



VI-CENTER™ EXTENDED ENTERPRISE EDITION

GETTING STARTED GUIDE

This manual provides a quick introduction to Virtual Iron® software, and explains how to use Virtual Iron® VI-Center to configure and manage virtual servers.

Version: 4.4

Getting Started with Virtual Iron

About this Guide

This quick start guide takes you through the process of creating a virtual server with Virtual Iron® Extended Enterprise Edition (XEE). For a detailed treatment of the topics discussed here, refer to the *Virtual Iron® VI-Center™ Administrator Guide*. This guide contains the following sections:

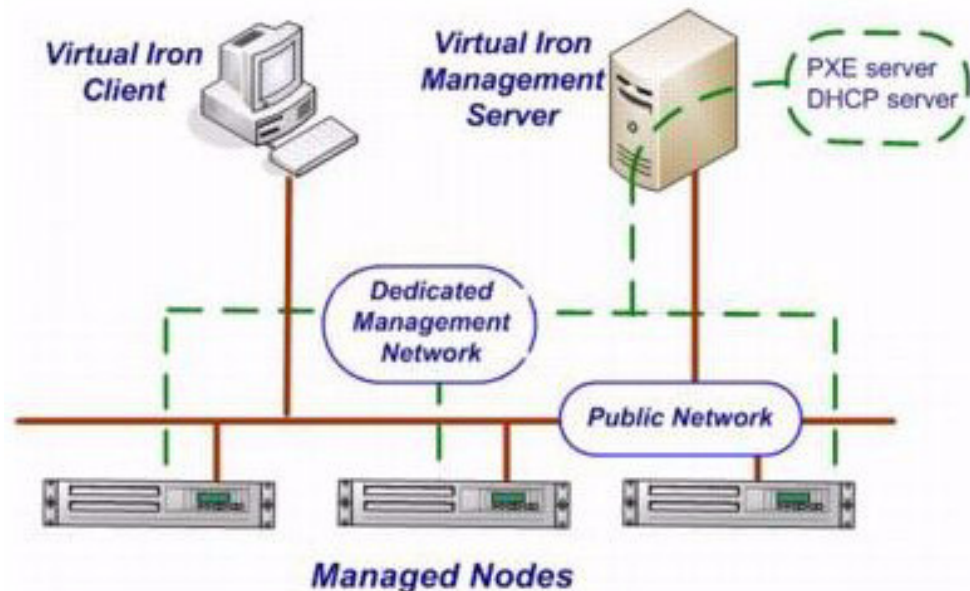
- ▶ *This chapter* describes how to create the physical framework, install the product, and connect to the Virtual Iron® management server.
- ▶ *Chapter Two* takes you through the steps needed to create a virtual server.

Set up the Physical Framework

Virtual Iron® is an enterprise-class virtualization product that allows the resources of one or more nodes to support distinct operating systems. Before you install the product, you need to cable together a set of supported *nodes* in the correct configuration.

This illustration shows a simplified configuration. It consists of at least three nodes: a *management node* (which hosts the VI-Center), at least one *managed node*, and a separate system running the *management client*.

The VI-Center can run on several versions of Windows® or Linux. This management node can be Intel or AMD-based. The *managed nodes* do not run a standard operating system. Instead, they boot and run a Virtual Iron component that enables its hardware to support multiple virtual server operating systems concurrently.



Installing Virtual Iron®

After you've cabled nodes, you are ready to install the software on the system designated as the *management server node*. Virtual Iron® runs on the Linux® and Windows® systems listed in the *VI-Center Administrator Guide*.

1. To install Virtual Iron®, proceed as follows.

For Linux:

Execute the bin file:

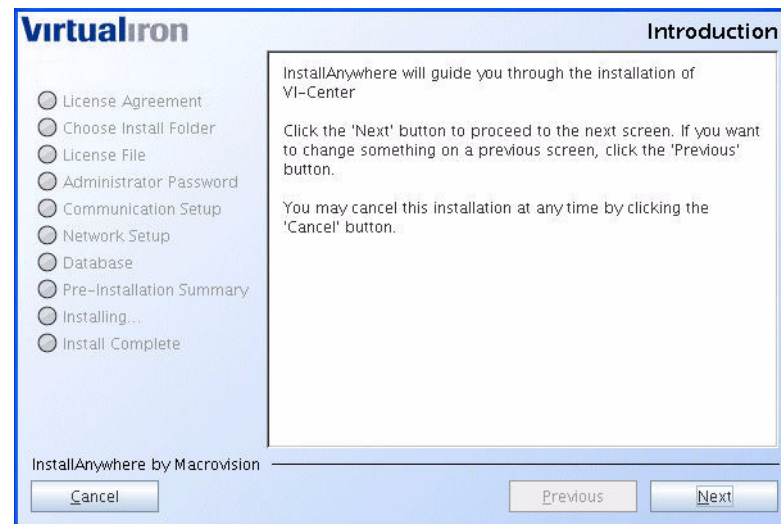
```
# sh ./VirtualIronInstall4xx.bin
```

For Windows®:

Double click this file:

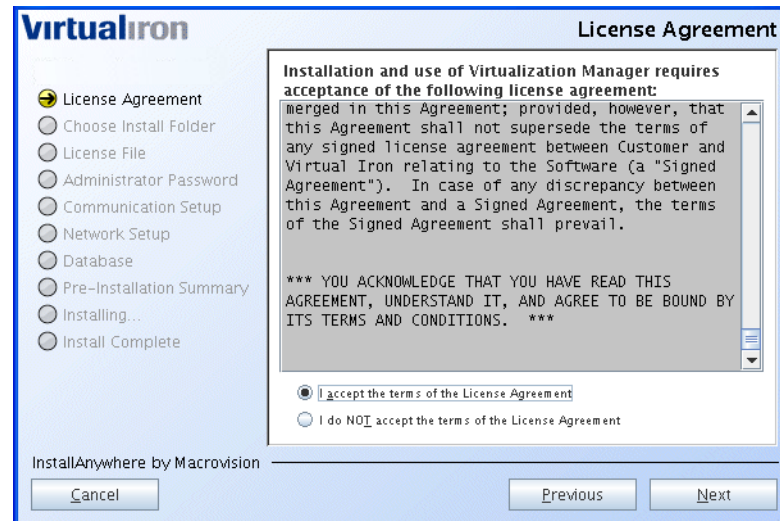
VirtualIronInstall4xx.exe

When the download completes, the introductory screen appears. Click **Next** to begin the installation.

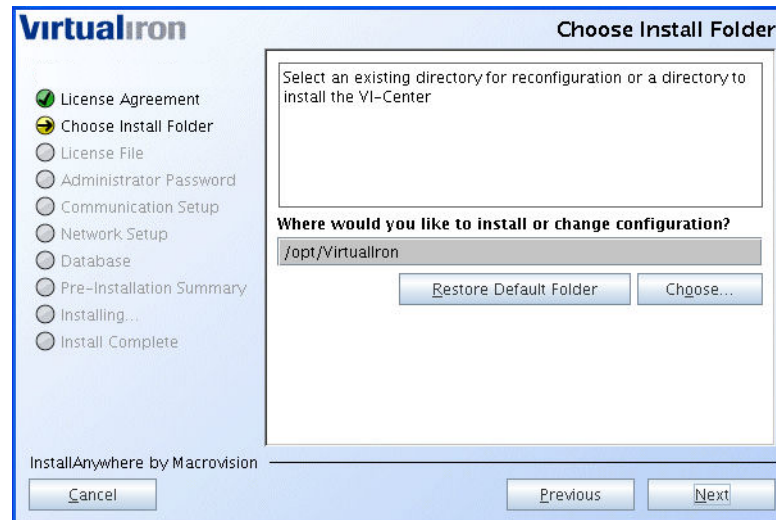


At this point, the installation process checks whether standard DHCP port 67 or TFTP port 69 are in use on the installation host.

2. In the Virtual Iron® license agreement, read the license agreement, Check the I Accept the Terms of the License Agreement radio button and click **Next** to continue the installation.



3. Next, choose a location for the installation. Enter a path for the installation, or choose the default folder. For Linux, this is **/opt/Virtuallron/**; for Windows™, **C:\Program Files\Virtuallron**. Select a location and click **Next**.



4. Enter the location of the Virtual Iron license file. This file is not included in the distribution, but is sent to you by Virtual Iron®, Inc. The example shown is from a Windows® installation.

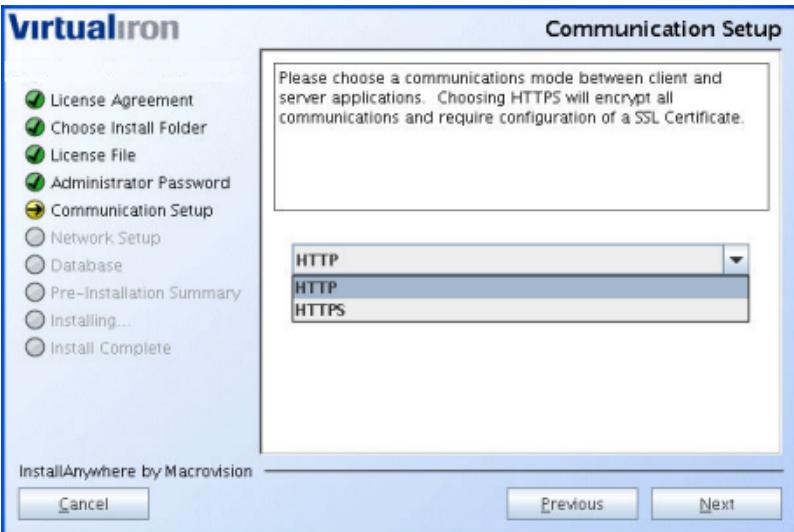


5. Enter an Admin password for the system. The password and confirmation password you choose must match, and must be 6-32 characters long.



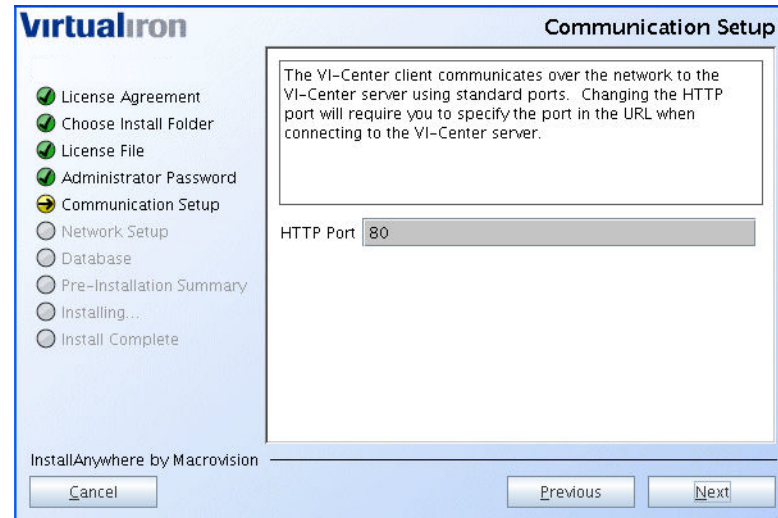
The dialog box is titled "VirtualIron" and "Set Administrator Password". On the left, a list of installation steps is shown: License Agreement, Choose Install Folder, License File, Administrator Password (highlighted with a yellow arrow), Communication Setup, Network Setup, Database, Pre-Installation Summary, Installing..., and Install Complete. The main area contains a text box with instructions: "Virtual Iron creates a default application administration account with the login name admin and password. You are required to enter a password that is between 6 and 32 characters in length." Below this are two input fields labeled "Password" and "Password Confirm". At the bottom, there are "Cancel", "Previous", and "Next" buttons.

6. Choose HTTP or HTTPS as the connection type between the VI-Center client and server.



The dialog box is titled "VirtualIron" and "Communication Setup". On the left, the same list of installation steps is shown, with "Communication Setup" highlighted with a yellow arrow. The main area contains a text box with instructions: "Please choose a communications mode between client and server applications. Choosing HTTPS will encrypt all communications and require configuration of a SSL Certificate." Below this is a dropdown menu showing "HTTP" as the selected option, with a list of options: HTTP, HTTP, and HTTPS. At the bottom, there are "Cancel", "Previous", and "Next" buttons.

If you choose HTTP, the window shown below appears. Choose a port or use port 80 (the default).



The VirtualIron Communication Setup window shows the 'Communication Setup' step selected in the left sidebar. The main area contains a text box explaining that the VI-Center client communicates over the network to the VI-Center server using standard ports, and that changing the HTTP port will require specifying the port in the URL. Below this, the 'HTTP Port' is set to 80. At the bottom, there are 'Cancel', 'Previous', and 'Next' buttons.

VirtualIron Communication Setup

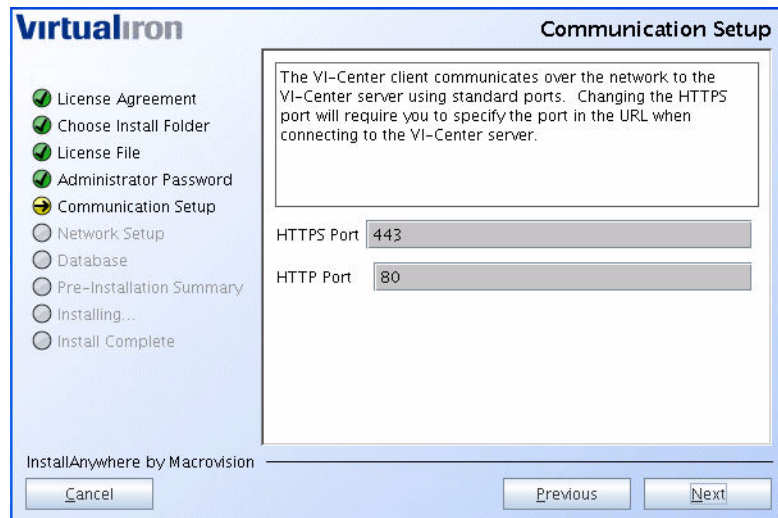
The VI-Center client communicates over the network to the VI-Center server using standard ports. Changing the HTTP port will require you to specify the port in the URL when connecting to the VI-Center server.

