.org**.

Getting Started with Virtual Infrastructure Web Access 3

This chapter guides you through the basic tasks you must complete to begin using VI Web Access.

This chapter includes the following topics:

Connecting to Virtual Infrastructure Web Access

After your user name and password are authorized by VI Web Access, the VI Web Access home page appears. The VI Web Access home page contains:

- High-level details about all the virtual machines on the server to which you are connected
- The option to access the details page for a virtual machine where you find information about virtual devices, configuration options, and a summary of recent Events

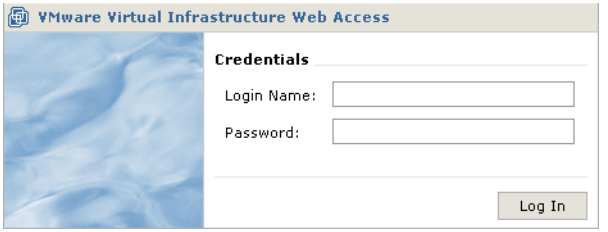
To log in to VI Web Access

1 Launch your Web browser.

2 Enter the URL of your ESX Server or your VirtualCenter Server installation:

```
https://<host or server name>/ui
```

The Web Access login page appears.



The login page contains fields for your user name and password.

3 Enter your user name and password, and click **Log In**.

The VI Web Access home page appears. For information about the Status Monitor page, see "Overview of the Virtual Infrastructure Web Access Default View" on page 25.

To log out of VI Web Access, see "Logging Out" on page 25.

NOTE If you have a pop-up blocker enabled, you will receive a message from VI Web Access saying that a pop-up blocker has been detected. You must disable your pop-up blocker in order to use client devices.

Logging Out

You can log out of VI Web Access by clicking the **Log Out** link found at the upper-right corner of every page. If you have active client device connections, you are prompted to confirm that you want to log out.

Logging out disconnects client devices that any of the virtual machines are using.

Overview of the Virtual Infrastructure Web Access Default View

The following sections describe the VI Web Access interface and components:

- "Workspace" on page 26
- "Menu Bar" on page 27
- "Toolbar" on page 30
- "Inventory Panel" on page 32

The VI Web Access default view contains a high-level view of the ESX Server or VirtualCenter Server that you are logged in to, including a list of all registered virtual machines and their status.

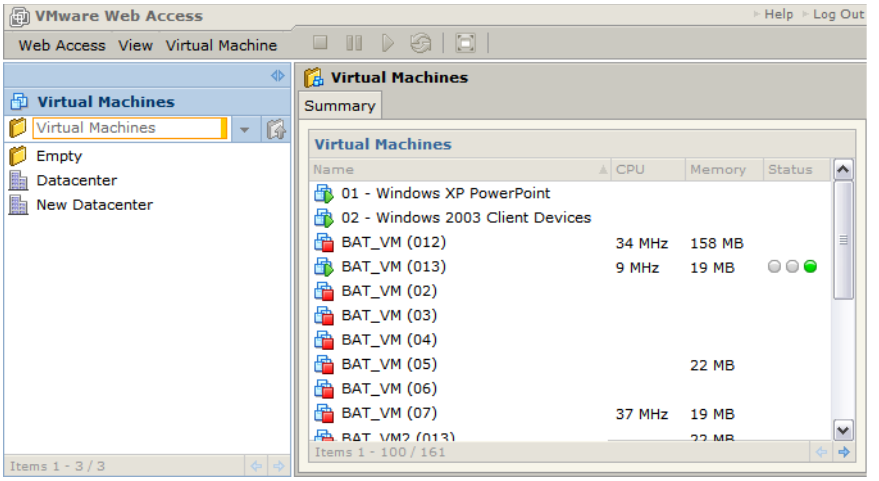


Figure 3-1. Web Access Home Page View

The VMware VI Web Access window is divided into four main sections:

- **Inventory panel** — Appearing on the left, this area displays a list of virtual machines (ESX Server) or the virtual machine hierarchical inventory

(VirtualCenter Server). Click a virtual machine to display information about the virtual machine and available options for the virtual machine.

- **Workspace** — Appearing on the right, this is the main part of the window. When the host (ESX Server) or a datacenter or folder (VirtualCenter Server) is selected in the inventory panel (see below), you can view a list of all the virtual machines contained by the selected object. When a virtual machine is selected, the workspace provides detailed information about various aspects of the virtual machine.
- **Menu bar** — The menu items along the top of the VI Web Access window provide access to common virtual machine operations, such as power on and enter full screen mode.
- **Toolbar** — These buttons along the top allow you to act on the selected virtual machine, offering one-click access to operations such as power on and enter full screen mode.

Workspace

When you select a virtual machine, the workspace provides detailed information about various aspects of the virtual machine. You can view a summary of the virtual machine's state, interact with the guest operating system using a remote mouse-keyboard-screen (MKS), and view details about Alarms (VirtualCenter), Events, and Tasks (VirtualCenter).

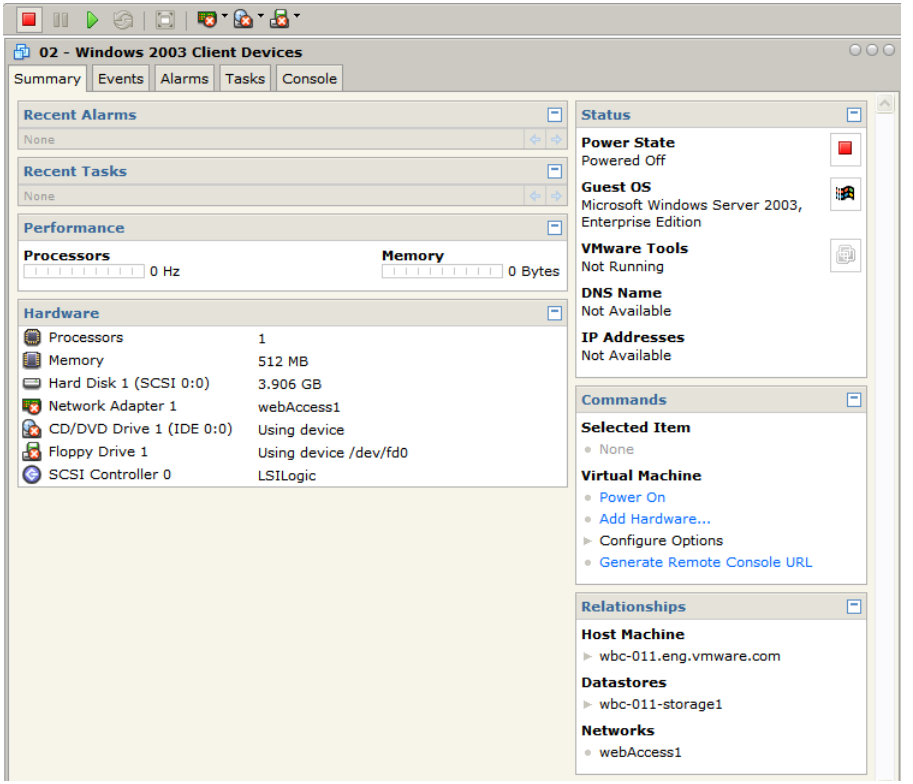


Figure 3-2. Virtual Machine Information Panel

Administrators can configure a URL for any virtual machine that displays only the Remote Console tab, allows or disables access to the virtual machine and its Workspace tabs, and that allows or disables access to the entire virtual machine inventory. See "Creating and Sharing Remote Console URLs" on page 42 for more information.

Menu Bar

The menu bar provides access to all commands.

Figure 3-3. Web Access Menu Bar

The menu bar options are:

- **Web Access menu** — Displays options relevant to VI Web Access.
- **View menu** —Controls which panes are visible.
- **Virtual Machine menu** — Is enabled only when a virtual machine is selected in the inventory panel.

The Web Access menu bar options are covered in the following sections:

- "Web Access Menu" on page 28
- "View Menu" on page 28
- "Virtual Machine Menu" on page 29

Web Access Menu

The **Web Access** menu lists general VI Web Access options for getting help and logging out.

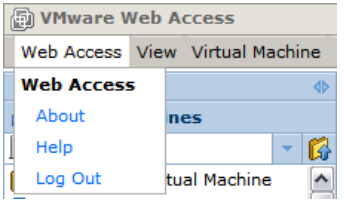


Figure 3-4. Web Access Menu

- **About** — Displays the Web Access version number, the ESX Server or VirtualCenter Server version number, and VMware copyright information.
- **Help** — Displays the online help contents.
- **Log Out** — Logs you out of VI Web Access.

View Menu

The virtual machine **View** menu lists options for managing inventory and tab views on the VI Web Access home page.

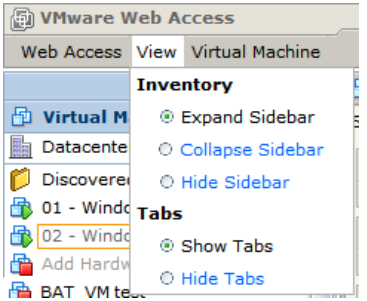


Figure 3-5. Web Access View Menu

Inventory View Options

The inventory panel displays a list of inventory objects. Display options include:

- **Expand Sidebar** — Expands the inventory panel.
- **Collapse Sidebar** — Collapses the inventory panel. When collapsed, the inventory panel is a strip along the left side of the VI Web Access window. Click the arrows in the strip to expand or collapse the inventory panel.
- **Hide Sidebar** — Hides the inventory panel. When the inventory panel is hidden, you cannot access the inventory panel unless you deselect this view option.

Virtual Machine Tab View Options

The virtual machine tabs appear at the bottom of the information panel. Display options include:

- **Show Tabs** — Displays the Summary, Events, Alarms (VirtualCenter only), Tasks (VirtualCenter only), and Console tabs for the virtual machine.
- **Hide Tabs** — Hides the Summary, Events, Alarms (VirtualCenter only), Tasks (VirtualCenter only), and Console tabs for the virtual machine.

Virtual Machine Menu

The Virtual Machine menu lists options for managing the power state of a virtual machine and for viewing the console.

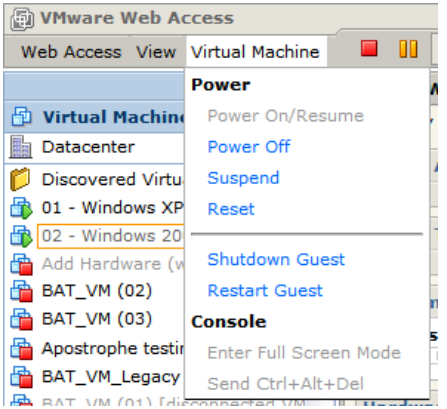


Figure 3-6. Web Access Virtual Machine Menu

The menu includes the following commands, some of which can be performed using the buttons and other visual elements of the management interface:

- **Power On**— Powers on a stopped virtual machine.
- **Resume** — Resumes a suspended virtual machine.
- **Power Off** — Powers off the virtual machine immediately. This is the same as turning off the power to a physical computer.
- **Suspend** — Suspends a powered-on virtual machine.
- **Reset** — Resets the virtual machine immediately. This is the same as pressing the reset button on a physical computer.
- **Shutdown Guest** —Shuts down the guest operating system.
- **Restart Guest** — Restarts the guest operating system and the virtual machine.
- **Enter Full Screen Mode** – Puts the virtual machine console in full screen mode.
- **Send Ctrl+Alt+Del** – Sends Ctrl+Alt+Del to the virtual machine.

Toolbar

The toolbar at the top of the VI Web Access page contains buttons you can click to power your virtual machines on and off.

Figure 3-7. Toolbar for Virtual Machine

The following table describes the toolbar actions.

Button	Actions
	Depending on how you have configured the power options for this virtual machine, this button either shuts down the guest operating system or powers off the virtual machine (see “Changing Power State Options” on page 103). When this icon is red, the virtual machine is powered off.
	Suspends a running virtual machine or resumes a suspended virtual machine. VMware Tools executes the script associated with this power state change, if any. When this icon is amber, the virtual machine is suspended.
	Powers on a stopped virtual machine or resumes a suspended virtual machine. VMware Tools executes the script associated with this power state change, if any. When this icon is green, the virtual machine is running.
	Depending on how you have configured the power options for this virtual machine, this button either restarts the guest operating system or resets the virtual machine (see “Changing Power State Options” on page 103).
	Enlarges the virtual machine display to cover the entire Web Access window. This option is enabled only when a virtual machine is running and the Console tab is selected.
	Takes you to the network adapter configuration page. A red X over the icon indicates that the network adapter is not connected.
	Takes you to the CD/DVD Drive configuration page. A red X over the icon indicates that the CD/DVD Drive is not connected.
	Takes you to the Floppy Drive configuration page. A red X over the icon indicates that the Floppy Drive is not connected.

Inventory Panel

This panel displays the virtual machine inventory. You can collapse and expand the inventory panel with a single click.

Administrators can configure a URL that does not show the inventory panel.

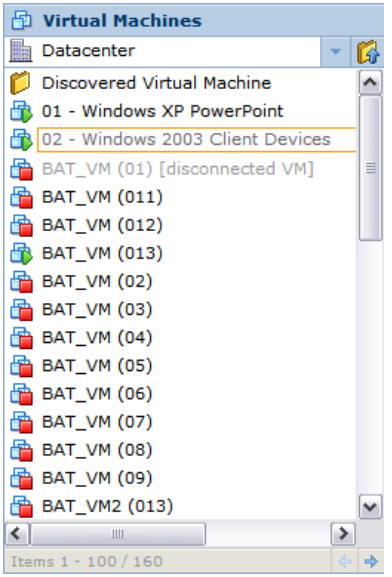


Figure 3-8. Virtual Machine Inventory

Using Virtual Infrastructure Web Access to Manage Virtual Machines

4

This chapter describes the various aspects of using VI Web Access to manage virtual machines. This chapter contains the following sections:

Summary, Events, Alarms, Tasks, and Console Views

The workspace, which appears on the right side of the VI Web Access display, displays information about the selected virtual machine divided into multiple tabs.

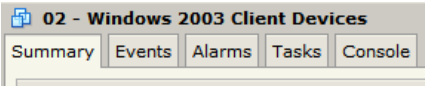


Figure 4-1. Virtual Machine > Summary, Events, Alarms, Tasks, and Console View

- **Summary** — Displays performance and status information. From this tab, you can modify the selected virtual machine's hardware and configuration options.
- **Events** — Displays events that occurred for the virtual machine. Select an event to see its details in the **Event Details** field.
- **Alarms** — Displays alarms. This tab is available only through VirtualCenter Server.
- **Tasks** — Displays activities and activity details. This tab is available only when using VI Web Access to connect to a VirtualCenter Server. Tasks can be initiated manually or scheduled using the VI Client. Select a task to see its details in the **Task Details** field.
- **Console** — Allows users to interact directly with the guest operating system. See "Using the Console" on page 38.

Viewing Summary Information About Virtual Machines

When you select the **Summary** tab for a virtual machine, VI Web Access displays a summary of the configuration information about that virtual machine.

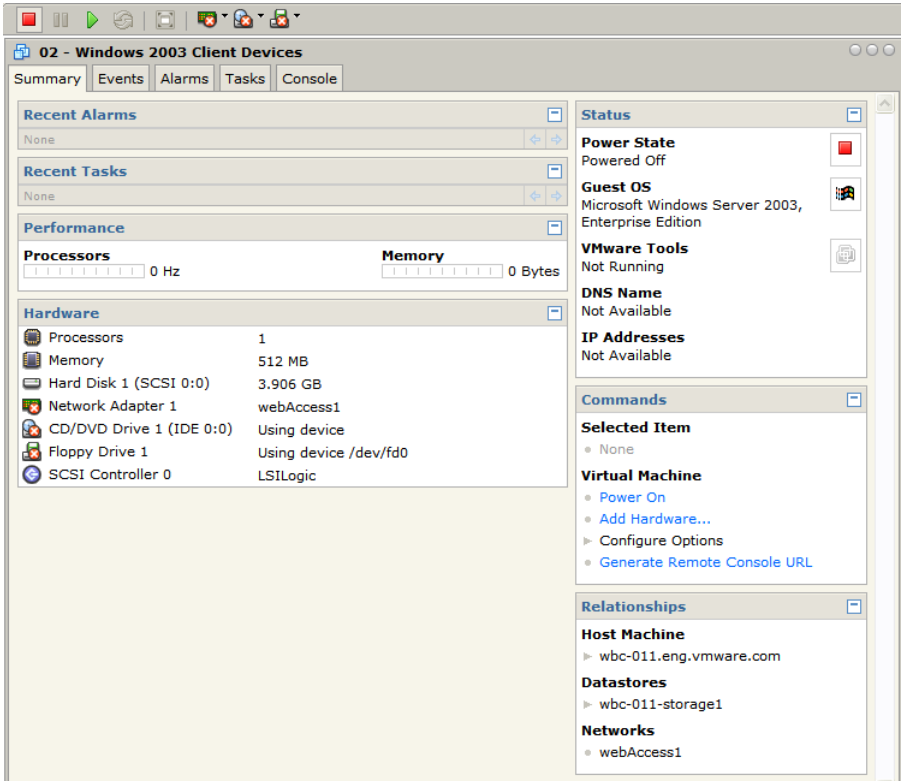


Figure 4-2. Virtual Machine > Summary Tab

The summary page contains the following information:

- Amount of server processor capacity that the virtual machine is currently using.
- Amount of server memory that the virtual machine is currently using.
- Current power state of the virtual machine: whether it is powered on, powered off, or suspended. For more information, see "Changing the Power State of a Virtual Machine" on page 42.
- Guest operating system installed in the virtual machine.
- VMware Tools status, indicating whether VMware Tools is installed and running. A link to install or upgrade VMware Tools will appear when Tools is not installed or needs to be upgraded to the latest version. For more information, see "Installing VMware Tools in the Guest Operating System" on page 41.
- IP address and DNS name of the virtual machine.

- Links to edit or remove the virtual machine's hardware. To change most options, you must power off the virtual machine. For more information, see "Editing the Hardware Configuration of a Virtual Machine" on page 47.
- Links to add hardware to the virtual machine. For more information, see "Adding Hardware to a Virtual Machine" on page 67.
- Links to edit the virtual machine's standard configuration options. To change most options, you must power off the virtual machine. For more information, see "Changing Virtual Machine Options" on page 102.
- Link to create a remote console URL of the virtual machine. For more information, see "Creating and Sharing Remote Console URLs" on page 42.
- Current relationships of the virtual machine: the name of the virtual machine's host, datastores, and networks.
- Recent Tasks for the virtual machine.
- Recent Alarms for the virtual machine, when you are using VI Web Access to connect to a VirtualCenter Server.

Viewing Virtual Machine Events

The Events tab is available when you select a virtual machine from the inventory panel.

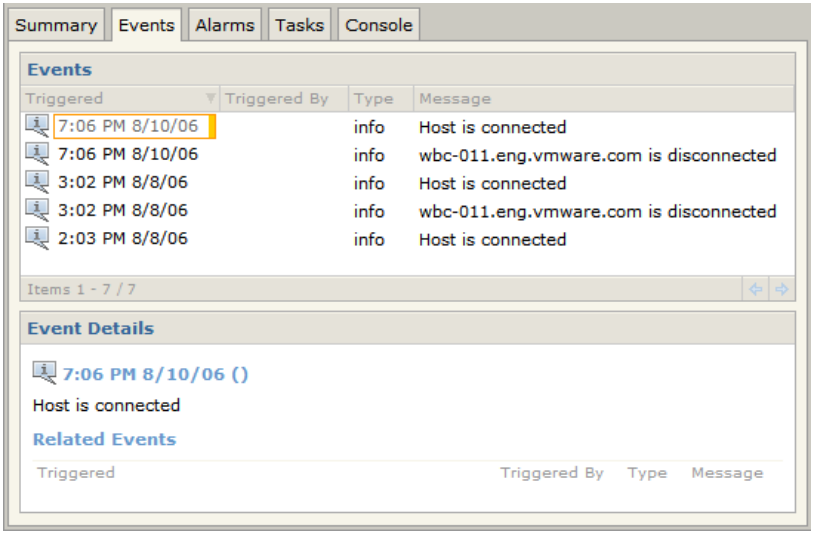


Figure 4-3. Virtual Machine > Events Tab

The **Events** list displays a sorted log of the most recent virtual machine transactions, such as questions ESX Server asks, errors, and other events like powering on or powering off the virtual machine.

You can sort events by clicking on the column headers. By default, events appear in reverse chronological order.

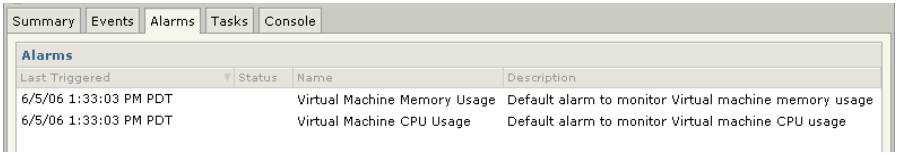
The event log draws its data from the log file for the virtual machine's configuration file. The log file is stored, by default, in the directory where the virtual machine is stored.

The **Events** tab content is described in the following table.

Field	Description
Triggered	Date and time the event occurred.
Triggered By	Entity that triggered the event.
Type	Type of event that occurred.
Message	Text explanation of action.

Viewing Virtual Machine Alarms

If you are using VI Web Access to connect to a VirtualCenter Server, the **Alarms** tab is available when you select a virtual machine from the inventory panel. Alarms are notifications that are triggered when specified events happen to a virtual machine, such as CPU usage exceeding the designated usage.

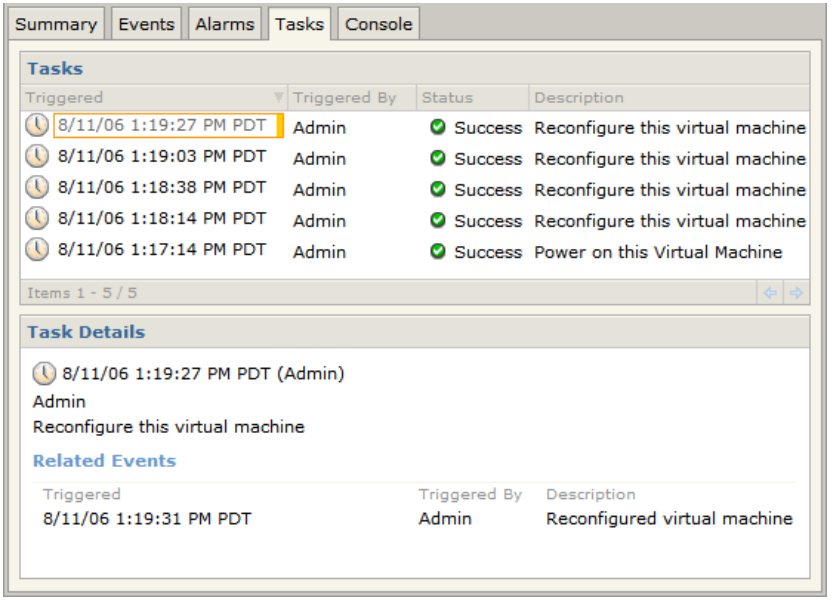


The **Alarms** tab content is described in the following table.

List Attribute	Description
Last Triggered	Date and time the alarm was most recently triggered.
Status	Severity of the alarm.
Name	Name of the alarm.
Description	Description of the alarm.

Viewing Virtual Machine Tasks

If you are using VI Web Access to connect to a VirtualCenter Server, the **Tasks** tab is available when you select a virtual machine from the inventory panel. Tasks are high-level actions, such as powering on a virtual machine, that are performed manually by a user or automatically on a schedule. Click a task's triggered date and time to display its details, including related events, in the **Task Details** section.



The **Task** tab content is described in the following table.

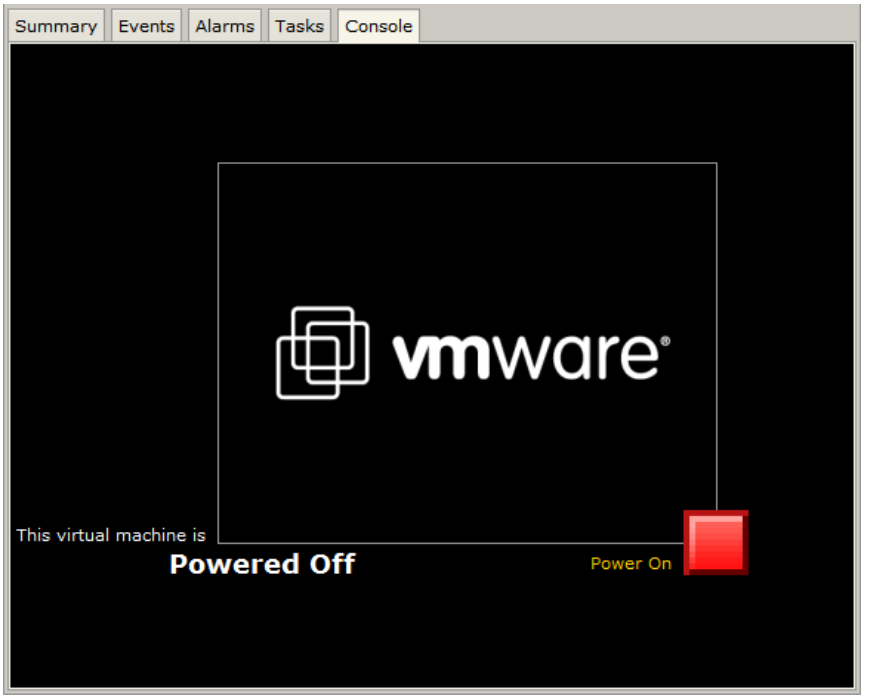
List Attribute	Description
Triggered	Date and time the task started.
Triggered By	User or entity that initiated the task.
Status	The state of the task: queued, in progress, error, or success.
Description	Description of the task.

Using the Console

The **Console** tab is available when you select a virtual machine from the inventory panel. If you need to interact with the guest operating system running in a virtual

machine, use the Console tab to connect remotely to the virtual machine's mouse, keyboard, and screen (MKS).

When a virtual machine is powered off, suspended, or not available, or if the MKS plug-in is not installed, the Console tab displays a message and possible actions for the virtual machine.



Virtual machine states include:

- **Powered Off** — Provides the option to power on the virtual machine.
- **Suspended** — Provides the option to resume the virtual machine.
- **Not Available** — Provides the option to try again.
- **Powering Off** – No options available.
- **Powering On** – No options available.
- **Suspending** – No options available.

When the virtual machine is powered on, the **Console** tab displays the MKS of the virtual machine.

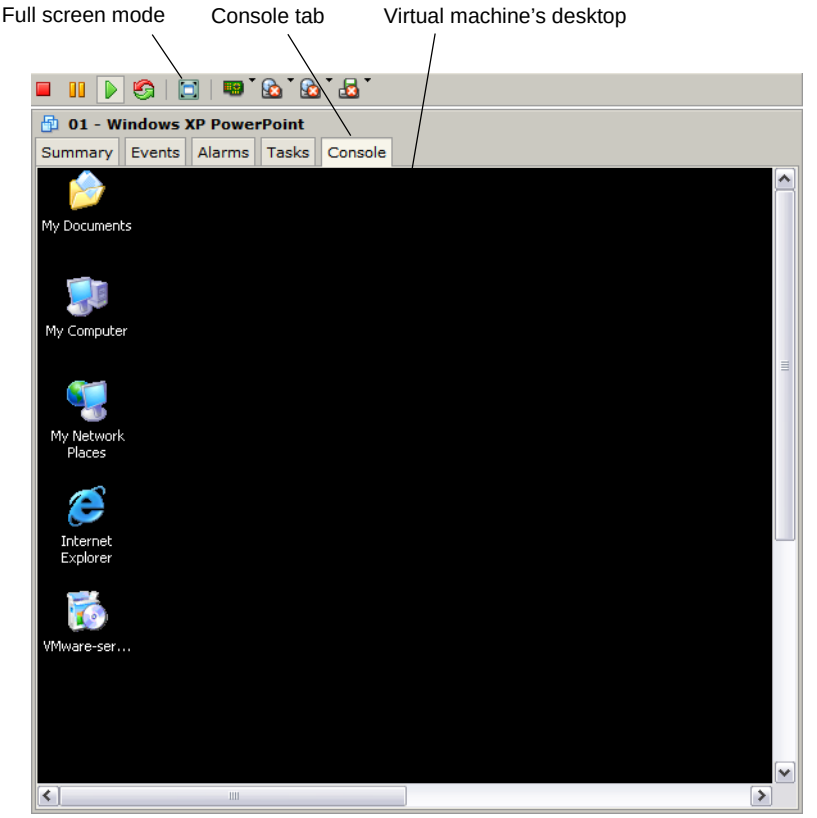


Figure 4-4. Inventory > Virtual Machine > Console Tab

To interact with the guest operating system using your mouse or keyboard, click the virtual machine's screen. To transfer control of your mouse and keyboard back to your computer, press **Ctrl** + **Alt**. If you have VMware Tools installed on the virtual machine, you can move the cursor in and out of the virtual machine to quickly switch mouse and keyboard control between the virtual machine and your computer.

Entering Full Screen Mode

When you select the **Console** tab, a full screen option is available. Select this option by clicking the full screen mode toolbar button ( ) or by pressing **Ctrl** + **Alt** + **Enter**. This option is enabled only when a virtual machine is running and the **Console** tab is selected.

To exit full screen mode, press and release **Ctrl + Alt**.

Installing VMware Tools in the Guest Operating System

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

Once your guest operating system is installed on a virtual machine, follow the directions below for installing or upgrading VMware Tools.

To install VMware Tools

1 In the status section of a virtual machine's summary, choose **Install VMware Tools**.

The VMware Tools installer has been inserted into your virtual machine's CD/DVD Drive.

2 Use the console to complete the installation.

This step connects the virtual machine's CD drive to an installation file on the ESX Server machine or the VirtualCenter Server. If autorun is enabled in your guest operating system (the default setting for Windows operating systems), a dialog box appears after a few seconds. It asks if you want to install VMware Tools. Click **Install** to launch the Installation wizard.

3 Click the **Console** tab.

4 Restart the guest operating system when prompted.

To upgrade VMware Tools

1 In the status section of a virtual machine's summary, click **Upgrade VMware Tools**.

The VMware Tools installer has been inserted into your virtual machine's CD/DVD Drive.

2 Use the Console to complete the installation.

3 In a Windows guest, you must restart the guest operating system to complete the upgrade.

Changing the Power State of a Virtual Machine

Depending on your permissions, you can use VI Web Access to change the power state of the virtual machine. To change a virtual machine's power state, click the button in the toolbar that indicates the desired power state.

Button	Description
	Powers off the virtual machine. Depending on how you have configured the power options for this virtual machine, ESX Server might shut down the guest operating system before powering off the virtual machine (see "Changing Power State Options" on page 103). When this icon is red, the virtual machine is powered off.
	Suspends a running virtual machine or resumes a suspended virtual machine. VMware Tools executes the script associated with this power state change, if any. When this icon is amber, the virtual machine is suspended.
	Powers on a stopped virtual machine or resumes a suspended virtual machine. VMware Tools executes the script associated with this power state change, if any. When this icon is green, the virtual machine is running.
	Resets the virtual machine. Depending on how you have configured the power options for this virtual machine, ESX Server might shut down the guest operating system before resetting the virtual machine (see "Changing Power State Options" on page 103).

NOTE Shutting down or restarting a guest operating system works only when VMware Tools is installed. Otherwise, the power is turned off or the virtual machine is reset exactly as if you had pushed the power or reset button on a physical machine. For information on installing VMware Tools, see "Installing VMware Tools in the Guest Operating System" on page 41.

Creating and Sharing Remote Console URLs

Using VI Web Access, you can create a remote console URL of a virtual machine using ordinary Web browser URLs. When creating a remote console URL, you can customize the VI Web Access user interface controls. Using remote console URLs, you can:

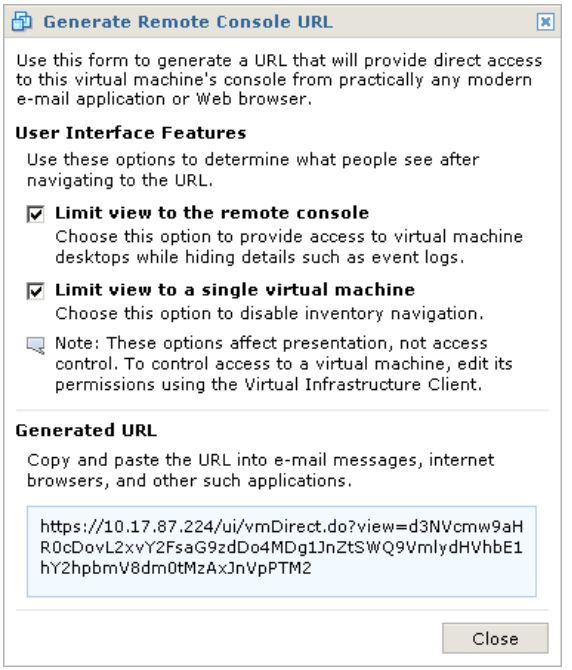
- Add the remote console URL to a list of favorite Web pages
- Share the remote console URL with one or more users in an e-mail message

NOTE Administrators wishing to test a remote console URL should do so using a different browser or computer. If the remote console URL is tested on the administrator's active browser session, all instances of that browser will need to be closed before the administrator will be able to log back in with full user interface capabilities.

To create a virtual machine remote console URL

1 In the status section of a virtual machine's summary, click **Generate Remote Console URL**.

The Generate Remote Console URL page appears.



2 Choose user interface features.

You can allow or disallow full inventory and Workspace tab viewing.

3 Copy the remote console URL for further use.

4 Click **Close** to return to the Summary tab.

Editing an Existing Virtual Machine's Configuration

5

This chapter describes the various aspects of using VI Web Access to configure virtual machines. This chapter contains the following sections:

Editing the Configuration of Existing Virtual Machines

To see more information about a virtual machine and to modify its configuration, click the virtual machine in the Inventory panel. The Summary tab displays the activities you can perform when viewing a virtual machine's details. These activities include:

- "Editing the Hardware Configuration of a Virtual Machine" on page 47
- "Adding Hardware to a Virtual Machine" on page 67
- "Changing Virtual Machine Options" on page 102

Understanding Permissions and Virtual Machines

Access to a virtual machine is based on the permissions you, as a user, are granted to the virtual machine's configuration file. Different permissions let you access virtual machines in different ways. These ways include:

- Browsing virtual machines
- Interacting with virtual machines
- Configuring virtual machines
- Administering virtual machines

Depending on your permissions and the state of the virtual machine, some options might not be available.

NOTE Permissions are configured using the Virtual Infrastructure Client. For more information, see the *VMware Infrastructure Basic System Administration Guide*.

Using Client Devices

With ESX Server 3, you can connect some virtual devices to physical devices or ISO images located on the client machine. This is useful if you would like users to be able to use physical drives on their local machines rather than on the host system, or if you would like the virtual machine to access an ISO image located on the client computer.

Client devices are currently supported for CD/DVD and Floppy Drives.

CAUTION When using client devices in a Linux guest, make sure that the device you are connecting to is not mounted or in use. If left mounted, the physical device will be unable to connect to the client device.

Editing the Hardware Configuration of a Virtual Machine

The **Hardware** list on the virtual machine Summary tab lists the virtual hardware in the virtual machine, such as Memory, Hard Disks, CD/DVD Drives, and Network Adapters. You can configure each hardware component, but in some cases the virtual machine must be powered off to edit all of the component's options.

Activities you can perform when editing the configuration of a virtual machine's hardware include:

Editing Processors

You can change the number of virtual processors used by your virtual machine.