HTTP Port: 80

InstallAnywhere by Macrovision

Cancel Previous Next

If you select **HTTPS**, select a port or use port 443 (the default). You can also select your own keystore. If you choose to do this, you must provide passwords for the keystore.



The VirtualIron Communication Setup window shows the 'Communication Setup' step selected in the left sidebar. The main area contains a text box explaining that the VI-Center client communicates over the network to the VI-Center server using standard ports, and that changing the HTTPS port will require specifying the port in the URL. Below this, the 'HTTPS Port' is set to 443 and the 'HTTP Port' is set to 80. At the bottom, there are 'Cancel', 'Previous', and 'Next' buttons.

VirtualIron Communication Setup

The VI-Center client communicates over the network to the VI-Center server using standard ports. Changing the HTTPS port will require you to specify the port in the URL when connecting to the VI-Center server.

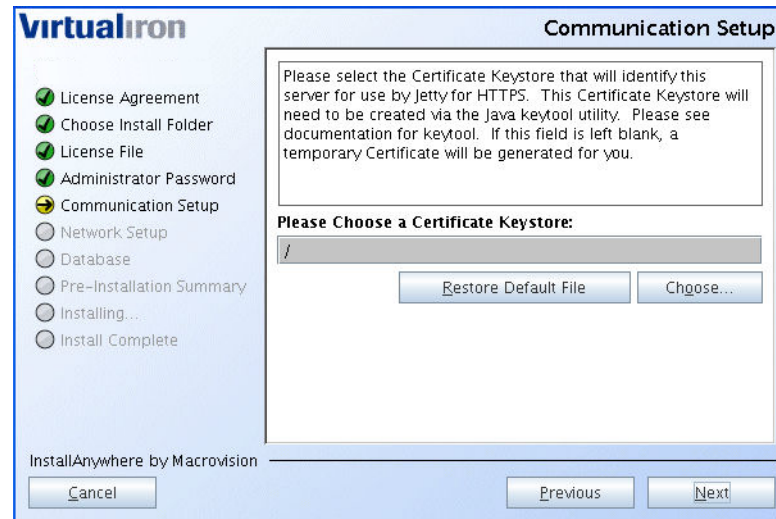
HTTPS Port: 443

HTTP Port: 80

InstallAnywhere by Macrovision

Cancel Previous Next

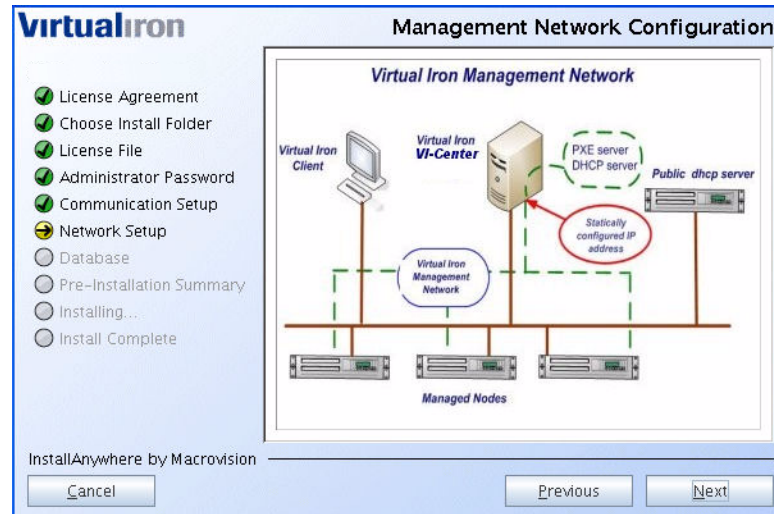
7. If you chose HTTPS (and the port is available), you will see the following window. The screen shown in this example is from a Linux installation.



8. Enter passwords for the keystore and the certificate key. This window appears only if you chose a certificate keystore in the preceding step.



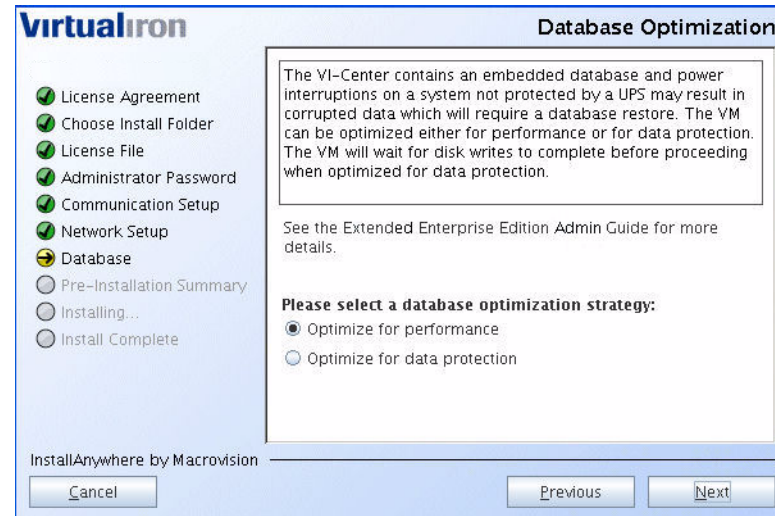
9. The illustration that appears at this point shows a representative configuration of the management network. Note that two networks are present. The Virtual Iron management network is a private network between the management server and all managed nodes. These nodes are also connected to a public network. Click **Next** to continue.



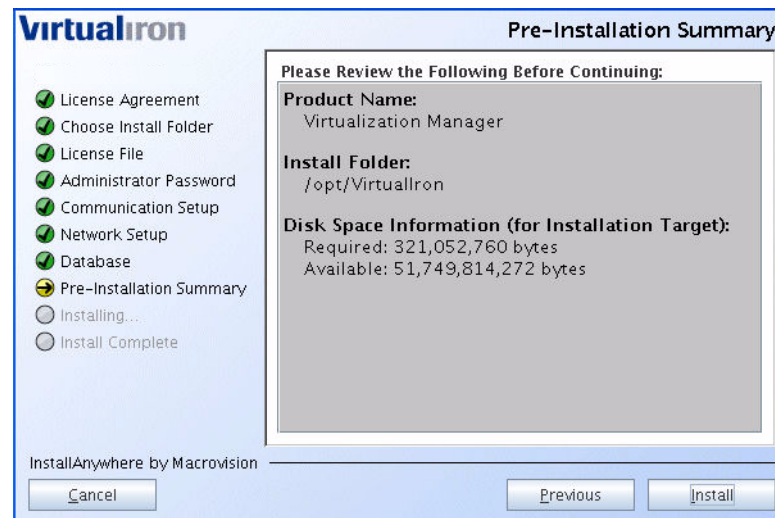
10. Assign the IP addresses the management server uses to connect to the private management network and the public network.

The 'Network Setup' form in the VirtualIron installer. It includes a list of steps on the left: License Agreement, Choose Install Folder, License File, Administrator Password, Communication Setup, Network Setup (selected), Database, Pre-Installation Summary, Installing..., and Install Complete. The main area contains the text 'Please setup your network configuration.' followed by an important note: 'Important: Make sure firewalls are disabled on the Management Network Interface. Otherwise, some services will fail to initialize.' Below this, there are two dropdown menus: 'Public Network Interface' set to 'eth0(10.1.3.190)' and 'Management Network Interface' set to 'eth1(10.1.190.1)'. At the bottom, there are buttons for 'Cancel', 'Previous', and 'Next'.

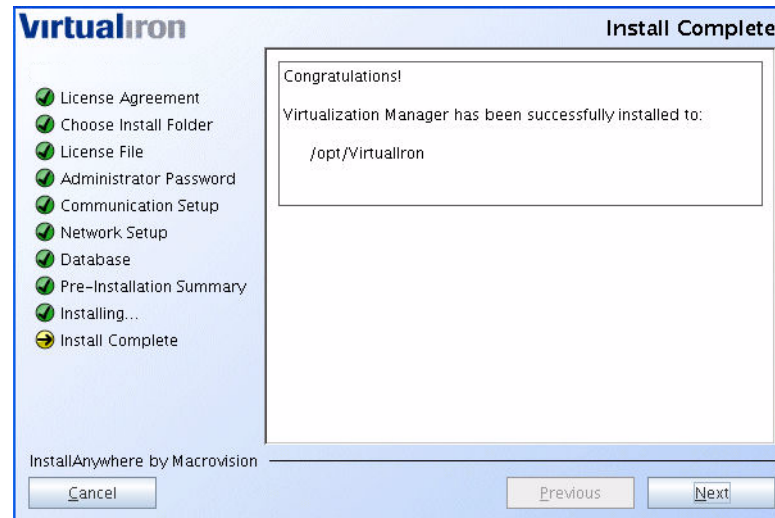
11. Select Optimize for Performance if you have a dedicated battery backup in case of a power disruption, otherwise select Optimize for Data Protection. For more information about these two options, see Chapter 2 of the Enterprise Edition Admin Guide.



12. At this point, all necessary information has been provided. A pre-installation summary is displayed. To proceed with the installation, click **Install**. The example is for a Windows® installation.



13. A screen appears with the install location. Click **Next**.



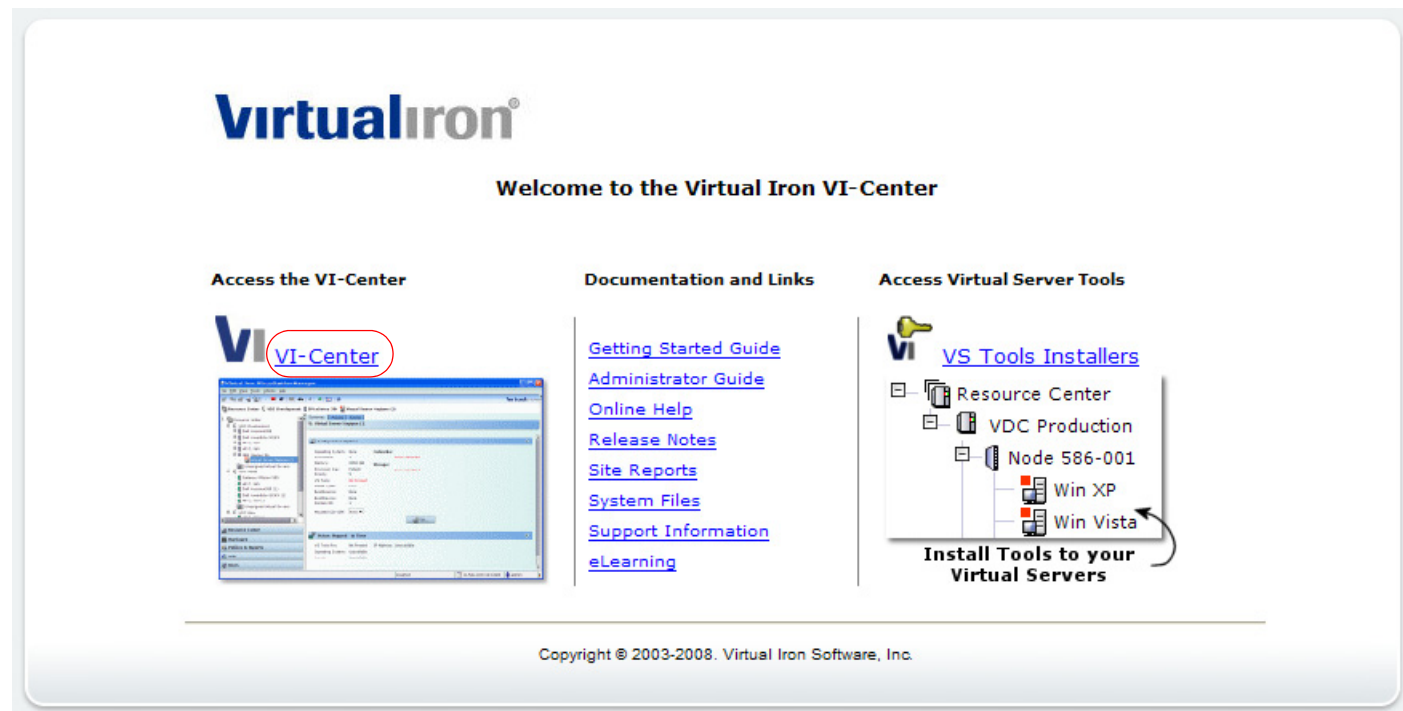
14. When the installation is complete, click **Done** to close the window. (Example: Windows® installation). The VI-Center starts automatically.



Connecting to the Management Server

After installing the product, use a web browser to connect to the management server node (that is, the node on which you installed the product).

1. For the URL, use the IP address assigned to the management Ethernet interface.
2. On the Virtual Iron® splash screen, click **VI-Center**.