To change the number of processors used

1 Select the virtual machine you want to modify from the inventory panel.

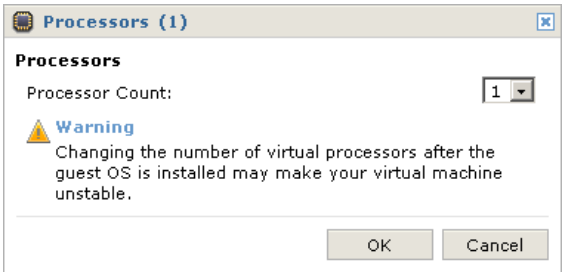
2 Make sure the virtual machine is powered off.

3 On the Summary page, click **Processors**.

The available processor configuration options appear under **Commands**.

4 Click **Edit**.

The processor configuration page appears.



5 Choose the number of processors you would like for the virtual machine from the **Processor Count** drop-down menu.

6 Click **OK** to save your changes and to return to the Summary tab.

Editing Memory Configuration

To edit Memory allocation

1 Select the virtual machine you want to modify from the inventory panel.

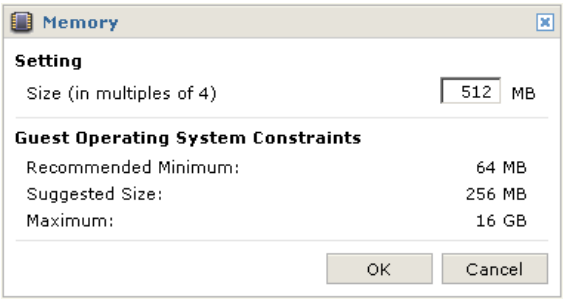
2 Make sure the virtual machine is powered off.

3 On the Summary page, click **Memory**.

The available Memory configuration options appear under **Commands**.

4 Click **Edit**.

The Memory device page appears.



5 To ensure that the virtual machine will boot, allocate at least the Recommended Minimum Memory.

6 Click **OK** to update the Memory setting and return to the Summary tab.

Editing or Removing a CD/DVD Drive

Virtual machines can access physical CD/DVD Drives on either the ESX Server host where the virtual machine is running or on your computer. They can access ISO images on the ESX Server file system or on remote datastores.

To edit an existing CD/DVD Drive

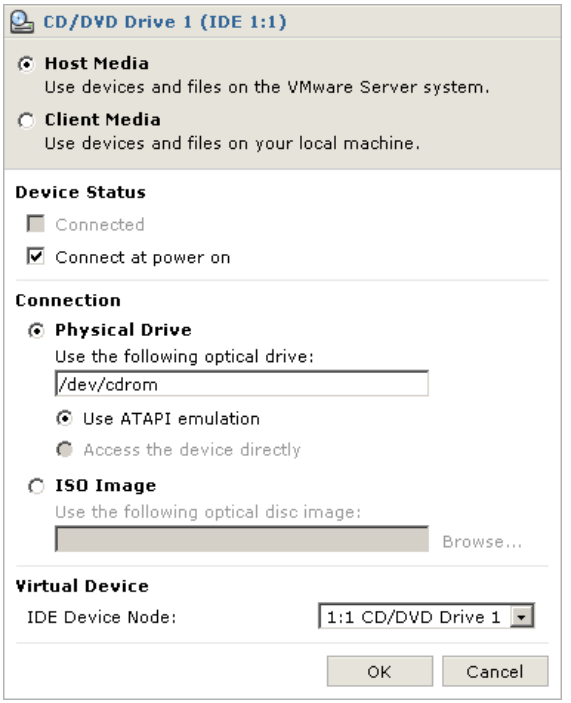
1 Select the virtual machine you want to modify from the inventory panel.

2 In the Summary page, click the CD/DVD Drive that you want to modify.

The available CD/DVD Drive configuration options appear under **Commands**.

3 Click **Edit**.

The CD/DVD Drive configuration page appears.



4 The media source machine is selected at the top of the dialog box. Select an action:

- To connect the CD/DVD Drive to the ESX Server devices or files, select **Host Media**.
- To connect the CD/DVD Drive to devices on your computer, click **Client Media**.

NOTE **Client Media** is supported on ESX Server 3 virtual machines only. For more information on client devices, see "Using Client Devices" on page 46.

The remainder of the dialog box contents changes to accommodate the capabilities of the selected media source. For example, virtual machines cannot connect automatically to client media while powering on. Consequently, the **Connect at power on** check box is disabled if the **Client Media** option is selected.

5 To connect this virtual machine to the server's CD/DVD Drive when the virtual machine is powered on, select **Connect at power on**.

6 Specify whether to connect to the server's CD/DVD Drive or to an ISO image. Select **Physical Drive** or **ISO Image**.

7 Enter the location of the drive in the **Physical Drive** field or the location of the ISO image in the **ISO Image** field.

For example, the server's CD drive could be `/dev/cdrom`.

8 Select the IDE device node from the **IDE Device Node** list.

9 Click **OK** to save your changes and return to the Summary tab.

NOTE When you click **OK** after connecting the drive to **Client Media**, VI Web Access launches a Device Status pop-up window. This window must remain open to keep the client device connected. Be sure to turn off pop-up blocking on your browser before connecting a drive to client media.

To remove an existing CD/DVD Drive

1 Select the virtual machine you want to modify from the inventory panel.

2 Make sure the virtual machine is powered off.

3 On the Summary page, click the CD/DVD Drive that you want to remove.

The available CD/DVD Drive configuration options appear under **Commands**.

4 Click **Remove**.

Editing or Removing a Floppy Drive

Use VI Web Access to edit Floppy Drives attached to virtual machines. Each virtual machine can access a physical Floppy Drive or a Floppy image file on the host machine or on the client machine where you are running your browser. You can connect only one Floppy Drive to each physical drive on the client computer. A device can be connected to only one virtual machine on a server at a time.

To edit an existing Floppy Drive

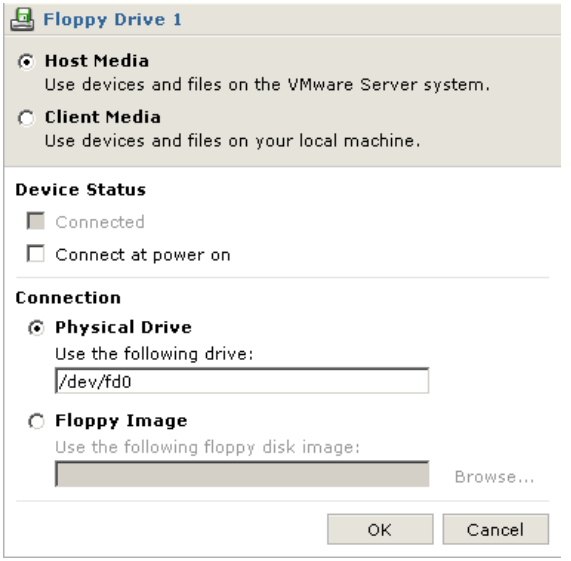
1 Select the virtual machine you want to modify from the inventory panel.

2 In the Summary page, click the Floppy Drive you want to remove.

The available Floppy Drive configuration options appear under **Commands**.

3 Click **Edit**.

The Floppy Drive configuration page appears.



4 Choose the media type for the Floppy Drive:

- **Host Media** – Connects to a device or file on the host system.
- **Client Media** – Connects to a device or file on the client system.

NOTE **Client Media** is supported on ESX 3 virtual machines only. For more information on client devices, see "Using Client Devices" on page 46.

5 To connect this virtual machine to the server's Floppy Drive, select **Connected**.

Only one virtual machine can connect to a given Floppy Drive at a time.

To connect this virtual machine to the server's Floppy Drive when the virtual machine is powered on, select **Connect at power on**.

6 To specify whether to connect to the server's Floppy Drive or to a floppy image, select **Physical Drive** or **Floppy Image**.

7 Enter the location of the drive or floppy image in the location field.

For example, the server's Floppy Drive could be `/dev/fd0`.

8 Click **OK** to save your changes and return to the Summary tab.

NOTE When you click **OK** after connecting the drive to **Client Media**, VI Web Access launches a Device Status pop-up window. This window must remain open to keep the client device connected. Be sure to turn off pop-up blocking on your browser before connecting a drive to client media.

To remove an existing Floppy Drive

1 Select the virtual machine you want to modify from the inventory panel.

2 Make sure the virtual machine is powered off.

3 On the Summary page, click the Floppy Drive you want to modify.

The available Floppy Drive configuration options appear under **Commands**.

4 Click **Remove** to remove the Floppy Drive from the virtual machine, or click **Delete from Disk** to remove the Floppy Image from the virtual machine and delete the file from the host computer.

Editing or Removing a Hard Disk

To edit an existing virtual disk on an ESX 3 virtual machine

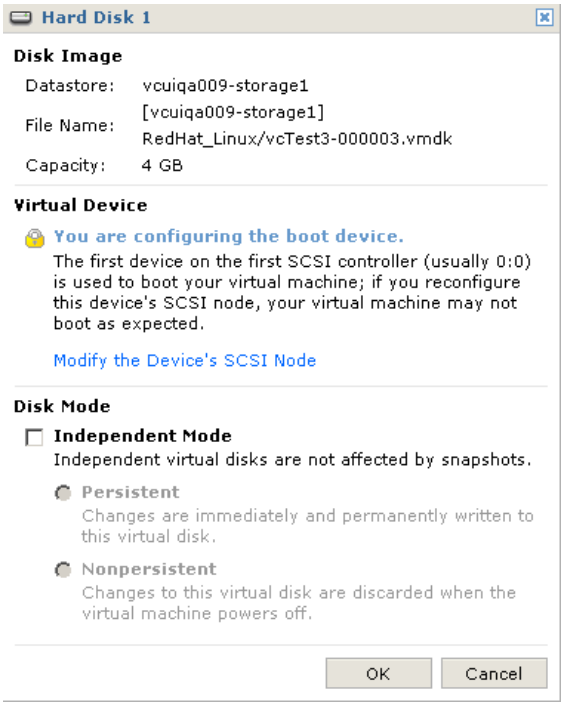
1 Select the virtual machine you want to modify from the inventory panel.

2 On the Summary page, click the Hard Disk you want to modify.

The Hard Disk options appear under **Commands**.

3 Click **Edit**.

The Hard Disk page appears.



4 Select the **SCSI Device Node** from the drop-down menu.

NOTE If the hard disk you are configuring is the boot device for this virtual machine, click **Modify the Device's SCSI Node** to change the SCSI Device node.

5 Choose whether to use the disk in **Independent Mode**.

6 If you chose to use the disk in Independent Mode, select **Persistent** or **Nonpersistent** disk mode:

- **Persistent** — Disks in persistent mode behave like conventional disk drives on your physical computer. All data written to a disk in persistent mode is written out permanently to the disk.
- **Nonpersistent** — Changes to disks in nonpersistent mode are not saved to the disks. Changes are lost when the virtual machine is powered off or reset.

Nonpersistent mode is convenient for users who always want to start with a virtual machine in the same state. Example uses include providing known environments for software test and technical support users, as well as demonstrating software.

7 Click **OK** to save your changes and return to the Summary tab.

To edit an existing virtual disk on an ESX 2.x virtual machine

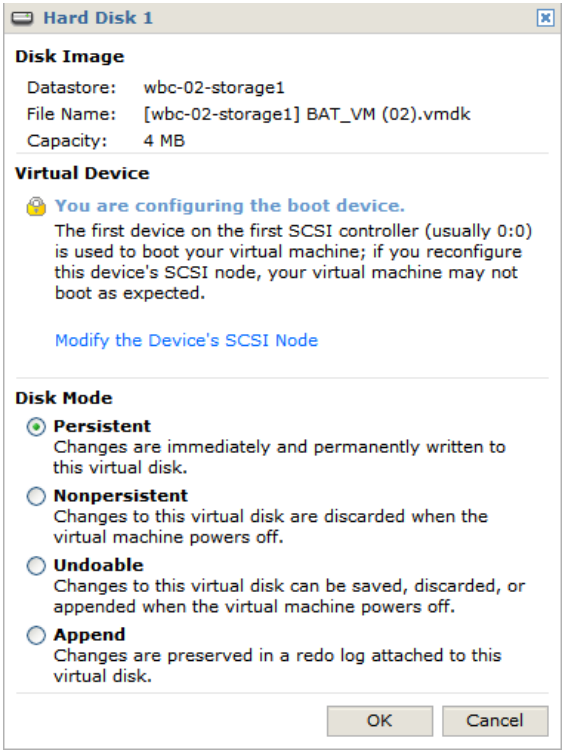
1 Select the virtual machine you want to modify from the inventory panel.

2 On the Summary page, click the Hard Disk you want to modify.

The Hard Disk options appear under **Commands**.

3 Click **Edit**.

The Hard Disk page appears.



4 Select the **SCSI Device Node** from the drop-down menu.

NOTE If the hard disk you are configuring is the boot device for this virtual machine, click **Modify the Device's SCSI Node** to change the SCSI Device node.

5 Choose the **Disk Mode**:

- **Persistent** — Disks in persistent mode behave like conventional disk drives on your physical computer. All data written to a disk in persistent mode are written out permanently to the disk.
- **Nonpersistent** — Changes to disks in nonpersistent mode are not saved to the disks, but are lost when the virtual machine is powered off or reset.

  Nonpersistent mode is for users who want to start with a virtual machine in the same state. Example uses include providing known environments for software test and technical support users, as well as demonstrating software.
- **Undoable** – Changes to disks in undoable mode can be saved, discarded, or appended when the virtual machine powers off.
- **Append** – Changes to disks in append mode are preserved in a redo log attached to the virtual disk.

6 Click **OK** to save your changes and return to the Summary tab.

To edit an existing system LUN disk on an ESX 3 virtual machine

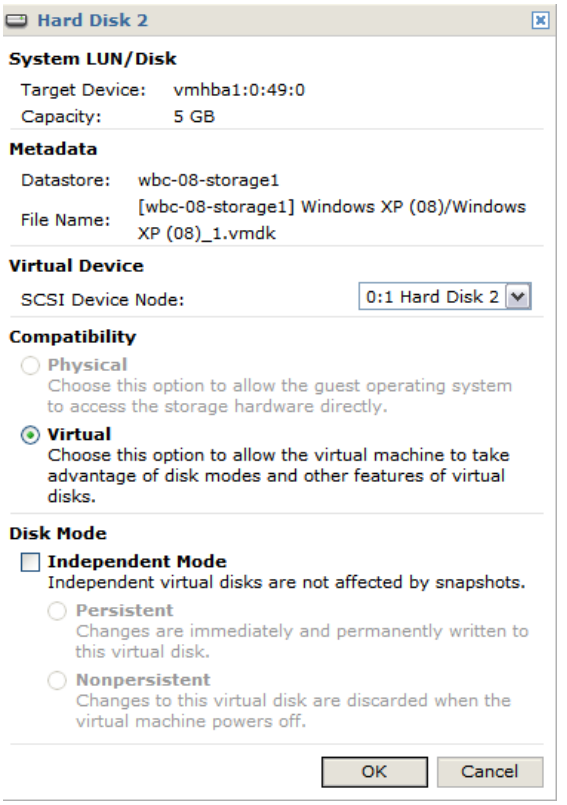
1 Select the virtual machine you want to modify from the inventory panel.

2 On the Summary page, click the Hard Disk you want to modify.

The Hard Disk options appear under **Commands**.

3 Click **Edit**.

The Hard Disk page appears.



4 Select the **SCSI Device Node** from the drop-down menu.

NOTE If the hard disk you are configuring is the boot device for this virtual machine, click **Modify the Device's SCSI Node** to change the SCSI Device node.

5 Choose whether to use the disk in **Independent Mode**.

6 If you chose to use the disk in Independent Mode, select **Persistent** or **Nonpersistent** disk mode:

- **Persistent** — Disks in persistent mode behave like conventional disk drives on your physical computer. All data written to a disk in persistent mode is written out permanently to the disk.

- **Nonpersistent** — Changes to disks in nonpersistent mode are not saved to the disks. Changes are lost when the virtual machine is powered off or reset.

  Nonpersistent mode is convenient for users who always want to start with a virtual machine in the same state. Example uses include providing known environments for software test and technical support users, as well as demonstrating software.

7 Click **OK** to save your changes and return to the Summary tab.

To edit an existing system LUN disk on an ESX 2.x virtual machine

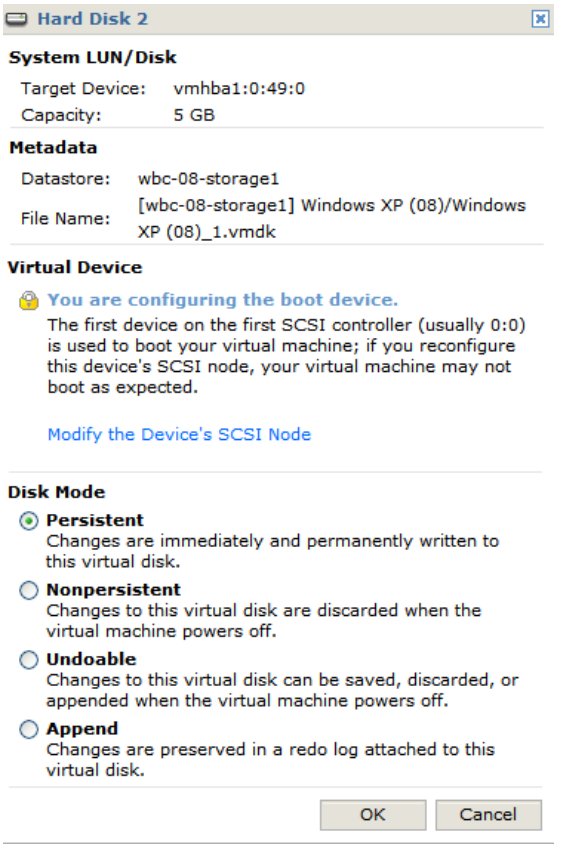
1 Select the virtual machine you want to modify from the inventory panel.

2 On the Summary page, click the Hard Disk you want to modify.

The Hard Disk options appear under **Commands**.

3 Click **Edit**.

The Hard Disk page appears.



4 Select the **SCSI Device Node** from the drop-down menu.

NOTE If the hard disk you are configuring is the boot device for this virtual machine, click **Modify the Device's SCSI Node** to change the SCSI Device node.

5 Choose the **Disk Mode**:

- **Persistent** — Disks in persistent mode behave like conventional disk drives on your physical computer. All data written to a disk in persistent mode are written out permanently to the disk.

- **Nonpersistent** — Changes to disks in nonpersistent mode are not saved to the disks, but are lost when the virtual machine is powered off or reset.

  Nonpersistent mode is for users who want to start with a virtual machine in the same state. Example uses include providing known environments for software test and technical support users, as well as demonstrating software.

- **Undoable** – Changes to disks in undoable mode can be saved, discarded, or appended when the virtual machine powers off.

- **Append** – Changes to disks in append mode are preserved in a redo log attached to the virtual disk.

6 Click **OK** to save your changes and return to the Summary tab.

To remove an existing Hard Disk

1 Select the virtual machine you want to modify from the inventory panel.

2 Make sure the virtual machine is powered off.

3 On the Summary page, click the Hard Disk you want to remove.

The available hard drive configuration options appear under **Commands**.

4 Click **Remove** to remove the Hard Disk from the virtual machine, or click **Delete from Disk** to remove the Hard Disk from the virtual machine and delete the virtual disk file from the host computer.

Editing or Removing a SCSI Device

To edit an existing SCSI Device

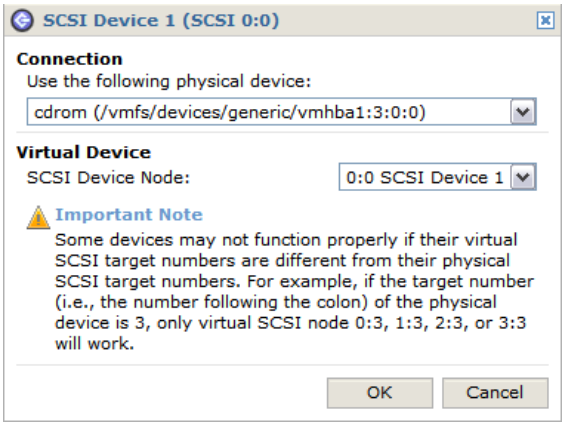
1 Select the virtual machine you want to modify from the inventory panel.

2 On the Summary page, click the SCSI Device you want to modify.

The SCSI Device options appear under **Commands**.

3 Click **Edit**.

The SCSI Device page appears.



4 Use the drop-down menu under **Connection** to specify the physical device you want to use.

5 Use the drop-down menu under **Virtual Device** to specify the SCSI Device node.

6 Click **OK** to update the SCSI Device settings and return to the Summary Tab.

To remove an existing SCSI Device

1 Select the virtual machine you want to modify from the inventory panel.

2 Make sure the virtual machine is powered off.

3 On the Summary page, click the SCSI Device you want to remove.

The available SCSI Device configuration options appear under **Commands**.

4 Click **Remove**.

Editing a SCSI Controller

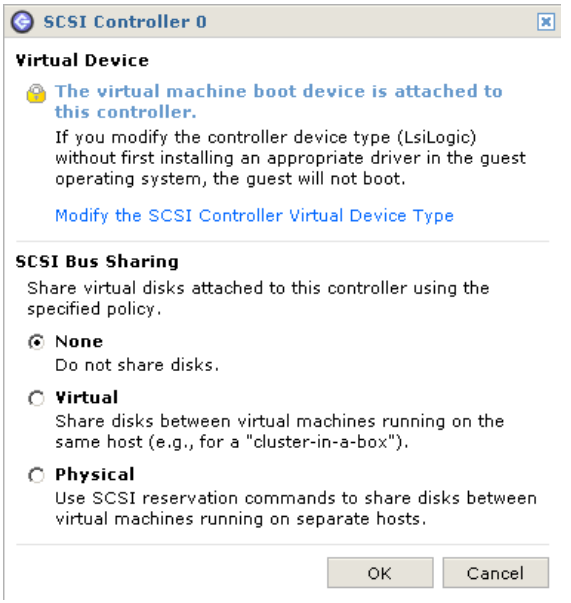
To edit a SCSI controller's configuration

1 Select the virtual machine you want to modify from the inventory panel.

2 On the Summary page, click the SCSI controller you want to modify. The available SCSI controller configuration options appear under Commands.

3 Click **Edit**.

The SCSI controller configuration page appears.



4 Select the SCSI controller type in the list.

Changing the SCSI controller type might prevent the virtual machine from booting.

5 To specify whether the SCSI bus is shared, select the type of sharing in the SCSI Bus Sharing section:

- **None** — Virtual disks cannot be shared by other virtual machines.
- **Virtual** — Virtual disks can be shared by virtual machines on the same server.
- **Physical** — Virtual disks can be shared by virtual machines on any server.

Depending upon the type of sharing, virtual machines can access the same virtual disk simultaneously on the same server or any server.

6 Click **OK** to save your changes and return to the Summary tab.

Editing or Removing a Network Adapter

Virtual network adapters can be connected to a labeled network in much the same way that physical network adapters are connected 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.

To edit an existing Network Adapter on an ESX 3 virtual machine

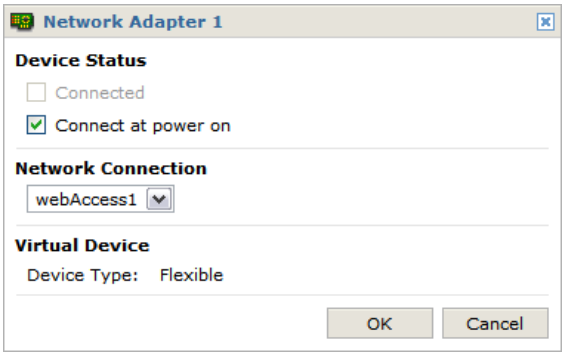
1 Select the virtual machine you want to modify from the inventory panel.

2 On the Summary page, click the Network Adapter you want to modify.

The available Network Adapter configuration options appear under **Commands**.

3 Click **Edit**.

The Network Adapter page appears.



4 To connect this virtual machine to the network when the virtual machine is powered on, select **Connect at power on**.

5 In the **Network Connection** list, select the virtual network device that you want the virtual machine to use.

6 Click **OK** to add the Network Adapter and return to the Summary tab.

To edit an existing Network Adapter on an ESX 2.x virtual machine

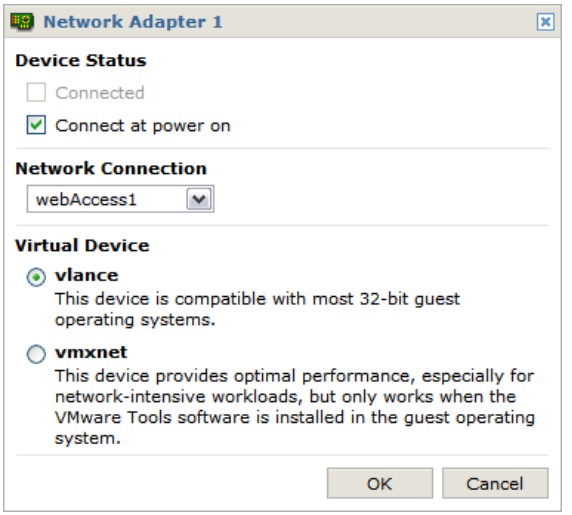
1 Select the virtual machine you want to modify from the inventory panel.

2 On the Summary page, click the Network Adapter you want to modify.

The available Network Adapter configuration options appear under **Commands**.

3 Click **Edit**.

The Network Adapter page appears.



4 To connect this virtual machine to the network when the virtual machine is powered on, select **Connect at power on**.

5 In the **Network Connection** list, select the virtual network device that you want the virtual machine to use.

6 In the **Virtual Device** list, select the network driver that you want the virtual machine to use. Choose either the **vlance** or **vmxnet** driver.

7 Click **OK** to add the Network Adapter and return to the Summary tab.

To remove an existing Network Adapter

1 Select the virtual machine you want to modify from the inventory panel.

2 Make sure the virtual machine is powered off.

3 On the Summary page, click the Network Adapter you want to remove.

The available Network Adapter configuration options appear under **Commands**.

4 Click **Remove**.

Editing or Removing a Parallel Port

To edit an existing Parallel Port

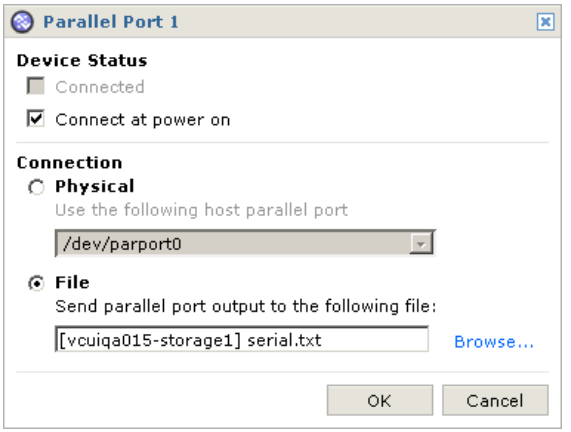
1 From the VI Web Access client, select the virtual machine.

2 On the Summary page, click the Parallel Port you want to modify.

The available Parallel Port configuration options appear under **Commands**.

3 Click **Edit**.

The Parallel Port page appears.



4 Under **Device status**, the default setting is **Connect at power on**.

Clear the check box to deselect this setting.

5 Choose the **Connection Type**.

- If you select **Physical**, use the drop-down menu to choose the port that will be used on the end user's host machine.
- If you select **File**, type the path and filename, or browse to the location of the file.

6 Click **OK** to save the updated settings and return to the Summary tab.

To remove an existing Parallel Port

1 Select the virtual machine you want to modify from the inventory panel.

2 Make sure the virtual machine is powered off.

3 On the Summary page, click the Parallel Port you want to remove.

The available Parallel Port configuration options appear under **Commands**.

4 Click **Remove**.

Editing or Removing 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. This is useful, for example, if you want to use a modem or a handheld device in your virtual machine.

To edit an existing Serial Port

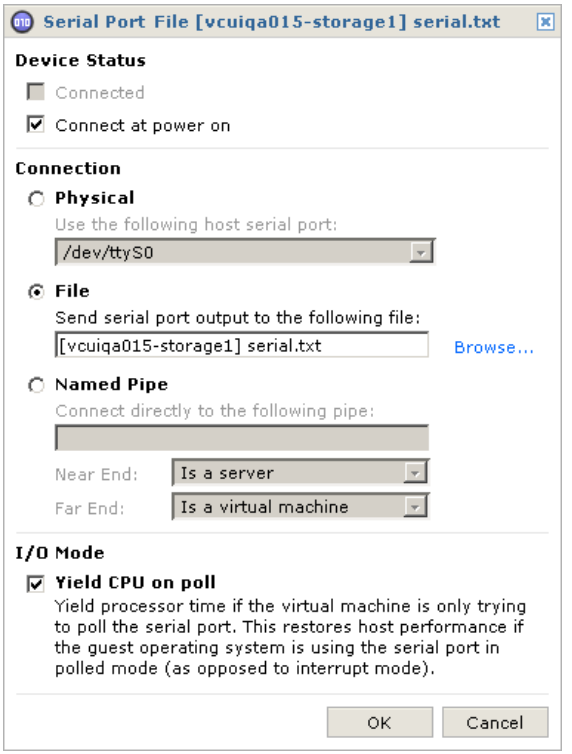
1 Select the virtual machine you want to modify from the inventory panel.

2 On the Summary page, click the Serial Port you want to modify.

The available Serial Port configuration options appear under **Commands**.

3 Click **Edit**.

The Serial Port page appears.



4 To connect the Serial port to the virtual machine when power it on, select **Connect at power on**.

5 Choose the connection type.

- If you select **Physical**, use the drop-down list to choose the port that will be used on the end user's host machine.
- If you select **File**, type the path and filename, or browse to the location of the file.

- If you select **Named Pipe**, type the pipe name and use the drop-down list to choose the connection options.

  i Under **Near End**, choose whether the application running in the guest operating system will function 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.

  ii Under **Far End**, specify where the application the virtual machine will connect to is located.

  Select **Is a virtual machine** if the application the virtual machine will connect to is located on another virtual machine on the host.

  Select **Is an application** if the application the virtual machine will connect to is running directly on the host machine.

6 Under **I/O Mode**, select whether to **Yield CPU on poll**.

The kernel in the target virtual machine uses the virtual serial port in polled mode, not interrupt mode.

7 Click **OK** to save the settings and return to the Summary tab.

To remove an existing Serial Port

1 Select the virtual machine you want to modify from the inventory panel.

2 Make sure the virtual machine is powered off.

3 On the Summary page, click the Serial Port you want to remove.

The available Serial Port configuration options appear under **Commands**.

4 Click **Remove**.

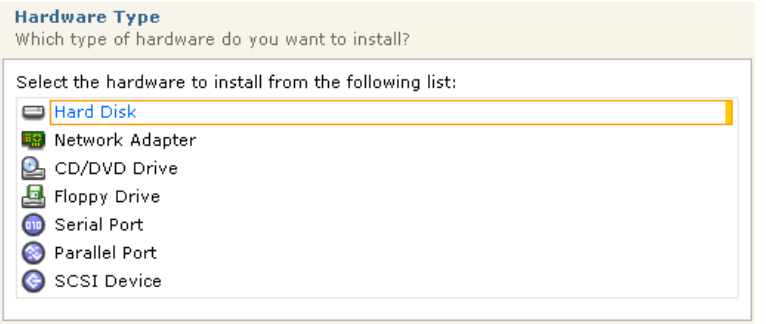
Adding Hardware to a Virtual Machine

Add virtual hardware to a virtual machine using the VI Web Access's Add Hardware wizard.

To start the wizard

1 From VI Web Access, select the virtual machine.

2 From the Summary tab, under Commands, click **Add Hardware**.



3 Double-click the type of hardware you want to add.

4 Follow the steps in the wizard.

The following sections describe how to add virtual hardware to an existing virtual machine:

- "Adding a Hard Disk" on page 68
- "Adding a Network Adapter" on page 85
- "Adding a CD/DVD Drive" on page 86
- "Adding a Floppy Drive" on page 89
- "Adding a Serial Port" on page 91
- "Adding a Parallel Port" on page 97
- "Adding a SCSI Device" on page 101

Adding a Hard Disk

You can add a new virtual disk, an existing virtual disk, or a mapped system LUN to the virtual machine.

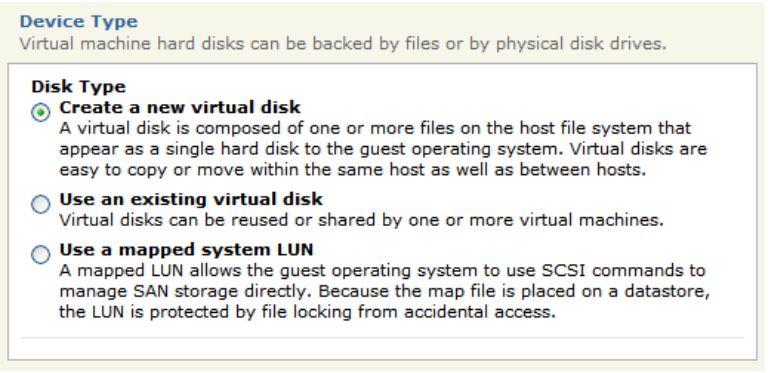
To add a new virtual disk to an ESX 3 virtual machine

1 Select a virtual machine from the inventory panel.

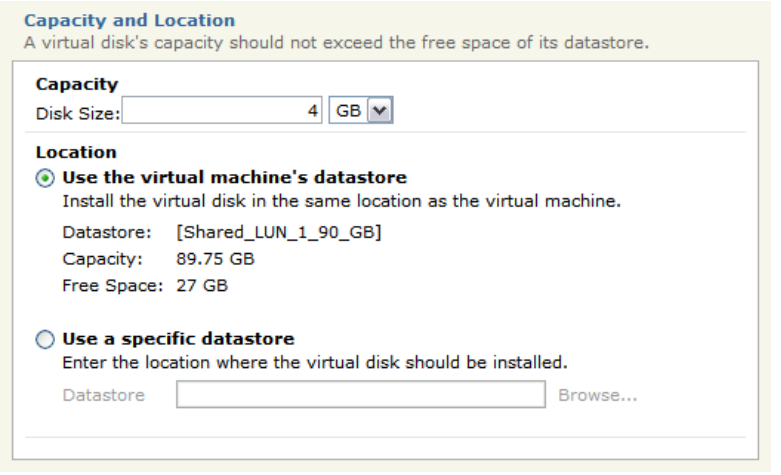
2 From the Summary tab, under **Commands**, click **Add Hardware**.

The Add Hardware wizard opens.

3 Double-click **Hard Disk**.



4 Select **Create a new virtual disk**, and click **Next**.



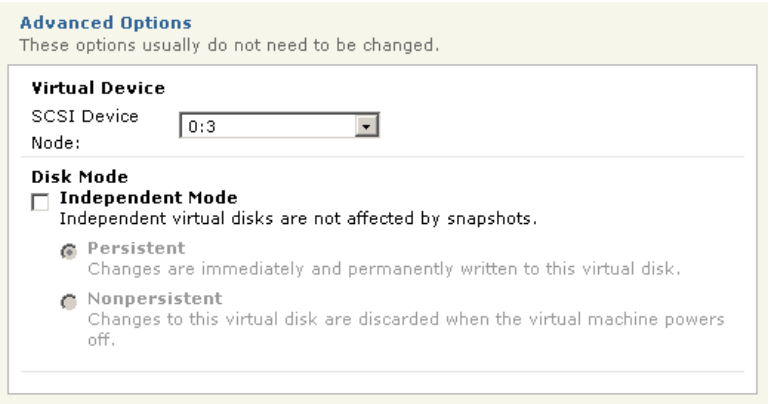
5 Specify the **Capacity** of the disk.

Disk Size must be specified in integers.

6 Choose the **Location** of the virtual disk:

- Choose **Use the virtual machine's datastore** to install the virtual disk in the same location as the virtual machine.
- Choose **Use a specific datastore** to specify a location to install the virtual disk. Specify the datastore location by entering the path to the virtual disk, or click **Browse** and navigate to the datastore you want to use.