3. The login window appears. Enter the password you chose when installing the product, and click **OK**.

VirtualIron

Welcome to the Virtual Iron VI-Center™

Enter your user name and password:

User Name: admin

Password: *****

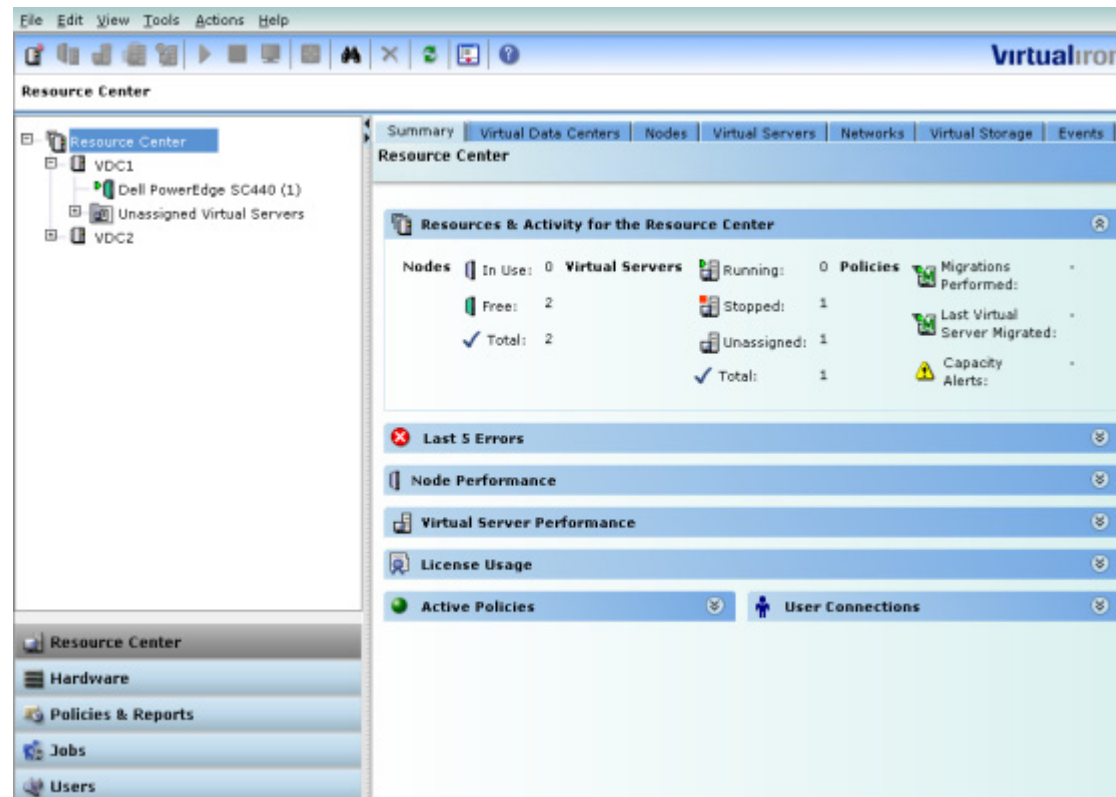
URL: ha-technology.com:80

OK Cancel

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4. VI-Center opens. If the Tutorial appears, click **Help, Show Tutorial** to deselect the option and close the Tutorial. You can access the tutorial at any time by the same method.

Note: If you are running Java6, and you get a File Not Found error when accessing the VI-Center URL, you may have a caching issue. Open your Java Control Panel (enter **javaws -viewer** in the Command Prompt). In the General tab, make sure Keep Temporary Files on My Computer is checked.



Creating and Booting a Virtual Server

Follow these steps to configure and launch a virtual server.

Set the BIOS and Reboot all Managed Nodes

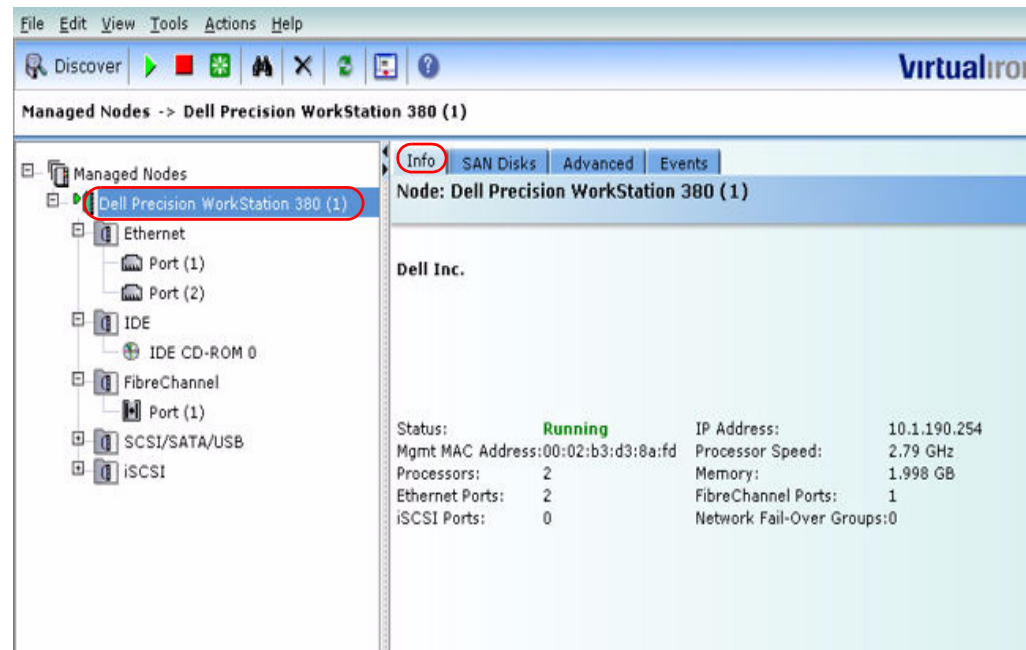
Set the BIOS of each managed node to PXE or Network. Then reboot the nodes.

The nodes may take a few minutes to boot. When they come up, they will PXE-boot the virtualization software from the management server. This prepares these nodes for virtualization. They appear in the **Hardware** view of the client interface.

Check Hardware Components

When you log in to the product, the VI-Center does an inventory of node components. Before moving on, take a moment to check the components of all nodes

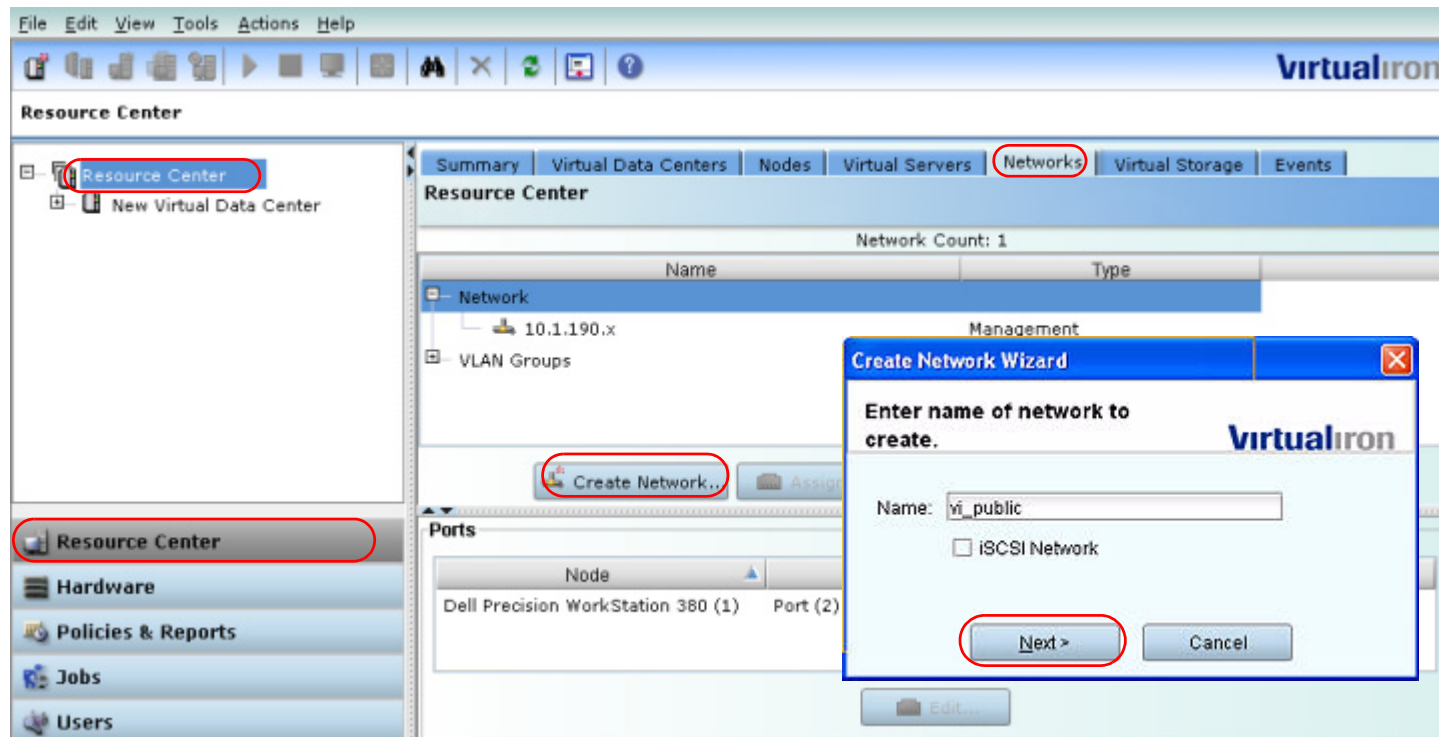
1. Click **Hardware** in the Applications Shortcuts.
2. Select the managed node and click the **Info** tab to get detailed information that VI-Center has discovered for the node. The components of each node are listed in the following categories:
 - Management MAC address and IP address
 - Number and speed of processors and memory
 - Ethernet ports (for connection to external networks)
 - iSCSI ports (internal SCSI adapters, for SAN connection. See the Networks tab)
 - Fibre Channel ports (for connection to SAN)
 - IDE drive (CD-ROM)



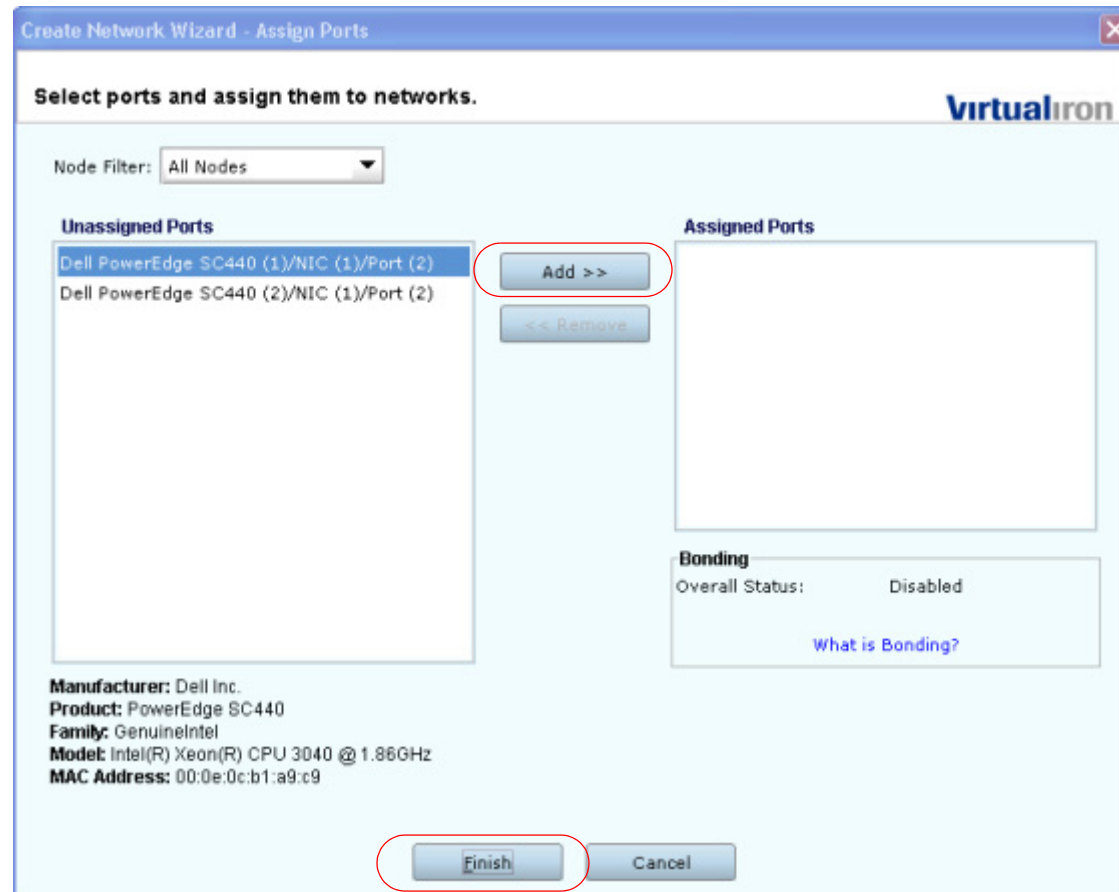
Create Networks

1. In the **Hardware** view, select **Managed Nodes** in the navigation tree, and then select the **Networks** tab. Click **Create Network** and follow the Create Network Wizard windows. Enter a name for the network. In the example shown, we used vi_public. Click **Next**.

The networks you create will be available to the virtual servers. (See the *VI-Center Administration Guide* for further information.)



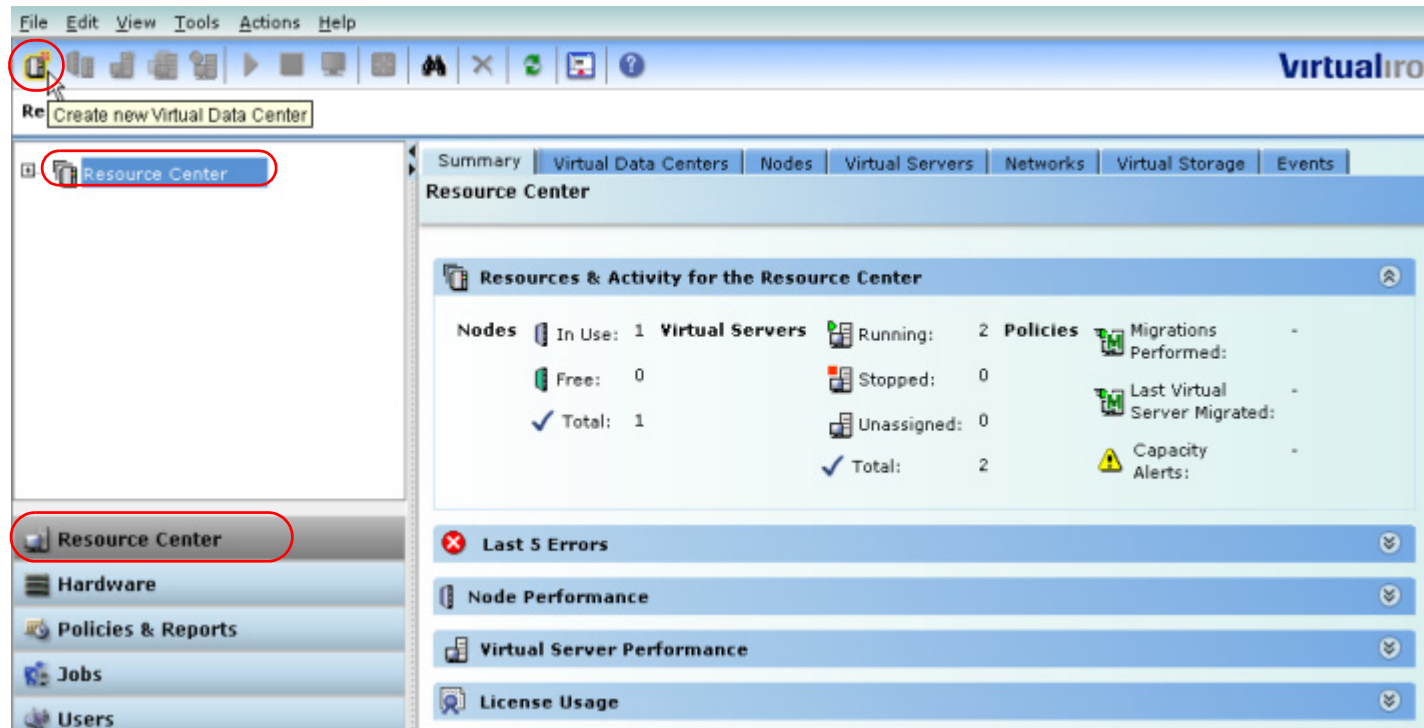
2. In the **Create Network Wizard - Assign Ports** window, select which nodes to assign from the pulldown. Click **Add**, then **Finish**.