7 Click **Next**.



The **Advanced Options** panel displays the SCSI Device node and disk mode options.

8 Select the **SCSI Device Node** from the drop-down menu.

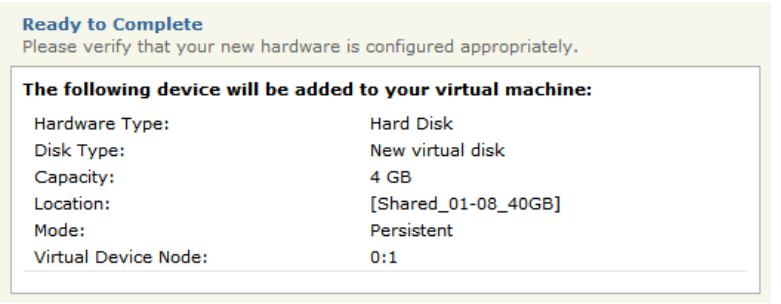
9 Choose whether or not to run the disk in **Independent Mode**. Disks in **Independent Mode** are not affected by snapshots.

10 If you selected **Independent Mode**, choose one of the following:

- **Persistent** — Disks in persistent mode behave like conventional disk drives on your physical computer. All data written to a disk in persistent mode are written out permanently to the disk.
- **Nonpersistent** — Changes to disks in nonpersistent mode are not saved to the disks, but are lost when the virtual machine is powered off or reset.

  Nonpersistent mode is for users who want to start with a virtual machine in the same state. Example uses include providing known environments for software test and technical support users, as well as demonstrating software.

11 Click **Next**.



12 Review the device configuration summary and click **Finish** to complete the wizard.

To add a new virtual disk to an ESX 2.x virtual machine

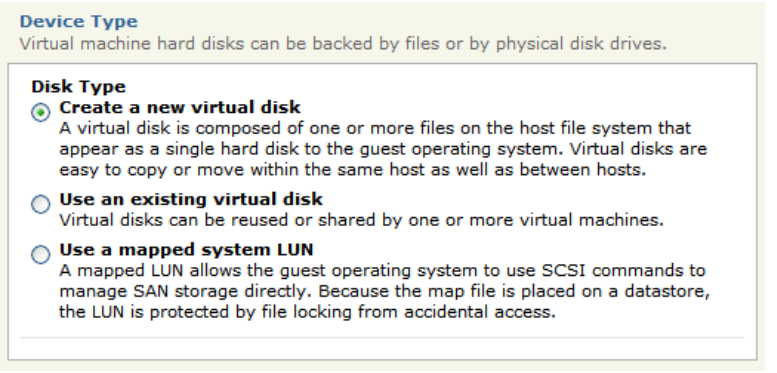
1 Select a virtual machine from the inventory panel.

2 Make sure the virtual machine is powered off.

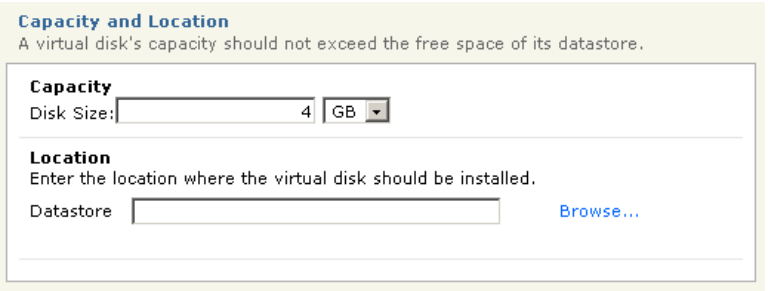
3 From the Summary tab, under **Commands**, click **Add Hardware**.

The Add Hardware wizard opens.

4 Double-click **Hard Disk**.



5 Select **Create a new virtual disk**, and click **Next**.

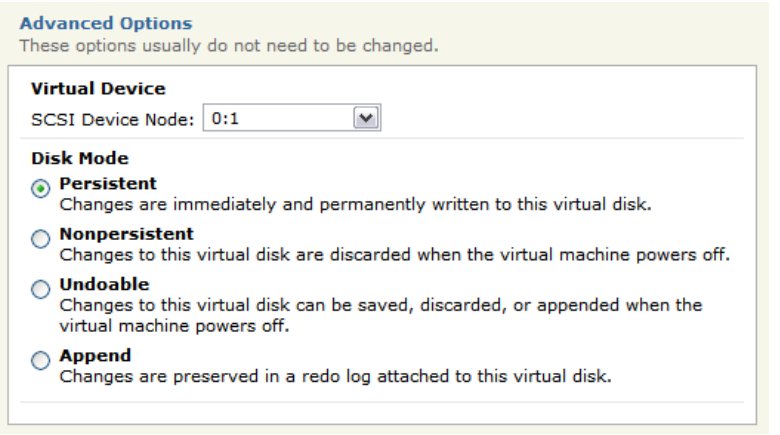


6 Specify the size and location of the disk.

Disk size must be specified in integers.

7 Specify the datastore location by entering the path to the virtual disk, or click **Browse** and navigate to the datastore you want to use.

8 Click **Next**.



The **Advanced Options** panel displays the SCSI Device node and disk mode options.

9 Select the **SCSI Device Node** from the drop-down menu.

10 Choose the **Disk Mode**:

- **Persistent** — Disks in persistent mode behave like conventional disk drives on your physical computer. All data written to a disk in persistent mode are written out permanently to the disk.

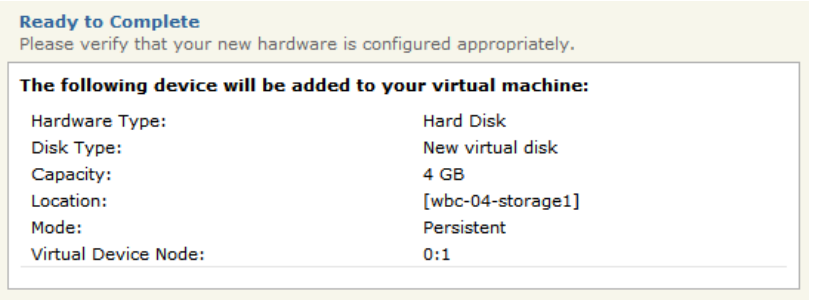
- **Nonpersistent** — Changes to disks in nonpersistent mode are not saved to the disks, but are lost when the virtual machine is powered off or reset.

  Nonpersistent mode is for users who want to start with a virtual machine in the same state. Example uses include providing known environments for software test and technical support users, as well as demonstrating software.

- **Undoable** – Changes to disks in undoable mode can be saved, discarded, or appended when the virtual machine powers off.

- **Append** – Changes to disks in append mode are preserved in a redo log attached to the virtual disk.

11 Click **Next**.



12 Review the device configuration summary and click **Finish** to complete the wizard.

To add an existing virtual disk to an ESX 3 virtual machine

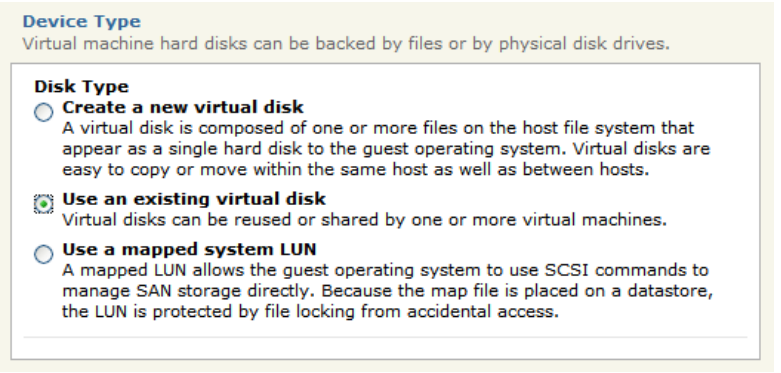
1 Select a virtual machine from the inventory panel.

2 If you are adding a Hard Disk to an ESX Server 2.x virtual machine, make sure the virtual machine is powered off.

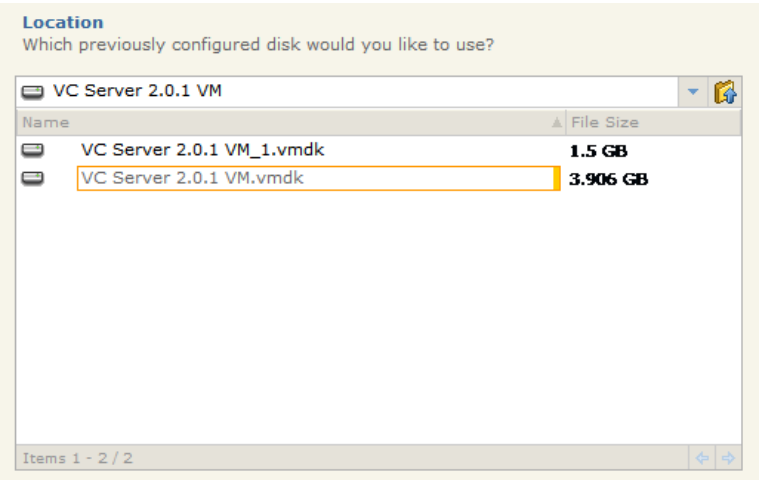
3 From the Summary tab, under **Commands**, click **Add Hardware**.

The Add Hardware wizard opens.

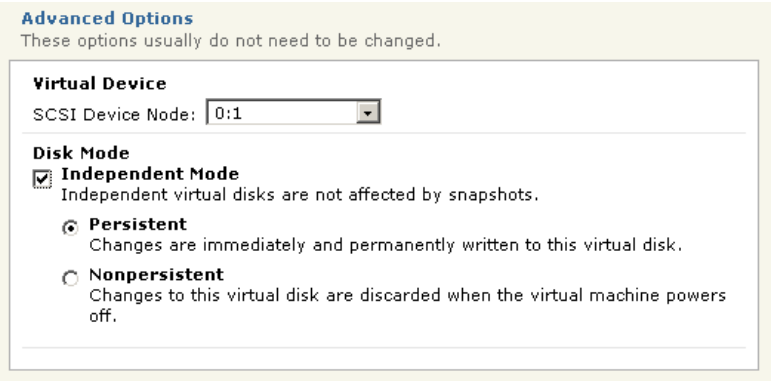
4 Double-click **Hard Disk**.



5 Select **Use an existing virtual disk**, and click **Next**.



6 Browse to and select an existing virtual disk, and click **Next**.



The **Advanced Options** panel displays the SCSI Device node and disk mode options.

7 Select the **SCSI Device Node** from the drop-down menu.

8 Choose whether to run the disk in **Independent Mode**.

9 If you selected Independent Mode, select **Persistent** or **Nonpersistent** disk mode:

- **Persistent** — Disks in persistent mode behave like conventional disk drives on your physical computer. All data written to a disk in persistent mode are written out permanently to the disk.
- **Nonpersistent** — Changes to disks in nonpersistent mode are not saved to the disks, but are lost when the virtual machine is powered off or reset.

  Nonpersistent mode is for users who want to start with a virtual machine in the same state. Example uses include providing known environments for

10 Click **Next**.

11 Review the device configuration summary and click **Finish** to complete the wizard.

To add an existing virtual disk to an ESX 2.x virtual machine

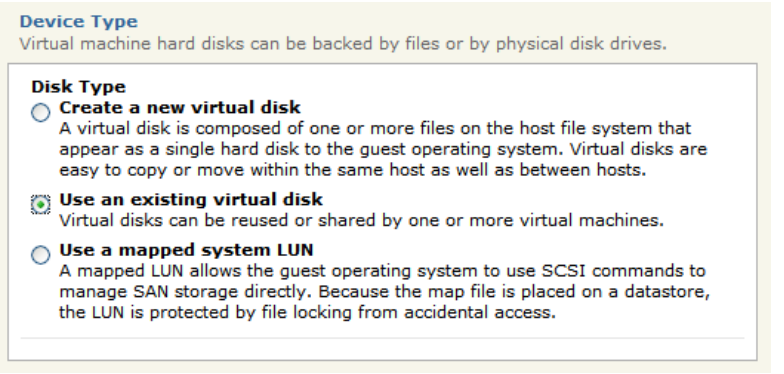
1 Select a virtual machine from the inventory panel.

2 If you are adding a Hard Disk to an ESX Server 2.x virtual machine, make sure the virtual machine is powered off.

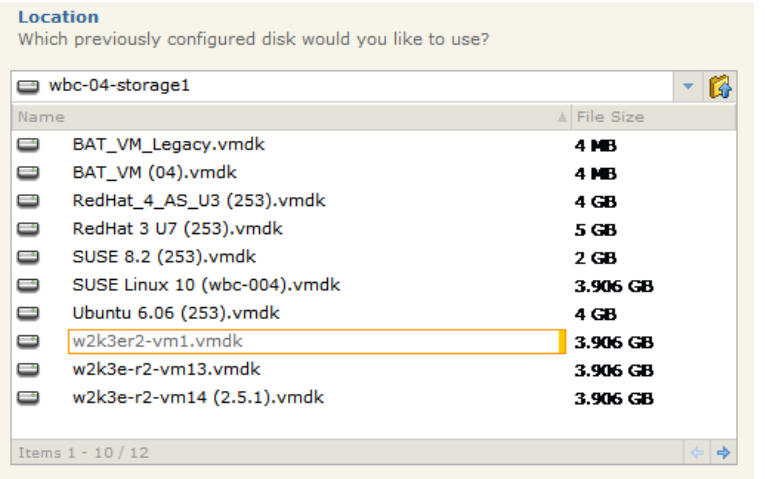
3 From the Summary tab, under **Commands**, click **Add Hardware**.

The Add Hardware wizard opens.

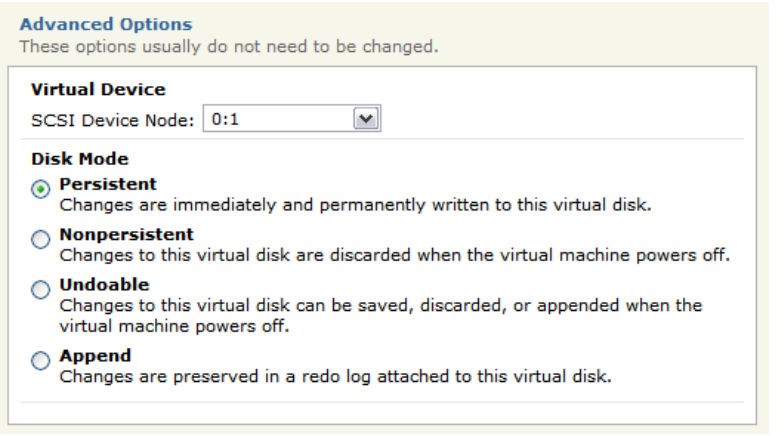
4 Double-click **Hard Disk**.



5 Select **Use an existing virtual disk**, and click **Next**.



6 Browse to and select an existing virtual disk, and click **Next**.



The **Advanced Options** panel displays the SCSI Device node and disk mode options.

7 Select the **SCSI Device Node** from the drop-down menu.

8 Choose the **Disk Mode**:

- **Persistent** — Disks in persistent mode behave like conventional disk drives on your physical computer. All data written to a disk in persistent mode are written out permanently to the disk.

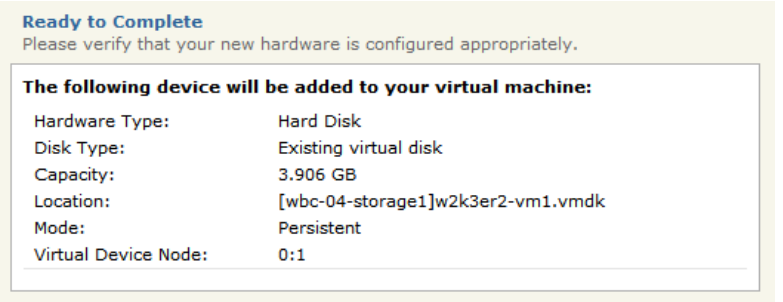
- **Nonpersistent** — Changes to disks in nonpersistent mode are not saved to the disks, but are lost when the virtual machine is powered off or reset.

  Nonpersistent mode is for users who want to start with a virtual machine in the same state. Example uses include providing known environments for software test and technical support users, as well as demonstrating software.

- **Undoable** – Changes to disks in undoable mode can be saved, discarded, or appended when the virtual machine powers off.

- **Append** – Changes to disks in append mode are preserved in a redo log attached to the virtual disk.

9 Click **Next**.



10 Review the device configuration summary and click **Finish** to complete the wizard.

To add a mapped system LUN to an ESX 3 virtual machine

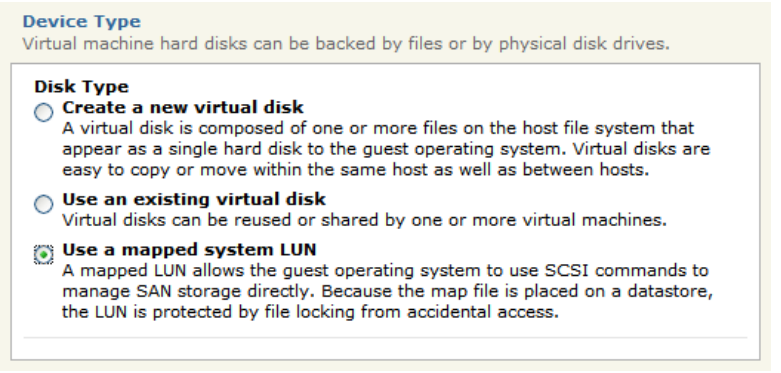
1 Select a virtual machine from the inventory panel.

2 If you are adding a hard disk to an ESX Server 2.x virtual machine, make sure the virtual machine is powered off.

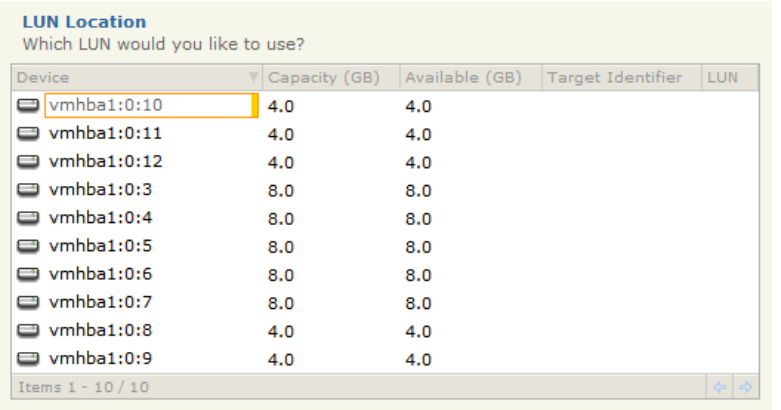
3 From the Summary tab, under **Commands**, click **Add Hardware**.

The Add Hardware wizard opens.

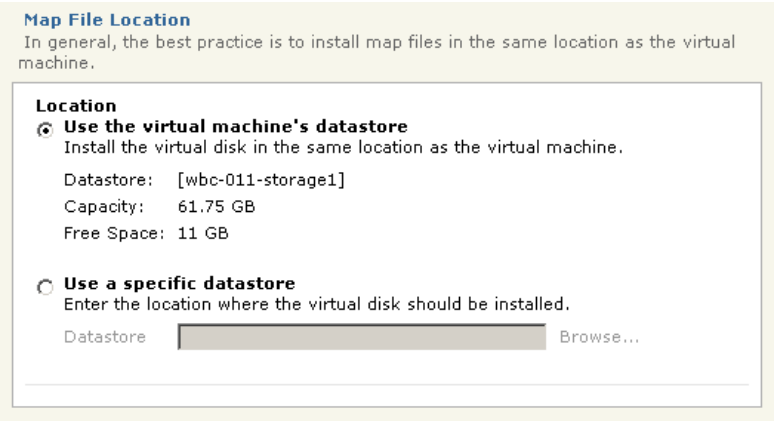
4 Double-click **Hard Disk**.



5 Select **Use a mapped system LUN**, and click **Next**.



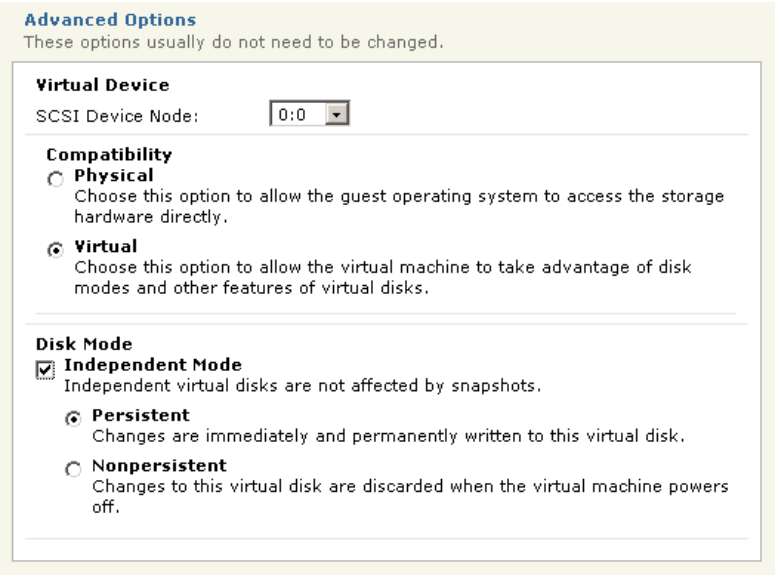
6 Select the LUN to add to the virtual machine, and click **Next**.



7 Choose the file location:

- **Use the virtual machine's datastore** – Install the virtual disk in the same location as the virtual machine.
- **Use a specific datastore** – Specify a location in which to install the virtual disk.

8 Click **Next**.



9 Select the **SCSI Device Node** from the drop-down menu.

10 Choose the disk **Compatibility**:

- **Physical** – Allow the guest operating system to access the storage hardware directly.
- **Virtual** – Allow the virtual machine to take advantage of the features of virtual disks, such as snapshots and disk modes. For more information on virtual disks, see the *Basic System Administration Guide*.

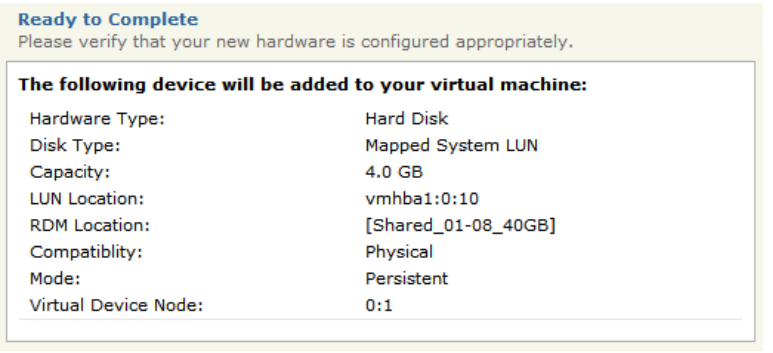
11 If you chose Virtual compatibility, choose whether to run the disk in **Independent Mode**.

12 If you selected **Independent Mode**, choose the **Persistent** or **Nonpersistent** disk mode:

- **Persistent** — Disks in persistent mode behave like conventional disk drives on your physical computer. All data written to a disk in persistent mode are written out permanently to the disk.
- **Nonpersistent** — Changes to disks in nonpersistent mode are not saved to the disks, but are lost when the virtual machine is powered off or reset.

  Nonpersistent mode is for users who want to start with a virtual machine in the same state. Example uses include providing known environments for software test and technical support users, as well as demonstrating software.
- **Undoable** – Changes to disks in undoable mode can be saved, discarded, or appended when the virtual machine powers off.
- **Append** – Changes to disks in append mode are preserved in a redo log attached to the virtual disk.

13 Click **Next**.



14 Review the device configuration summary and click **Finish** to complete the wizard.

To add a mapped system LUN to an ESX 2.5.x virtual machine

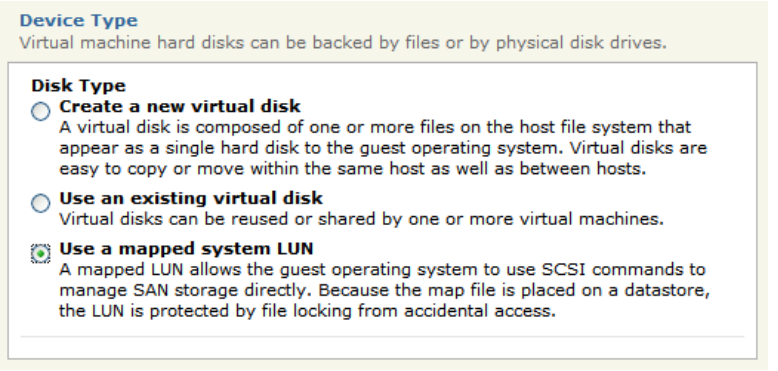
1 Select a virtual machine from the inventory panel.

2 If you are adding a hard disk to an ESX Server 2.x virtual machine, make sure the virtual machine is powered off.

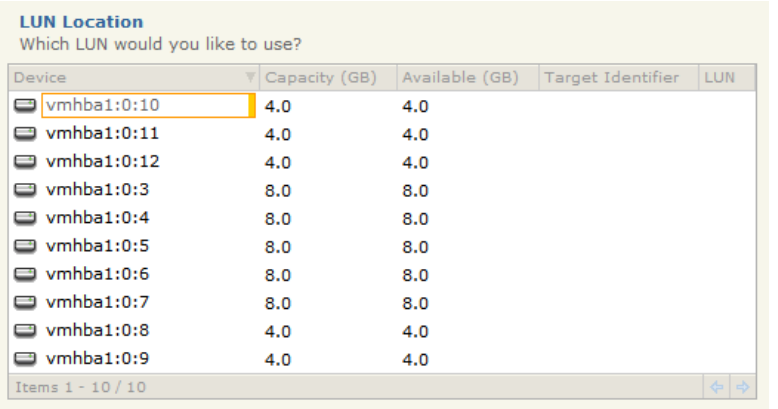
3 From the Summary tab, under **Commands**, click **Add Hardware**.

The Add Hardware wizard opens.

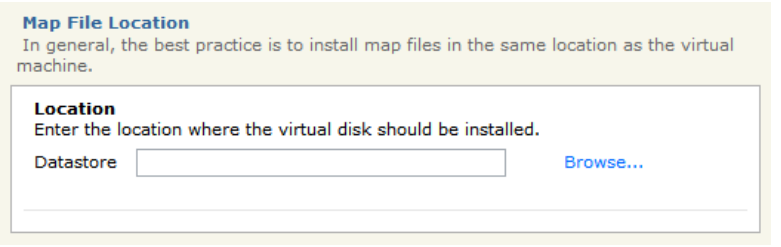
4 Double-click **Hard Disk**.



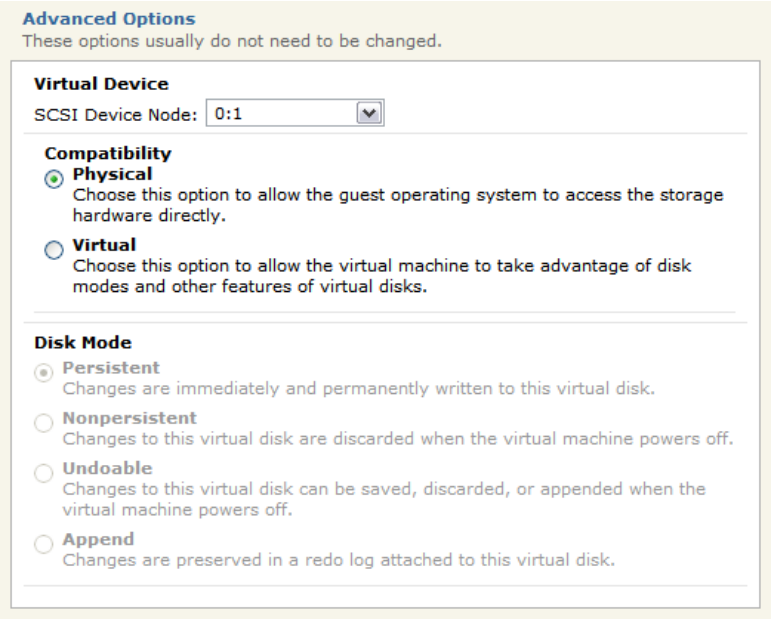
Select **Use a mapped system LUN**, and click **Next**.



5 Select the LUN to add to the virtual machine, and click **Next**.



6 Browse to the location where you would like to install the virtual disk, and click **Next**.



7 Select the **SCSI Device Node** from the drop-down menu.

8 Choose the disk **Compatibility**:

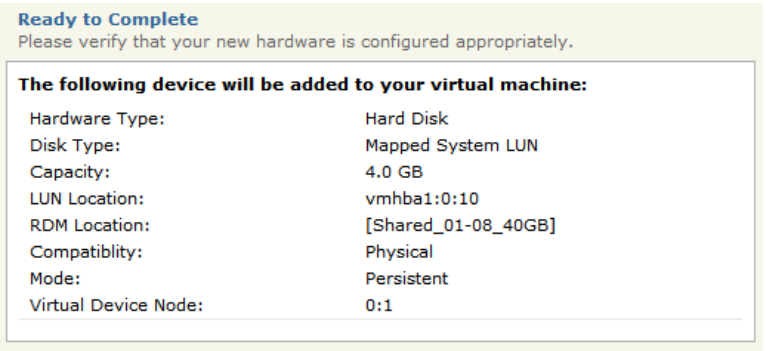
- **Physical** – Allow the guest operating system to access the storage hardware directly.
- **Virtual** – Allow the virtual machine to take advantage of disk modes and other features of virtual disks.

9 If you chose Virtual compatibility, choose the **Disk Mode**:

- **Persistent** — Disks in persistent mode behave like conventional disk drives on your physical computer. All data written to a disk in persistent mode are written out permanently to the disk.
- **Nonpersistent** — Changes to disks in nonpersistent mode are not saved to the disks, but are lost when the virtual machine is powered off or reset.

  Nonpersistent mode is for users who want to start with a virtual machine in the same state. Example uses include providing known environments for software test and technical support users, as well as demonstrating software.
- **Undoable** – Changes to disks in undoable mode can be saved, discarded, or appended when the virtual machine powers off.
- **Append** – Changes to disks in append mode are preserved in a redo log attached to the virtual disk.

10 Click **Next**.



11 Review the device configuration summary and click **Finish** to complete the wizard.

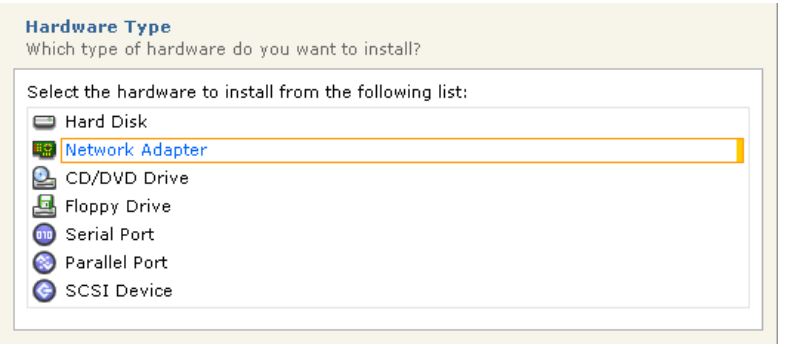
Adding a Network Adapter

To add a Network Adapter

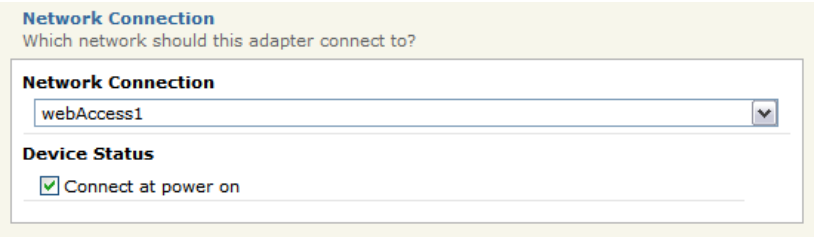
1 Select a virtual machine from the inventory panel.

2 From the Summary tab, under **Commands**, click **Add Hardware**.

The Add Hardware wizard opens.



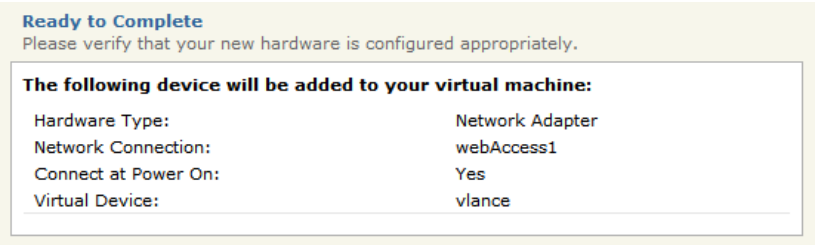
3 Double-click **Network Adapter**.



4 Select the network interface card.

To have the network adapter connected to the virtual machine when you power it on, select **Connect at power on**.

5 Click **Next**.



6 Click **Finish** to add the Network Adapter.

Adding a CD/DVD Drive

You can add up to four CD/DVD drives to your virtual machine. You can connect the virtual machine's drive to a physical drive or ISO image on your host machine or on the machine where you are running your browser.

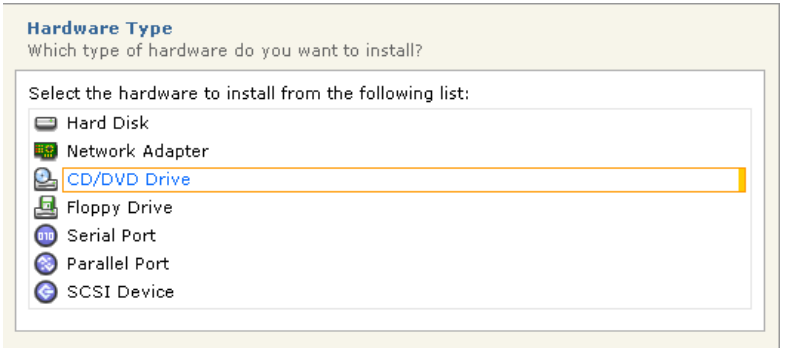
To add a CD/DVD Drive to a virtual machine

1 Make sure the virtual machine is powered off.

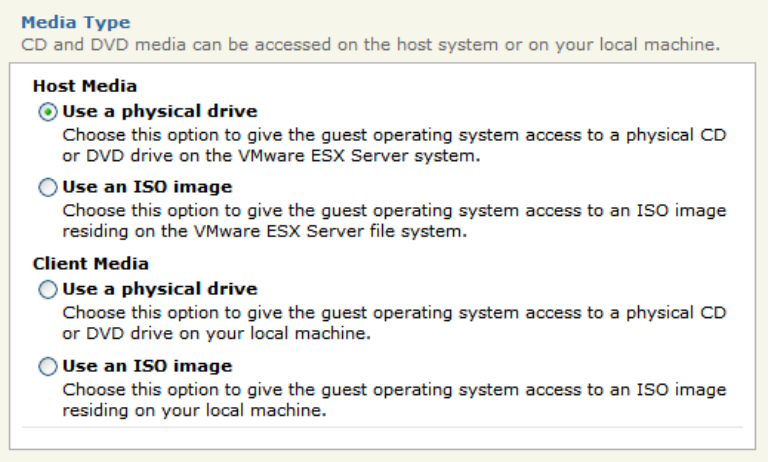
2 Select a virtual machine from the inventory panel.

3 From the Summary tab, under **Commands**, click **Add Hardware**.

The Add Hardware wizard opens.