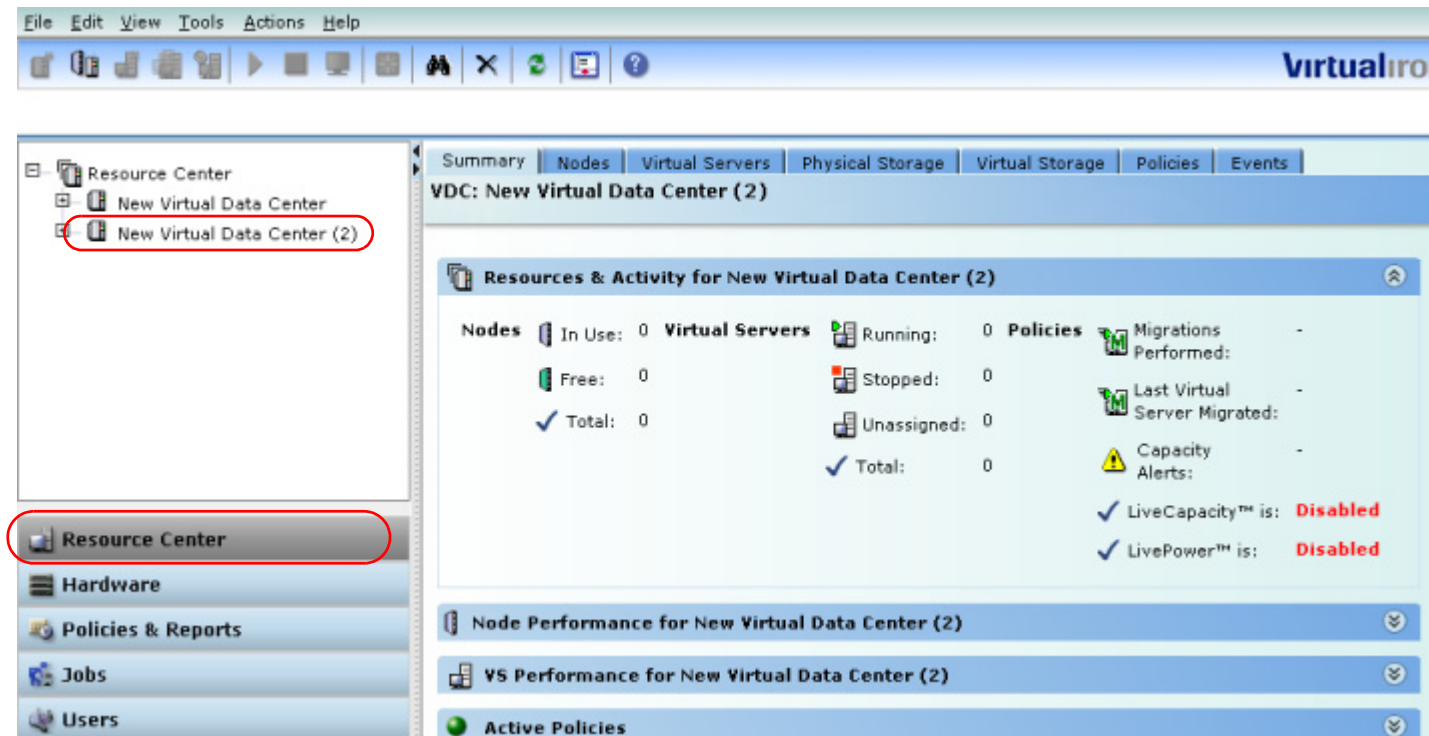
Create a Virtual Data Center (VDC)

A Virtual Data Center (VDC) is a group of one or more nodes and the Virtual Servers (VSs) it supports. The physical resources of a VDC can be shared by multiple VSs.

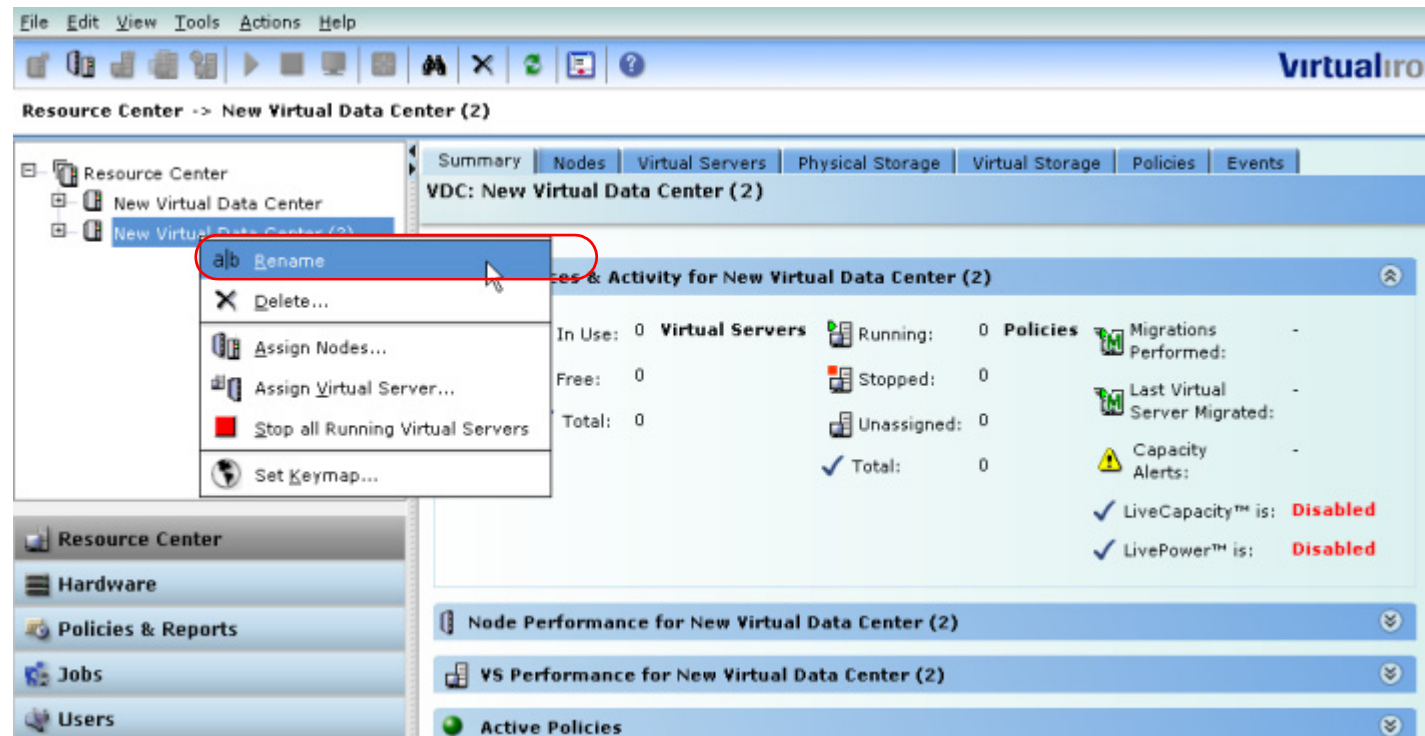
1. Click **Resource Center** in the Applications Shortcuts. Then click the **Create New Virtual Data Center** icon.



The new virtual data center appears in the navigation tree. Note that a yellow lock icon briefly shows up beside the New Virtual Data Center icons. The locks indicate that you are making a change to these objects. While you are performing this operation, the objects cannot be managed by other users. The locks are automatically released when the operation completes.



2. Right click the virtual data center you just created. Select **Rename** from the submenu, and type in a new name. Press **Enter** to change the name.



Note that you can view the status of each operation at the bottom of the **Job Progress** pane.

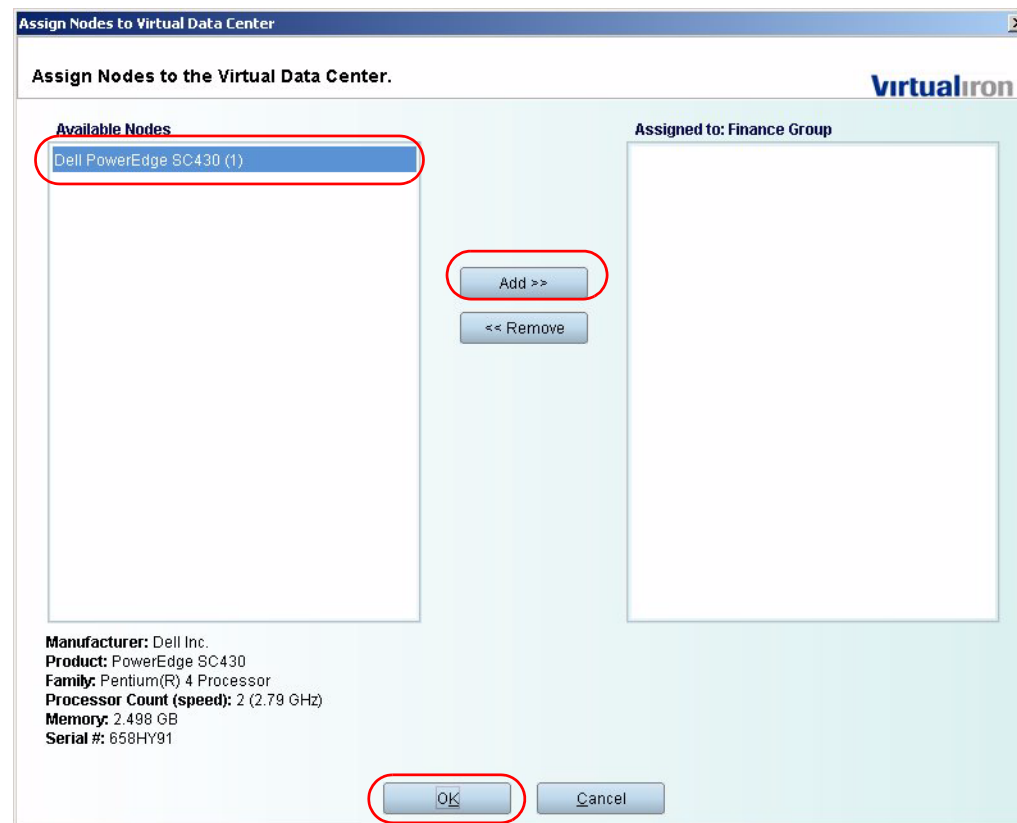
Assign a Node to the VDC

Assigning a node provides the VDC with a pool of processing, memory and I/O resources that can be shared by VSs and their applications. You can assign as many nodes to a VDC as exist in the Hardware view.

1. Select the name of the VDC in the navigation tree, and click the **Assign Nodes** icon as shown here:



2. The **Assign Nodes** window appears, displaying the name and information associated with all nodes that have been discovered by the management server. To move the node to the VDC you have created, select the node and click **Add >>**. Then click **OK**.



Create a Virtual Server

Virtual Servers (VSs) can be configured to access local disks, raw SAN disks, and logical disks. Virtual Iron supports the creation of logical disks that can be cloned and exported for use by virtual servers.

Raw storage refers to all SAN storage visible to the node hosting a VS. Managed storage, whether on a local disk or SAN (over iSCSI or Fibre Channel), refers to disks used to configure and store *logical disks*. Raw storage has certain advantages, but it affords less management flexibility than the managed storage framework.