4 Double-click **CD/DVD Drive**.



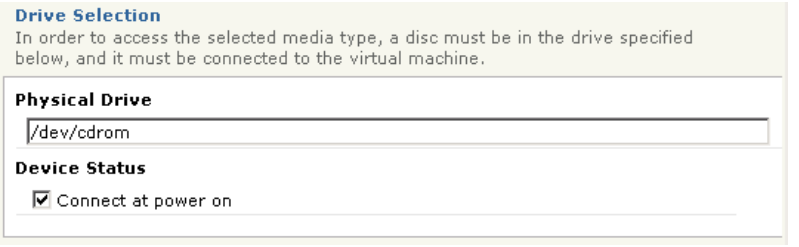
5 Choose one of the **Media Type** options:

- Select an option under **Host Media** to connect to a drive or ISO image on the ESX host.
  - Select **Use a physical drive** to connect the virtual machine's drive to a physical drive on the host computer.
  - Select **Use an ISO image** to connect the virtual machine's drive to an ISO image file on the host computer.
- Select an option under **Client Media** to connect to a drive or ISO image on the client computer.
  - Select **Use a physical drive** to connect the virtual machine's drive to a physical drive on the client computer.
  - Select **Use an ISO image** to connect the virtual machine's drive to an ISO image file on the client computer.

NOTE Client Media options are not available on ESX 2.x virtual machines.

6 Click **Next**.

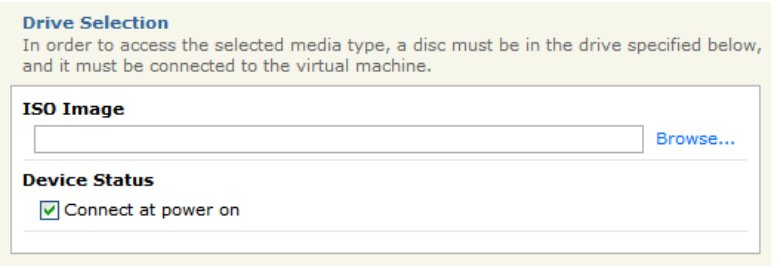
7 If you selected **Use a physical drive**, specify the drive you want to use and indicate whether the system should connect the device when the virtual machine powers on.



8 Click **Next**.

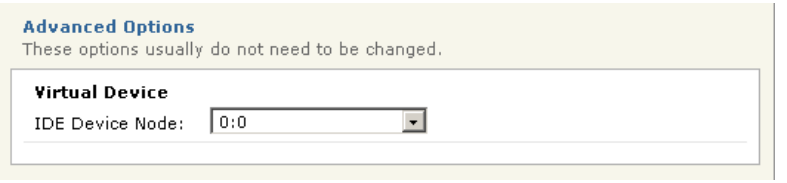
9 If you selected **Use an ISO Image**, type the path and filename for the image file or click **Browse** to navigate to the file.

To have the drive connected to the virtual machine when you power it on, select **Connect at power on**.



10 Click **Next**.

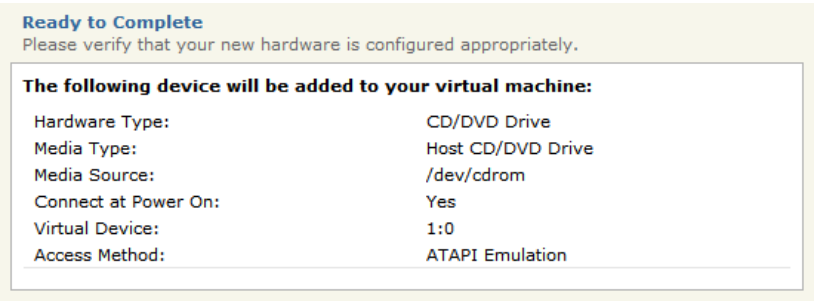
The Advanced Options page appears.



11 Choose the virtual device node from the drop-down menu.

12 Click **Next**.

The **Ready to Complete** page appears and displays the device settings.



13 Click **Finish** to add the CD/DVD Drive to your virtual machine.

Adding a Floppy Drive

You can connect a Floppy Drive in your virtual machine to a physical drive or floppy image on the host machine or on the machine where you are running your browser.

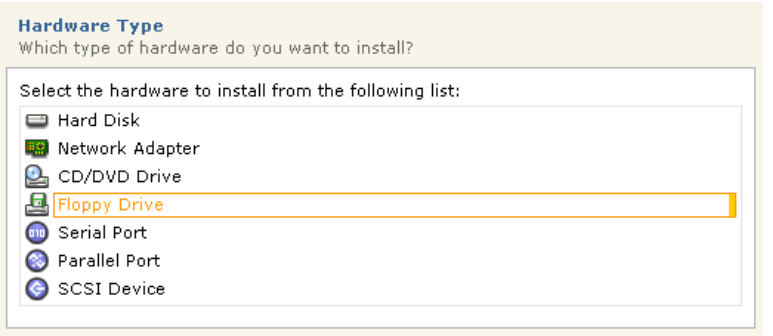
To add a new virtual Floppy Drive to a virtual machine

1 Make sure the virtual machine is powered off.

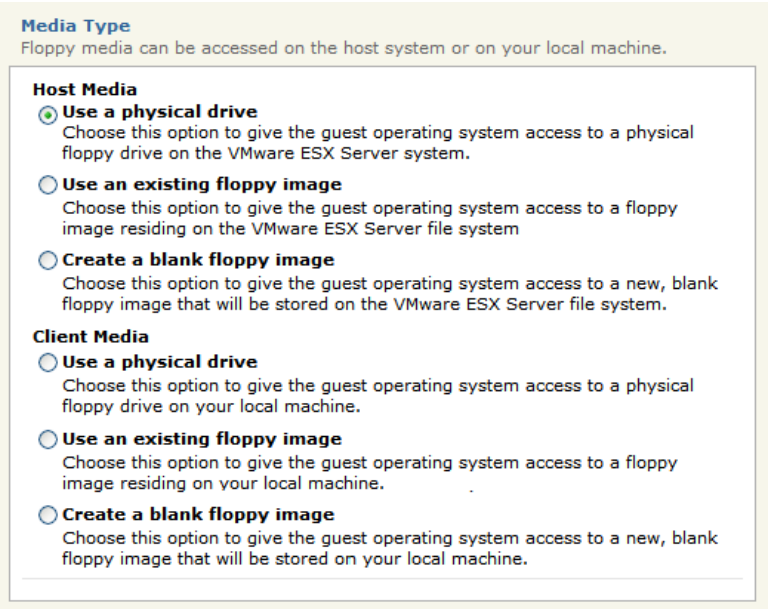
2 Select a virtual machine from the inventory panel.

3 From the Summary tab, under **Commands**, click **Add Hardware**.

The Add Hardware wizard opens.



4 Double-click **Floppy Drive.**



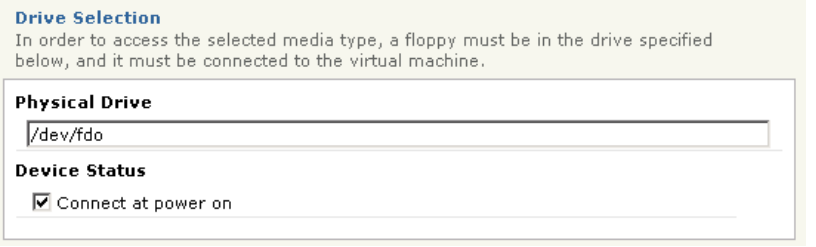
5 Choose one of the **Media Type** options:

- Select an option under **Host Media** to connect to a drive or floppy image on the ESX host.
  - Select **Use a physical drive** if you want to connect the virtual machine's drive to a physical drive on the host computer.
  - Select **Use an existing floppy image** if you want to connect the virtual machine's drive to a floppy image file on the host computer.
  - Select **Create a blank floppy image** if you want to connect the virtual machine's drive to a new, blank floppy image file on the host computer.
- Select an option under **Client Media** to connect to a drive or floppy image on the client computer.
  - Select **Use a physical drive** if you want to connect the virtual machine's drive to a physical drive on the client computer.

- Select **Use an existing floppy image** if you want to connect the virtual machine's drive to a floppy image file on the client computer.
- Select **Create a blank floppy image** if you want to connect the virtual machine's drive to a new, blank floppy image file on the client computer.

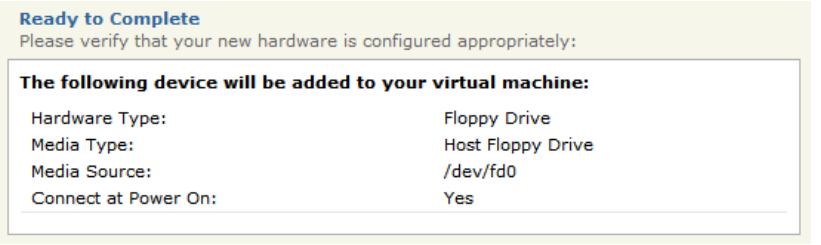
NOTE Client Media options are not available on ESX 2.x virtual machines.

6 Click **Next**.



7 Select the type of floppy media. To have the Floppy Drive connected to the virtual machine when you power it on, select **Connect at power on**.

NOTE Connect at power on is not available with client media.



8 Click **Finish** to add the Floppy Drive to your 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, an output file on the host computer, or an application running in the virtual machine or another virtual machine on the host computer.

To add a physical Serial Port to the virtual machine's configuration

1 Make sure the virtual machine is powered off.

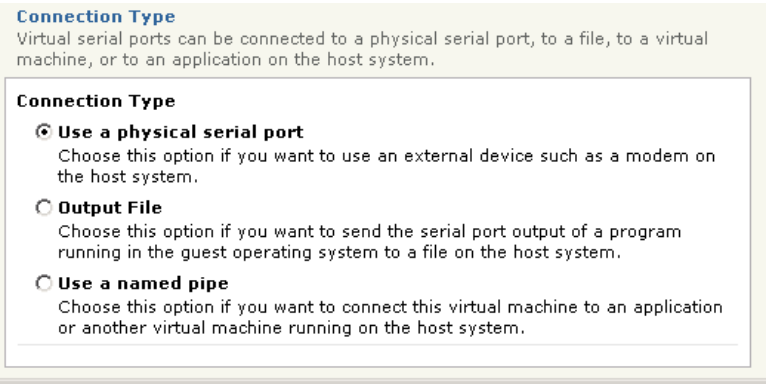
2 Select a virtual machine from the inventory panel.

3 From the Summary tab, under **Commands**, click **Add Hardware**.

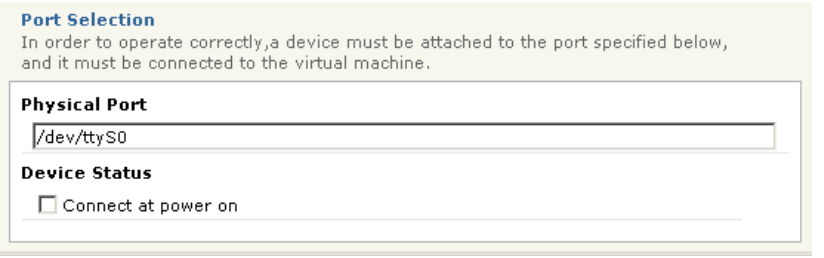
The Add Hardware wizard opens.

4 Double-click **Serial Port**.

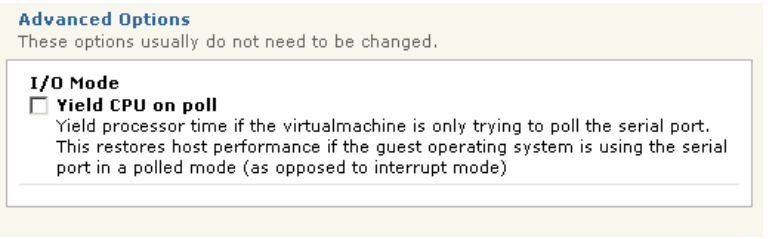
The Serial Port page appears.



5 Choose **Use a physical serial port** to connect to a physical port on the host machine, and click **Next**.



6 To connect this virtual machine to the host's Serial Port when the virtual machine is powered on, select **Connect at power on**, and click **Next**.



7 Under I/O Mode, select whether to **Yield CPU on poll**.

The kernel in the target virtual machine uses the virtual Serial Port in polled mode, not interrupt mode.

8 Click **Next**.

9 Click **Finish** to add the Serial Port to your virtual machine.

To add an output file Serial Port to the virtual machine's configuration

1 Make sure the virtual machine is powered off.

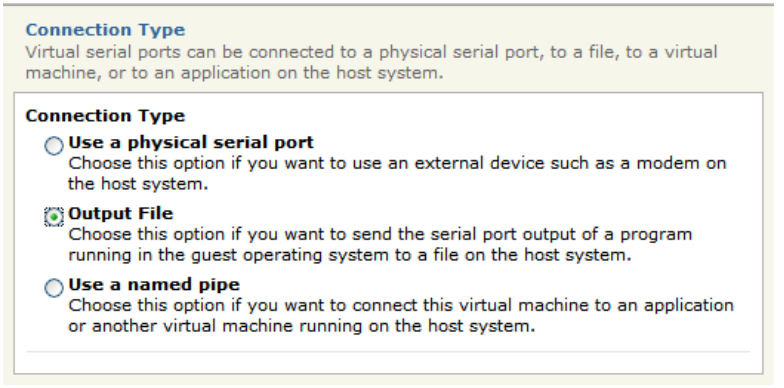
2 Select a virtual machine from the inventory panel.

3 From the Summary tab, under **Commands**, click **Add Hardware**.

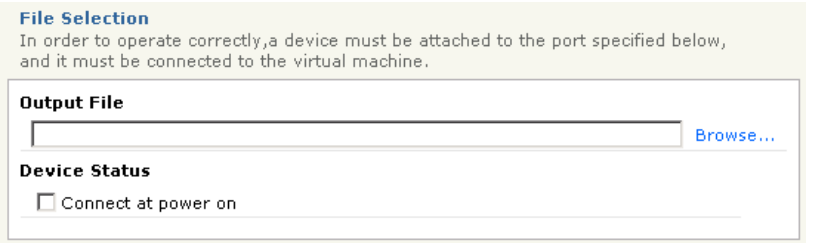
The Add Hardware wizard opens.

4 Double-click **Serial Port**.

The Serial Port page appears.

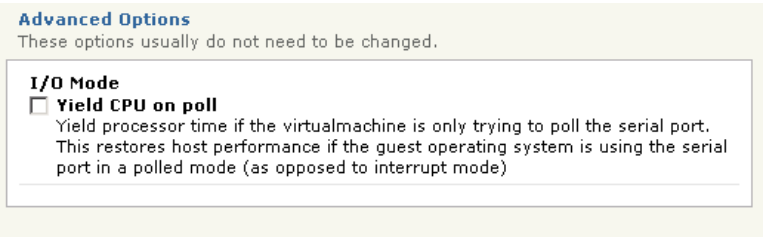


Choose **Output file** to connect to a physical port on the host machine, and click **Next**.



5 Enter the location of the output file, or browse for a location in the **Output File** field.

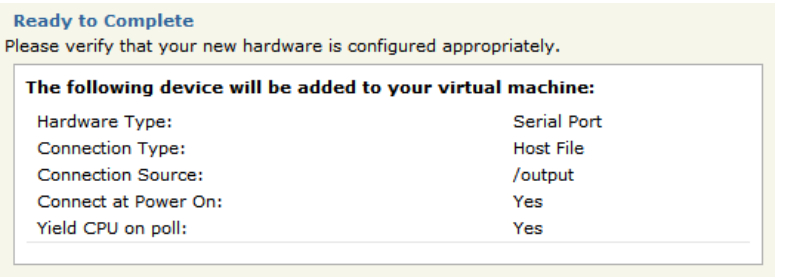
To connect this virtual machine to the host's output file when the virtual machine is powered on, select **Connect at power on**, and click **Next**.



6 Under I/O Mode, select whether to **Yield CPU on poll**.

The kernel in the target virtual machine uses the virtual Serial Port in polled mode, not interrupt mode.

7 Click **Next**.



8 Click **Finish** to add the Serial Port to your virtual machine.

To add a named pipe Serial Port to the virtual machine's configuration

1 Make sure the virtual machine is powered off.

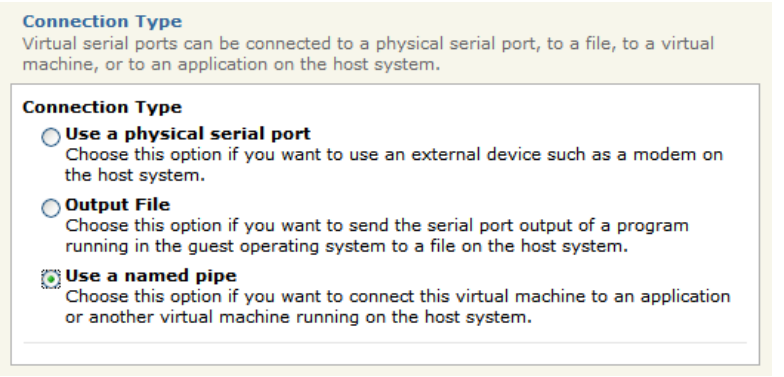
2 Select a virtual machine from the inventory panel.

3 From the Summary tab, under **Commands**, click **Add Hardware**.

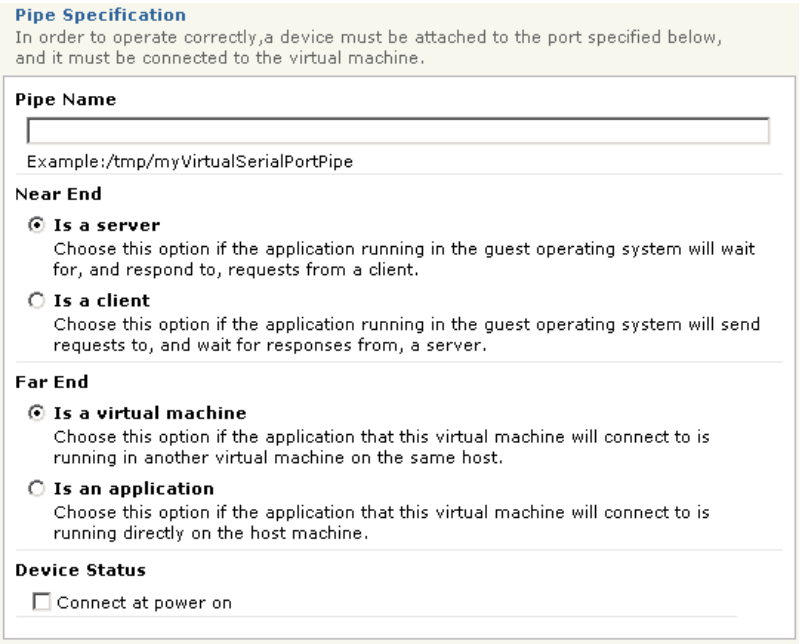
The Add Hardware wizard opens.