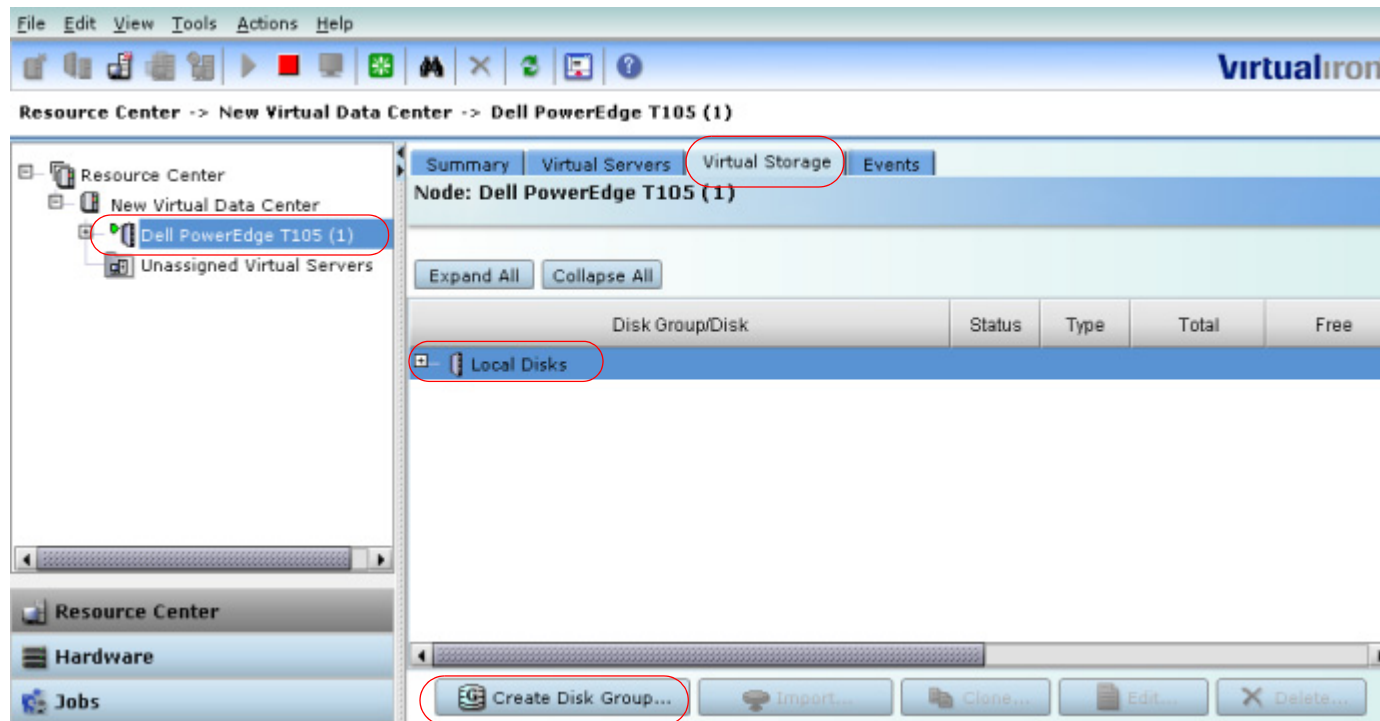
The succeeding example defines how to create a logical disk on a local drive. See the **Virtual Iron® VI-Center™ Administrator Guide** for details on SAN configurations.

To create and run a VS, you need to create the VS, configure the boot and runtime options, assign a network to it, and define its storage. This process is covered in these steps:

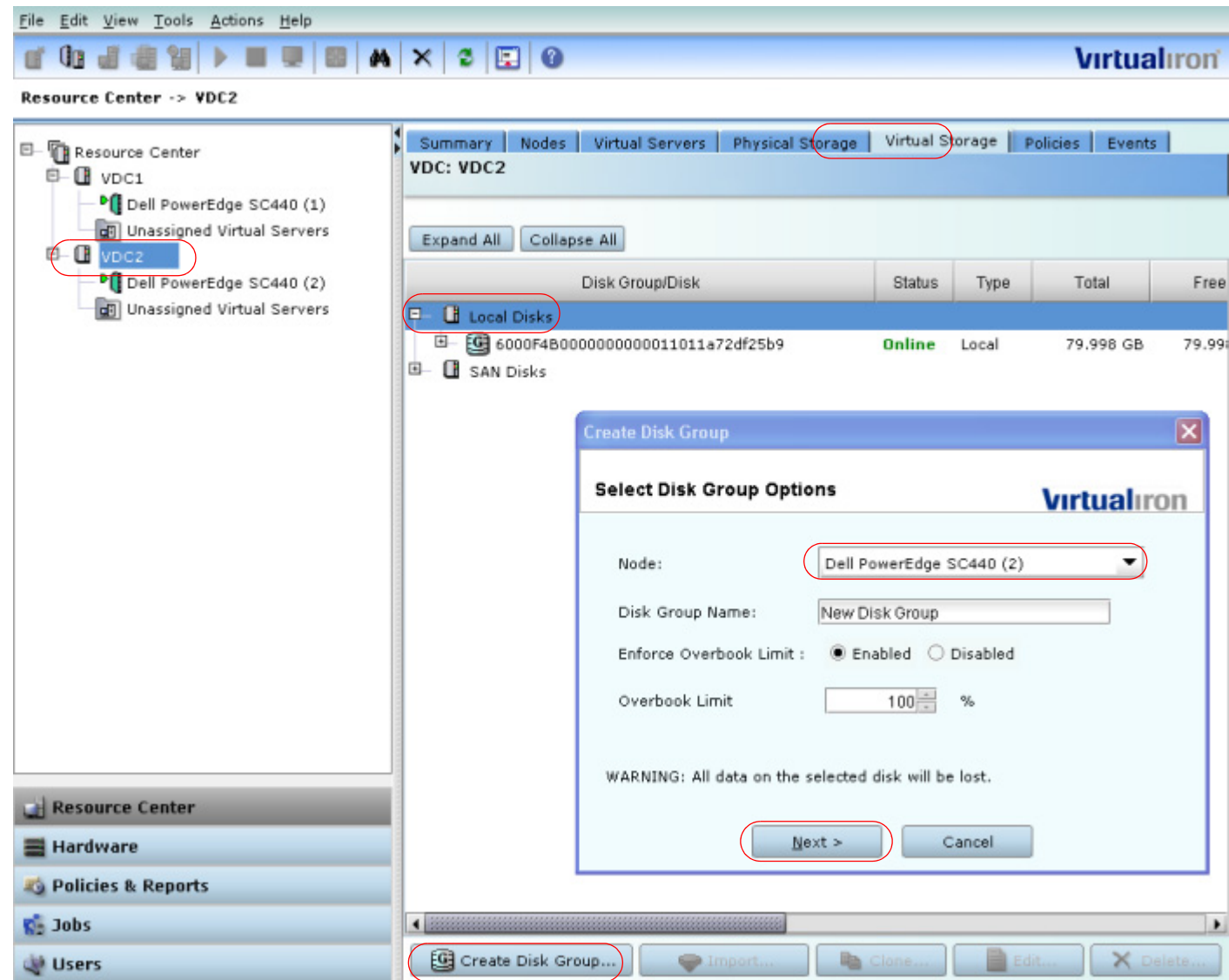
- [*Create a Logical Disk*](#)
- [*Create a Virtual Server Wizard*](#)
- [*Configure the Network Adapters*](#)
- [*Specify Virtual Server Boot Options*](#)
- [*Configure Virtual Server Processors, Memory, and Priority.*](#)
- [*Start the VS Installation*](#)
- [*Installing VS Tools on Windows® Virtual Servers*](#)
- [*Special Considerations for Windows 2000 OS*](#)

Create a Logical Disk

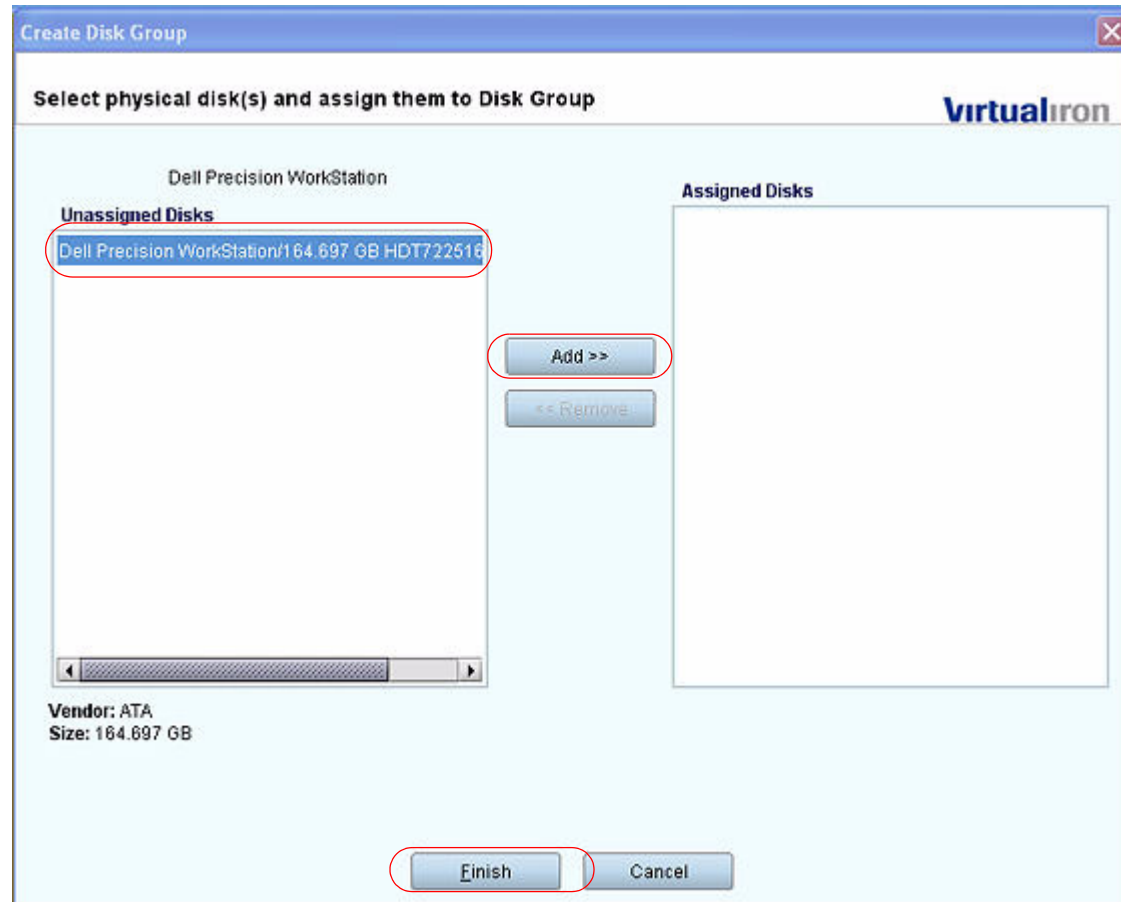
1. Click **Resource Center**, select your node and then select the **Virtual Storage** tab.
2. Select **Local Disks**, and click **Create Disk Group...**



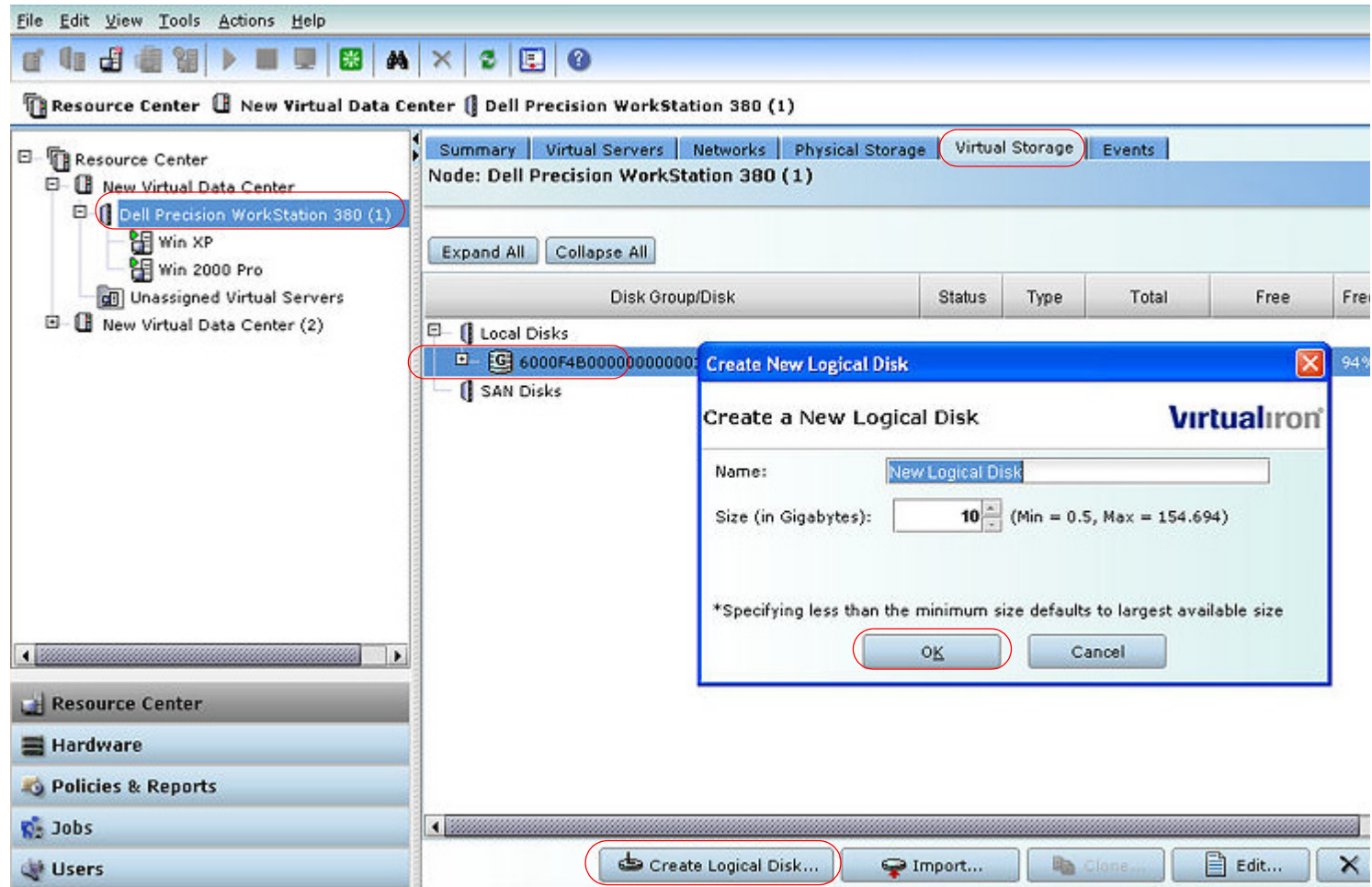
3. In the **Select Disk Group Options** window, rename the Disk Group, or keep the default name. Click **Next>>**.



4. Assign a disk to the Disk Group. In this example, the node hard disk is available for assignment.
5. Click **Add** and **Finish**.



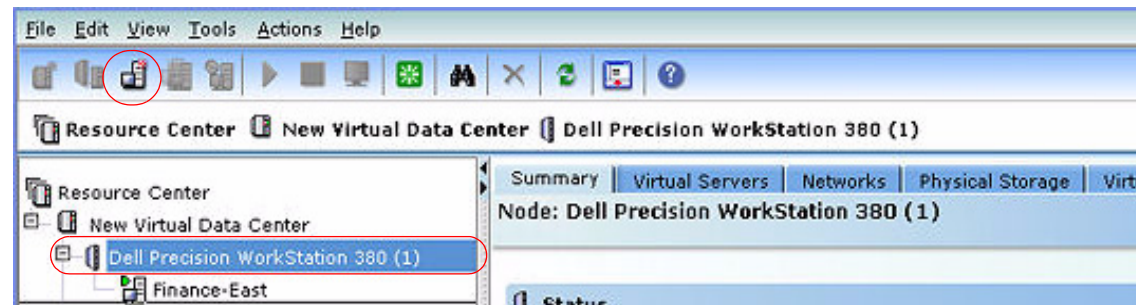
6. Select the Disk Group and click **Create Logical Disk**. In the **Create New Logical Disk** pop-up window, rename the logical disk if desired. Note that a logical disk can only be assigned to a virtual server.
7. Choose a size for the logical disk that is just large enough to accommodate the virtual server. You can use the remaining space for other virtual servers.
8. Click **OK**.



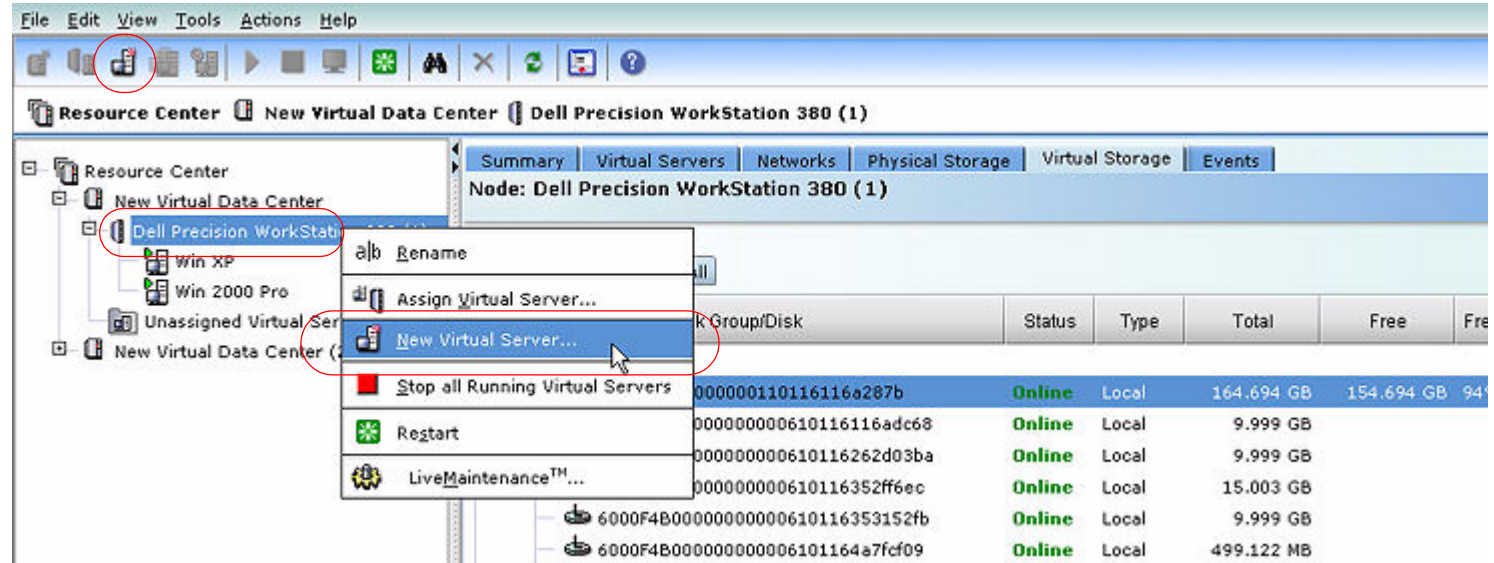
Create a Virtual Server Wizard

1. To access the Virtual Server Wizard, use one of the following methods:

- Select the node you added earlier, then click the **Create New Virtual Server** icon on the application tool bar.



- Or, right click the node you added earlier, and select **New Virtual Server** from the pop-up list.



2. Name the virtual server. In this example, the virtual server has been named **Options**.

The screenshot shows the 'New Virtual Server Wizard' window. On the left, a 'Steps' list includes: 1. Select Virtual Server Configuration (highlighted with a red circle), 2. Specify Storage, 3. Select Storage, 4. Network, 5. Boot Options, and 6. Configuration Options. The main area is titled 'Select Virtual Server Configuration'. It contains a text field 'New Virtual Server Name:' with the value 'Options' (circled in red). Below this, a section titled 'Please specify how you would like to configure your Virtual Server (VS):' offers two radio button options. The first is 'Create a basic Virtual Server' with a description: 'This is the fastest way to create a new VS. You will be able to configure the VS later in the editor.' The second option, 'Create a fully configured Virtual Server (recommended)', is selected (circled in red) and has a description: 'This mode allows you to create a new VS with specific configuration.' At the bottom right, there are four buttons: '< Prev', 'Next >' (circled in red), 'Finish', and 'Cancel'. The VirtualIron logo is visible in the bottom left corner of the dialog.

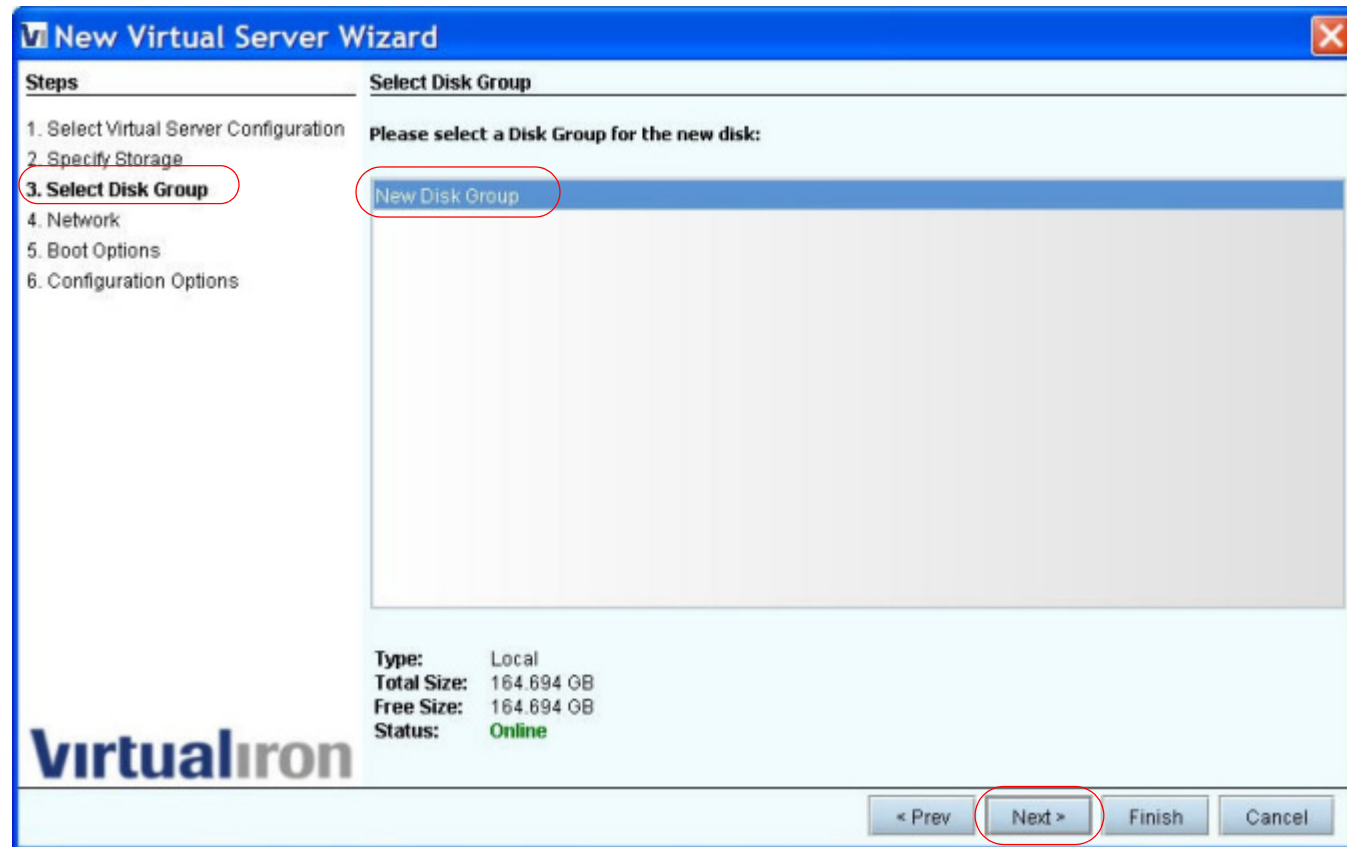
3. Select how you want to configure your virtual server from one of the two options. This example shows the default setting, **Create a fully configured Virtual Server**.
4. Click **Next**.

5. Specify the type of storage you want to use. If you choose **Create New Disk**, as in the example, enter a name for the new logical disk.
6. Select a disk size for the logical disk. **10 Gigabytes** is the default.

The screenshot shows the 'New Virtual Server Wizard' window, specifically the 'Specify Storage' step. On the left, a 'Steps' pane lists six steps: 1. Select Virtual Server Configuration, 2. Specify Storage (highlighted with a red circle), 3. Select Disk Group, 4. Network, 5. Boot Options, and 6. Configuration Options. The main area is titled 'Specify Storage' and contains the text 'Please specify storage:'. There are three radio button options: 'Use existing Disk', 'Create New Disk:' (selected and highlighted with a red circle), and 'Do not specify storage'. Below the 'Create New Disk:' option, there is a text field for 'Disk Name' containing 'New Logical Disk' and a 'Disk Size' spinner set to '10' Gigabytes (Max = 98GB), with the '10' highlighted by a red circle. At the bottom right, there are four buttons: '< Prev', 'Next >' (highlighted with a red circle), 'Finish', and 'Cancel'. The VirtualIron logo is visible in the bottom left corner of the window.

7. Click **Next**.

8. Select the Disk Group in which the newly created logical disk will be placed.
9. Click **Next**.



Configure the Network Adapters

1. Select an Ethernet network from the pulldown menu.
2. Select a VNIC from the **Network Adapter** pulldown menu to choose a specific VNIC from the drop-down list.
3. Click **Next**.

The screenshot shows the 'New Virtual Server Wizard' window, specifically the 'Network' step. On the left, a 'Steps' list shows the progression from '1. Select Virtual Server Configuration' to '6. Configuration Options', with '4. Network' highlighted by a red circle. The main area is titled 'Network' and contains the instruction 'Please specify a network:'. Below this, there are two radio buttons: 'Specify a network' (which is selected and circled in red) and 'Do not specify network'. Under the selected option, there are two dropdown menus: 'Ethernet Network:' with 'vi_public' selected, and 'Network Adapter:' with 'VNIC:' and '00:0f:4b:00:00:1f' selected. At the bottom right, there are four buttons: '< Prev', 'Next >' (circled in red), 'Finish', and 'Cancel'. The VirtualIron logo is visible in the bottom left corner of the window.

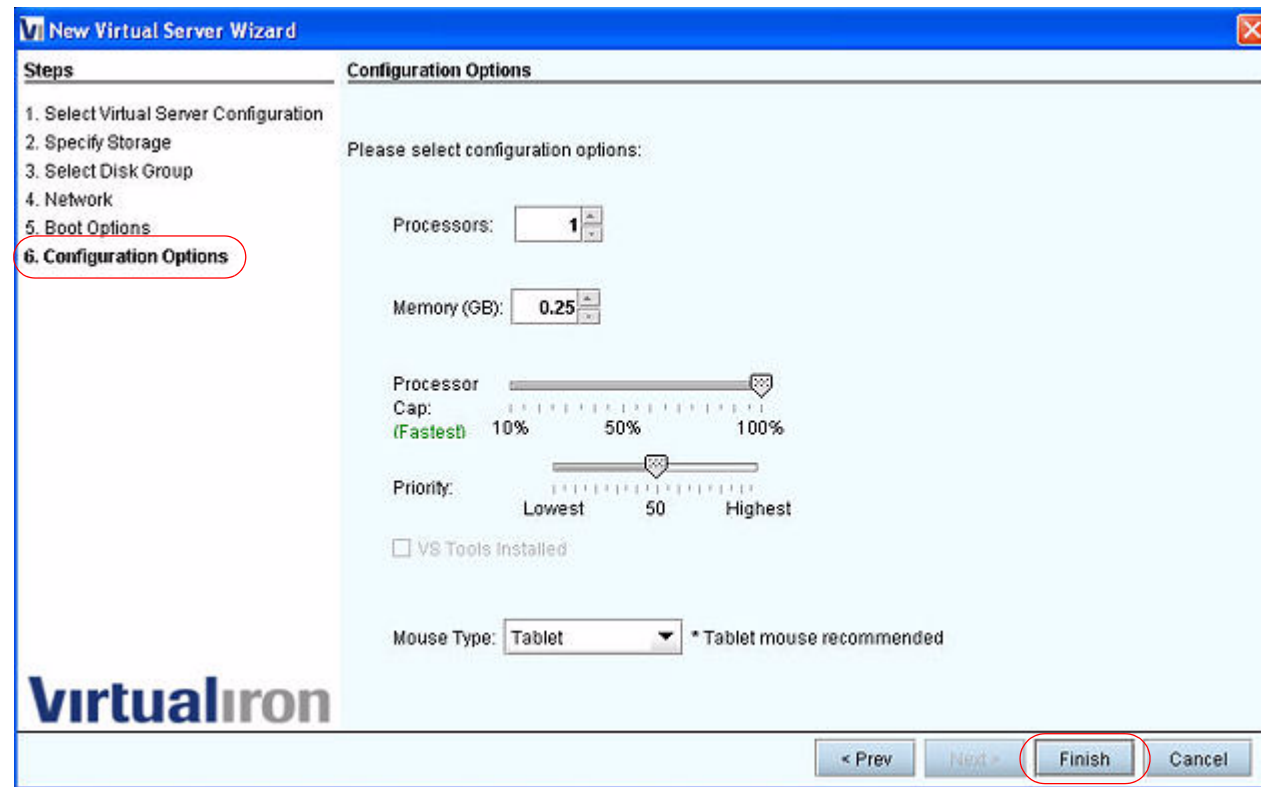
Specify Virtual Server Boot Options

1. In the **Boot Options** pane, select **Microsoft Windows XP** for Operating System. For this example, you will need a Microsoft Windows XP CD and license key later on.
2. Select **CD-ROM/DVD**. This selection tells the VS to boot from the CD ROM device on the node where the VS is located. Later you will install Windows onto a Logical Disk that you specify
3. Place the Windows installation CD into the node on which the virtual server will reside.
4. Click **Next**.