4 Double-click **Serial Port**.

The Serial Port page appears.



5 Choose **Use a named pipe** to connect to a physical port on the host machine, and click **Next**.



6 To specify a named pipe, enter the pipe name.

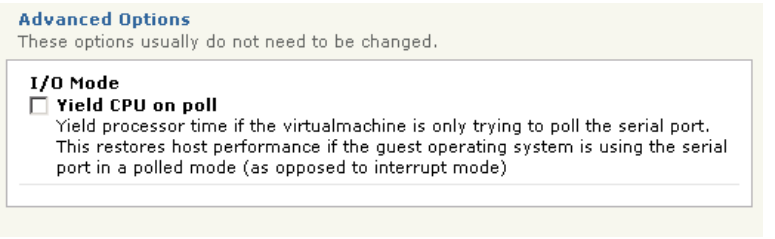
7 Under **Near End**, choose whether the application running in the guest operating system will function as a server or a client.

- 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.

8 Under **Far End**, specify where the application the virtual machine will connect to is located.

- Select **Is a virtual machine** if the application the virtual machine will connect to is located on another virtual machine on the host.
- Select **Is an application** if the application the virtual machine will connect to is running directly on the host machine.

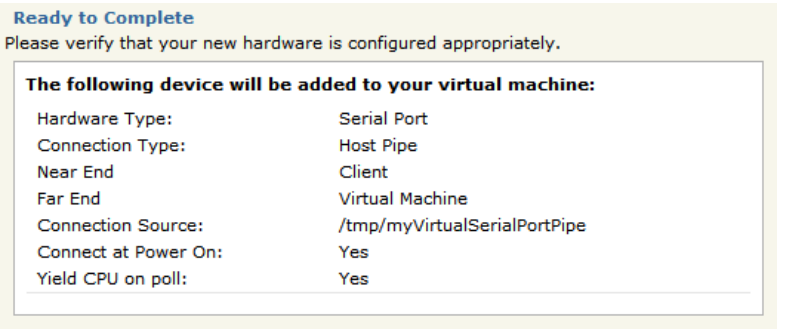
9 To connect this virtual machine to the named pipe when the virtual machine is powered on, select **Connect at power on**, and click **Next**.



10 Under I/O Mode, select whether to **Yield CPU on poll**.

The kernel in the target virtual machine uses the virtual Serial Port in polled mode, not interrupt mode.

11 Click **Next**.



12 Click **Finish** to add the physical Serial Port to your virtual machine.

Adding a Parallel Port

Parallel Ports are used by a variety of devices, including printers, scanners, dongles, and disk drives.

The virtual Parallel Port can connect to a Parallel Port or to a file on the host operating system.

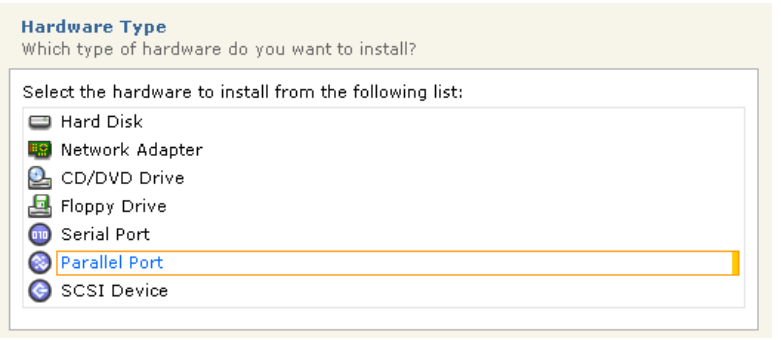
To add a physical Parallel Port to the virtual machine's configuration

1 Make sure the virtual machine is powered off.

2 Select a virtual machine from the inventory panel.

3 From the Summary tab, under **Commands**, click **Add Hardware**.

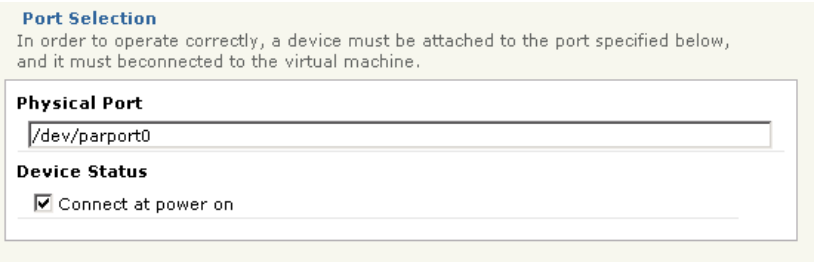
The Add Hardware wizard opens.



4 Double-click **Parallel Port**.

The Parallel Port page appears.

5 In the **Connection Type** list, select **Use a physical Parallel Port**, and click **Next**.



6 Enter the location of the device in the Location field.

For example, the host's Parallel Port could be `/dev/parport0`.

7 To connect this virtual machine to the host's Parallel Port when the virtual machine is powered on, select **Connect at power on**, and click **Next**.

8 Click **Finish** to add the Parallel Port.

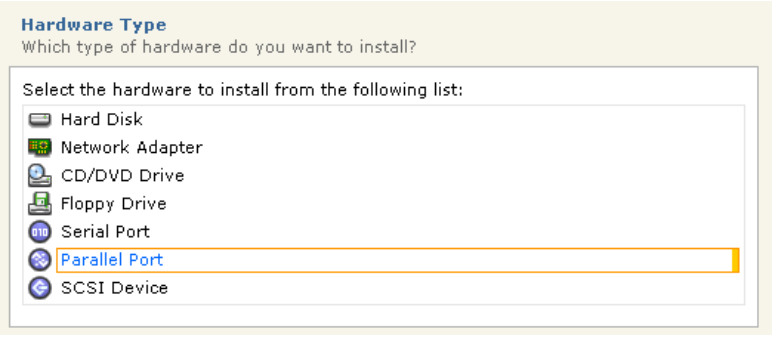
To add an output file Parallel Port to the virtual machine's configuration

1 Make sure the virtual machine is powered off.

2 Select a virtual machine from the inventory panel.

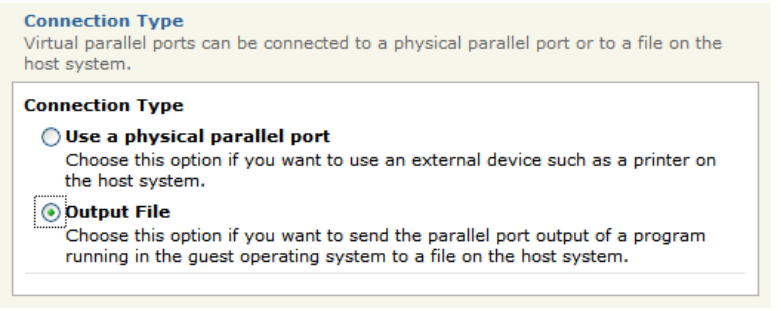
3 From the Summary tab, under **Commands**, click **Add Hardware**.

The Add Hardware wizard opens.

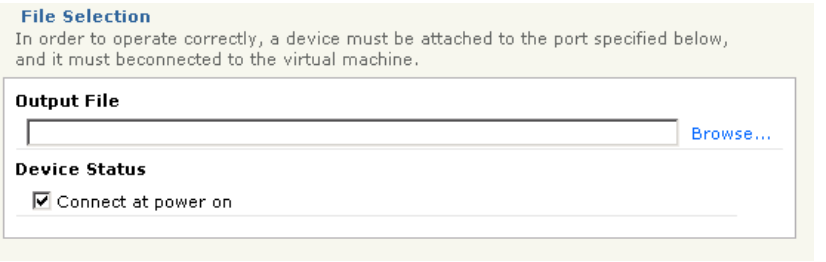


4 Double-click **Parallel Port**.

The Parallel Port page appears.

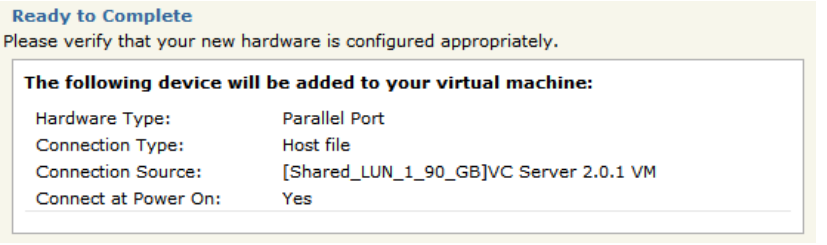


5 In the **Connection Type** list, select **Output File**, and click **Next**.



6 Enter the path and filename in the **Output File** field, or browse to the location of the file.

7 To connect this virtual machine to the host's Parallel Port when the virtual machine is powered on, select **Connect at power on**, and click **Next**.



8 Click **Finish** to add the Parallel Port.

Adding a SCSI Device

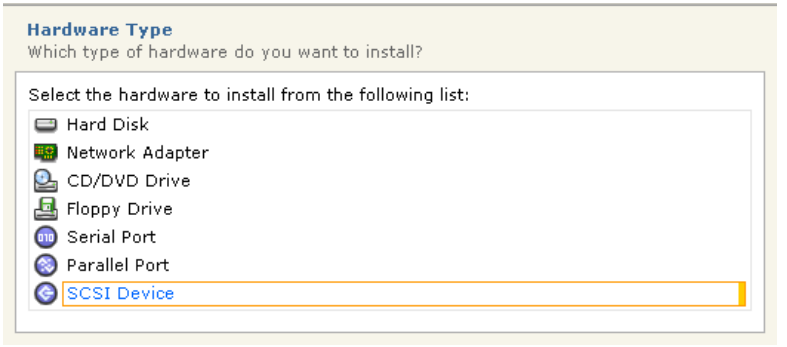
To add a SCSI Device to a virtual machine's configuration

1 Select a virtual machine from the inventory panel.

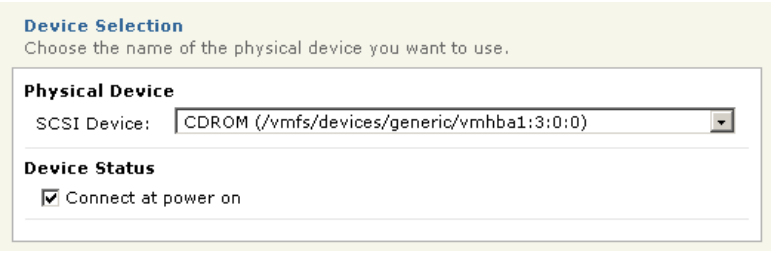
2 If you are adding a SCSI Device to an ESX Server 2.x virtual machine, make sure the virtual machine is powered off.

3 From the Summary tab, under **Commands**, click **Add Hardware**.

The Add Hardware wizard opens.

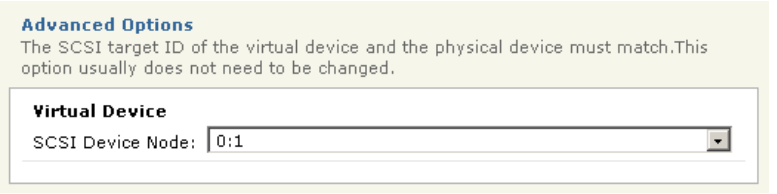


4 In the Add Hardware wizard, double-click SCSI Device.

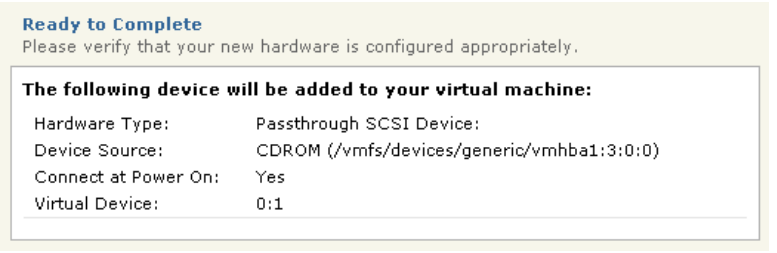


5 Under **Physical Device**, use the drop-down menu to select the physical device you want to use.

6 To connect this virtual machine to this SCSI Device when the virtual machine is powered on, select **Connect at power on**, and click **Next**.



7 Under **Virtual Device**, select the virtual device node where you want this device to appear in the virtual machine, and click **Next**.



8 Click **Finish** to add the SCSI Device.

Changing Virtual Machine Options

Configuration options let you adjust characteristics of the selected virtual machine, such as the virtual machine general settings, power options, and advanced options. The options are described in the following sections:

- "Changing General Settings" on page 102
- "Changing Power State Options" on page 103
- "Changing Advanced Settings" on page 104

Changing General Settings

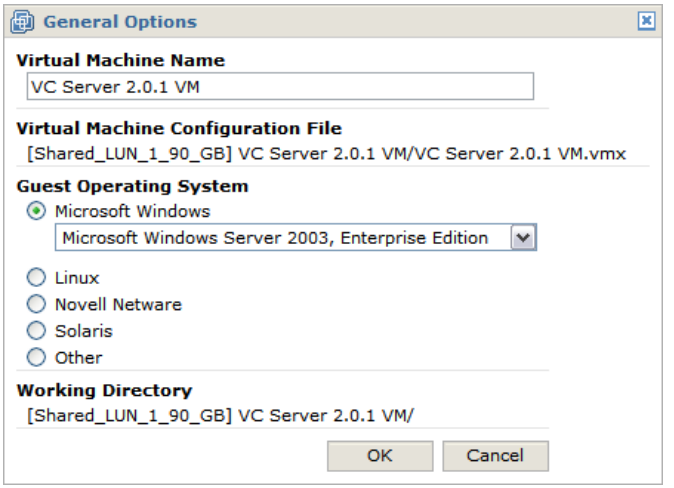
The Options tab lets you adjust characteristics of the selected virtual machine. You must power off the virtual machine before you can make any changes.

To change general settings

1 In the Summary tab, in the **Commands** section, click **Configure Options**.

2 Click **General**.

The General Options options page appears.



3 To change the display name, type a new name in the **Virtual Machine Name** field.

4 To change the guest operating system installed on the virtual disk (for example, if you are upgrading the guest operating system), select the new guest operating system from the **Guest Operating System** list.

When you change the operating system type using the Version list, only the setting for the guest operating system type in the virtual machine's configuration file is changed. The guest operating system itself is not changed. See the *Basic System Administration Guide* and the *Guest Operating System Installation Guide* for information about installing the guest operating system.

5 Click **OK** to save your changes and return to the Summary tab.

Changing Power State Options

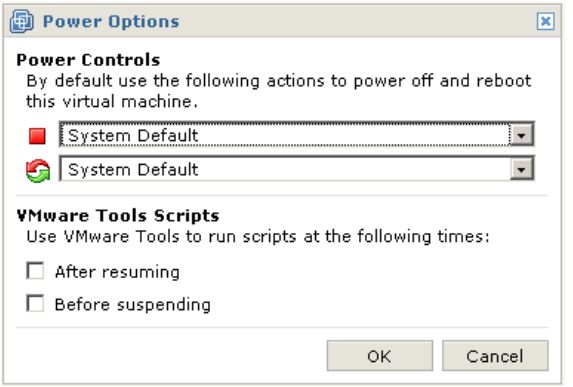
Power state options allow you to define actions that occur in various virtual machine power states.

To change power state options

1 In the Summary tab, in the **Commands** section, click **Configure Options**.

2 Click **Power**.

The Power Options page appears.



3 Choose the default power off option for the virtual machine.

Settings for powering off virtual machines include **Power off the virtual machine** and **Shut down the guest operating system**. By default, all virtual machines are powered off without shutting down the guest operating system. When VMware Tools is running, the virtual machine shuts down the guest operating system by default.

4 Choose the reboot option for the virtual machine.

Settings for rebooting virtual machines include **Reset the virtual machine** to reboot the virtual machine without shutting down the guest operating system and **Restart the guest operating system** to restart the guest operating system. By default, all virtual machines are rebooted without shutting down the guest operating system. When VMware Tools is running, the virtual machine restarts the guest operating system by default.

5 Choose to run a VMware Tools script either **After resuming** or **Before suspending**.

Changing Advanced Settings

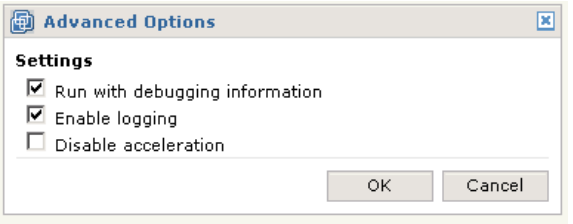
To change advanced virtual machine configuration options, complete the following steps.

To change advanced settings

1 In the Summary tab, in the **Commands** section, click **Configure Options**.

2 Click **Advanced**.

The Advanced Options page appears.



3 Select an option:

- **Run with debugging information** — Runs the virtual machine with debugging information, which is useful when you are experiencing problems with this virtual machine. You can then provide this information to VMware support to troubleshoot any problems you are experiencing.
- **Enable logging** — Enables logging for the virtual machine.
- **Disable acceleration** — Disables acceleration in the virtual machine. You might want to temporarily disable acceleration in a virtual machine if you try to install or start a program in a virtual machine and the program seems to hang or crash or reports that it is running under a debugger. VMware has seen this problem with a few programs. Generally, the problem occurs early in the program's execution. In many cases, you can get past the problem by temporarily disabling acceleration in the virtual machine.

  This setting slows virtual machine performance, so use it only for getting past a problem with running the program. After you stop encountering problems, return to the virtual machine settings editor and deselect **Disable acceleration**. You might then be able to run the program with acceleration.

Index

V

W