The screenshot shows the 'New Virtual Server Wizard' window, specifically the 'Boot Options' pane. The 'Steps' pane on the left lists six steps: 1. Select Virtual Server Configuration, 2. Specify Storage, 3. Select Disk Group, 4. Network, 5. Boot Options (highlighted with a red circle), and 6. Configuration Options. The 'Boot Options' pane contains the following fields: 'Operating System' is set to 'Microsoft Windows XP'; 'Specify Boot Device' has three radio buttons: 'CD-ROM/DVD' (selected and circled in red), 'Disk', and 'Network (PXE) Boot'; to the right of the radio buttons are three dropdown menus: 'Node Local CD-ROM/DVD', 'New Logical Disk', and '00:0f:4b:00:05:d2'; at the bottom, under 'Network Image Mounts', are two empty dropdown menus for 'CD-ROM:' and 'Floppy:'. The 'VirtualIron' logo is in the bottom left. At the bottom right, there are four buttons: '< Prev', 'Next >' (circled in red), 'Finish', and 'Cancel'.

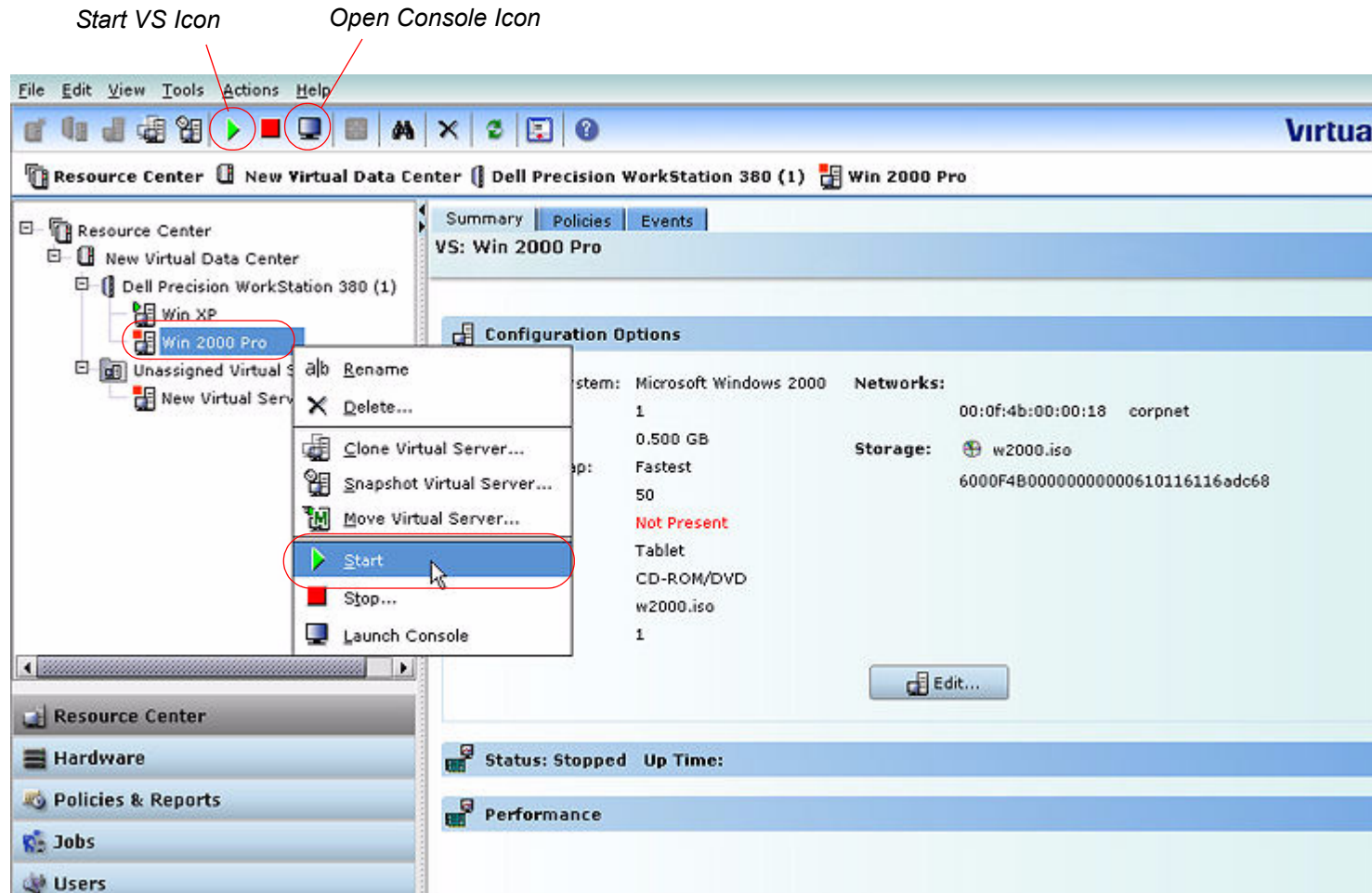
Configure Virtual Server Processors, Memory, and Priority.

1. Accept the default values or specify new values for the processors, memory, and priority. For information on these settings, see the *Virtualization Manager Administrators Guide*.
2. Depending on the operating system you specified in the previous step, **Tablet**, **PS2**, or **USB** is set as the default **Mouse Type**.
3. Click **Finish** and wait for the operation to complete.

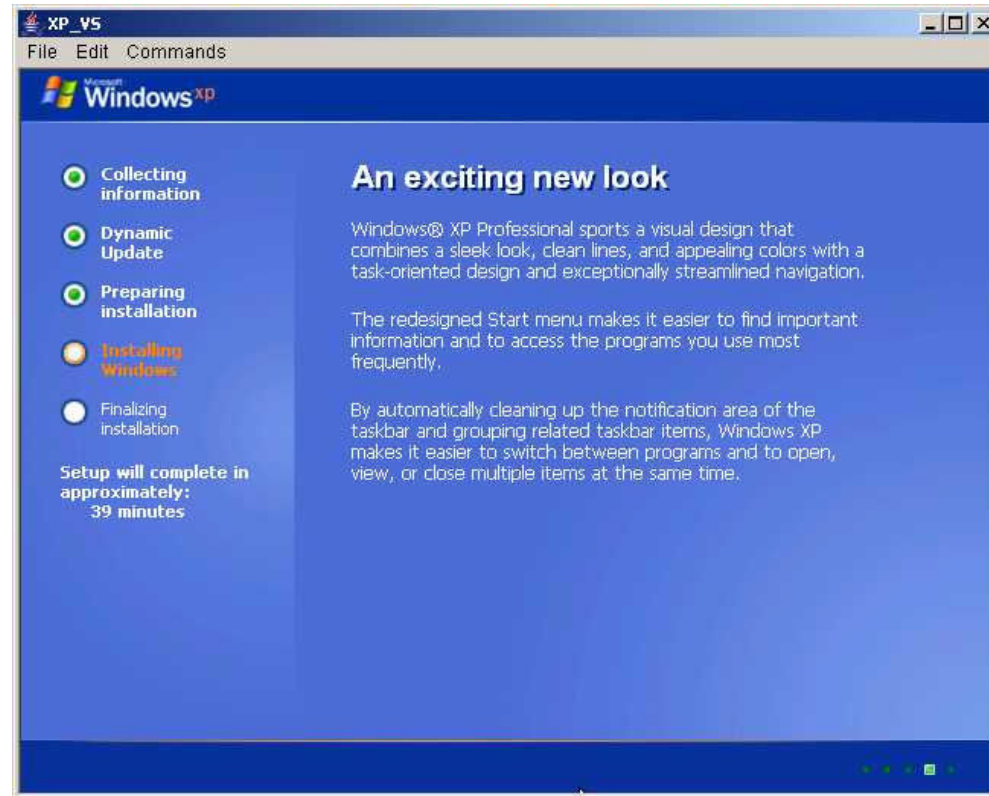


Start the VS Installation

1. Insert the appropriate installation media in the CD-ROM/DVD of your node. Select the virtual server and choose the **Start** icon, or right click and select **Start** from the pop-up menu.



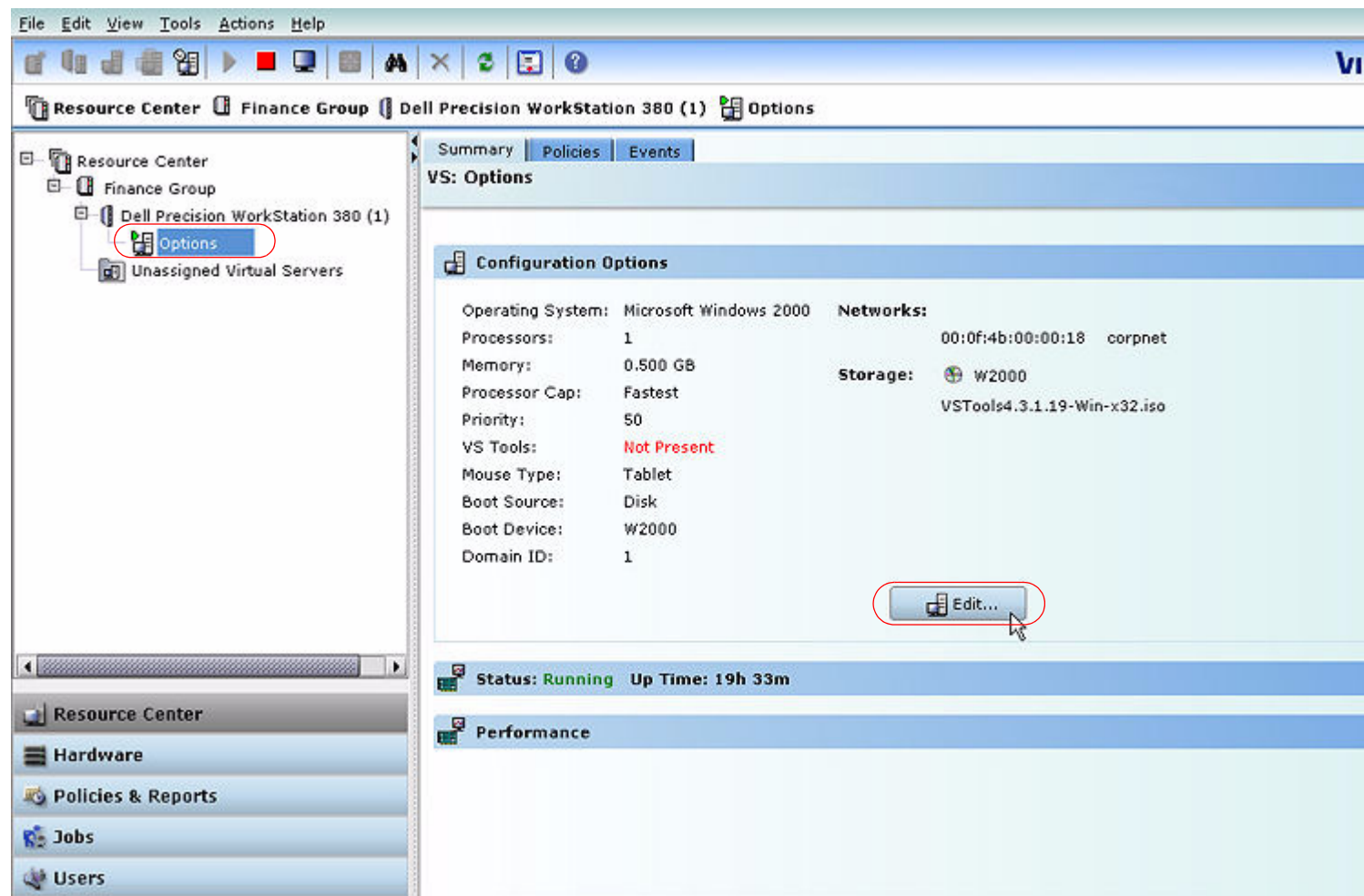
2. Open a console by clicking the console icon on the application toolbar. Windows XP boots in the console window. Follow the instructions to install Windows.



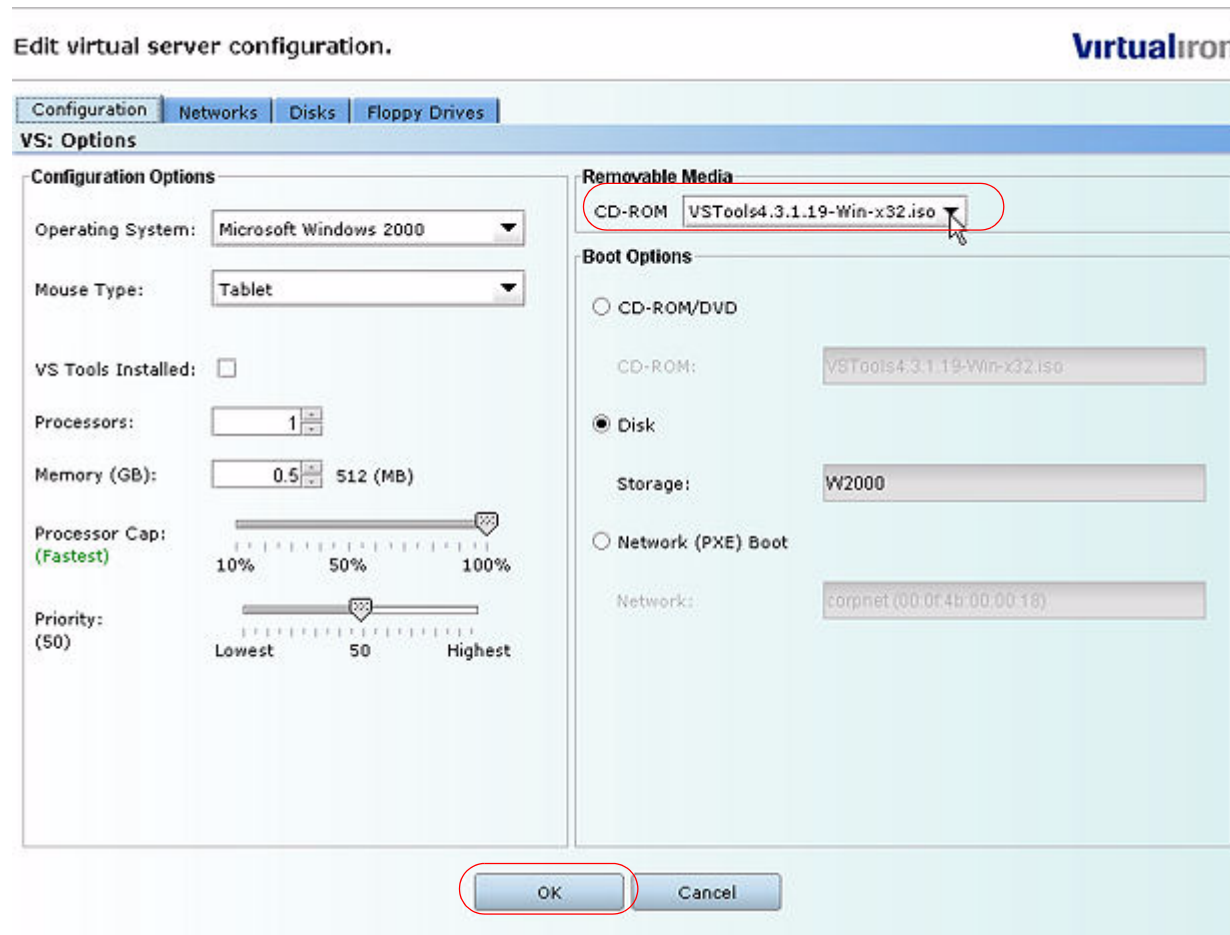
Installing VS Tools on Windows® Virtual Servers

Virtual Iron® provides a set of VS Tools designed for use with Windows® OS virtual servers. The steps that follow explain how to install these tools after you have created a VS running Windows® by attaching a virtual CDROM .iso file. This enables you to change the network boot device while the virtual server is running.

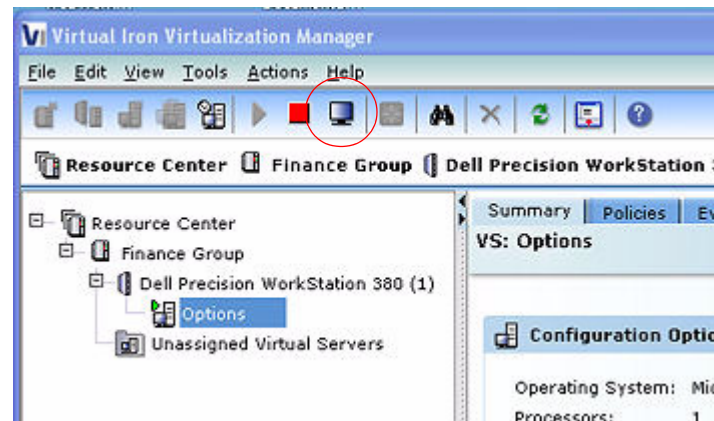
1. Following a successful installation, open the management server. In the Resource Center view, select the virtual server.
2. Click **Edit**.



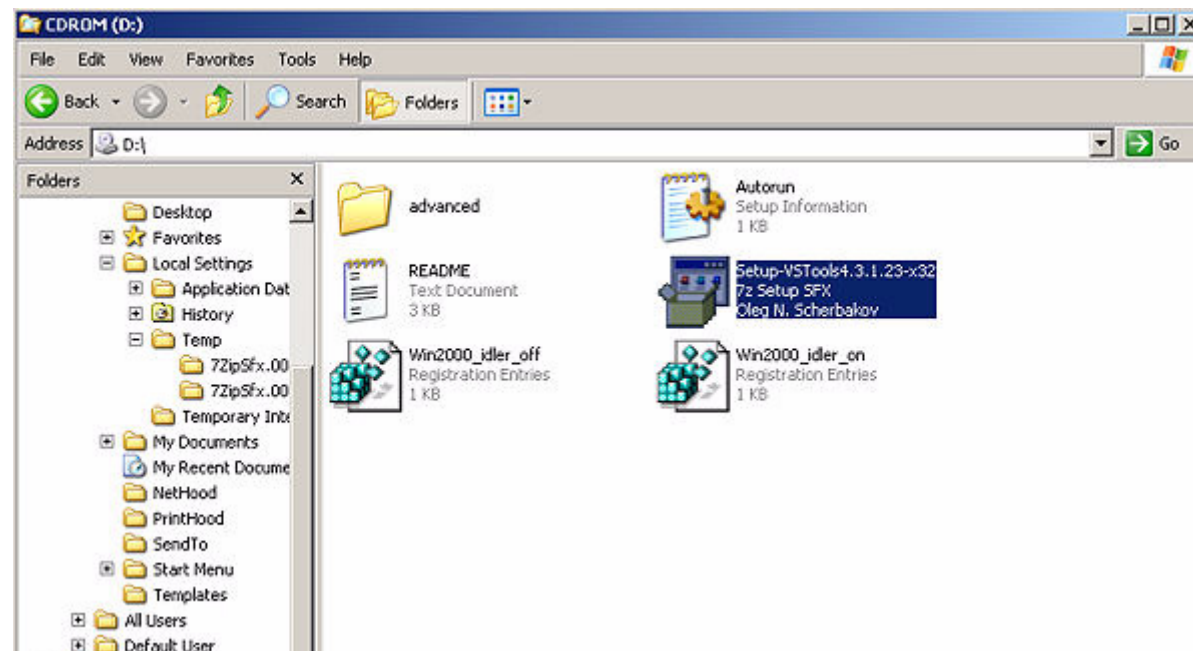
3. In the **Edit Virtual Server Configuration** window, select the latest VSTools .iso file from the options in the **Removable Media** pulldown menu.
4. Click **OK**.



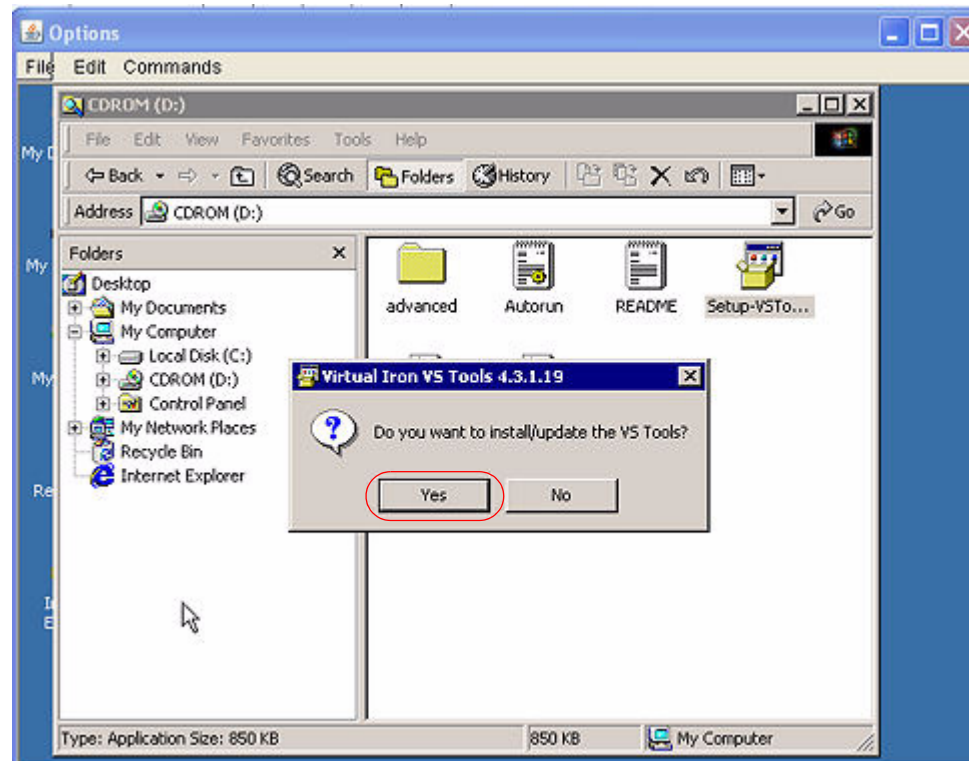
5. Click the Console icon in the task bar.



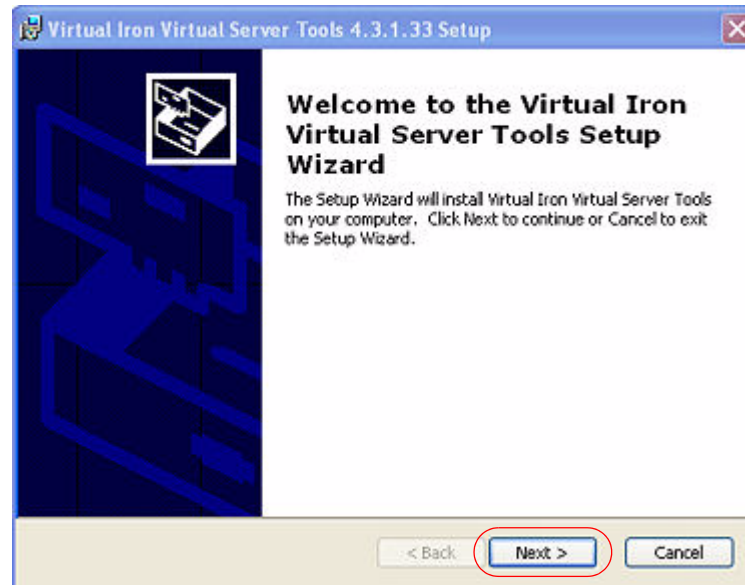
6. Navigate to your CDROM drive in the virtual server console and double-click the **Setup-VSTools4.x.x.x** file.



7. Answer **Yes** when prompted to install/update VS Tools. The installation begins.

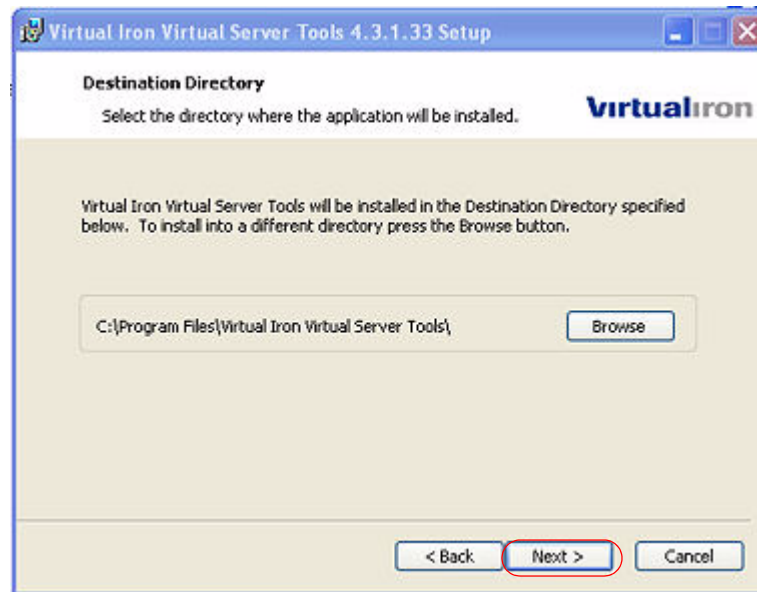


8. Launch the installer you saved to your virtual server's local system and follow the prompts in the **Virtual Server Tools Setup Wizard**.

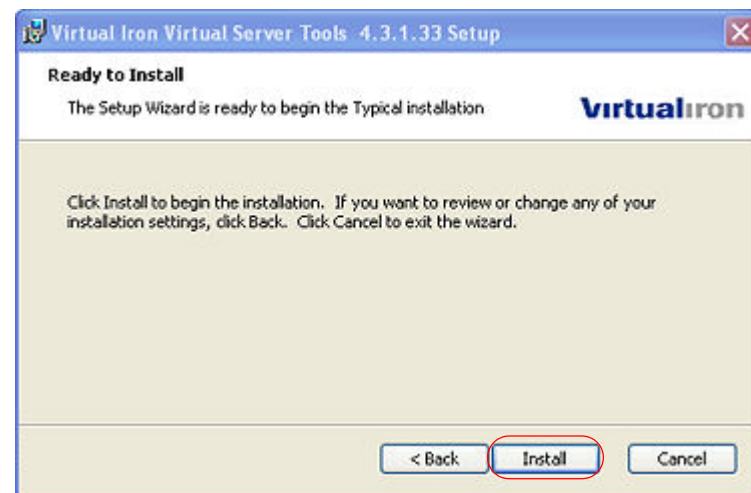


9. Click **Next**.

10. Specify where you want to install the drivers. Click **Next**.

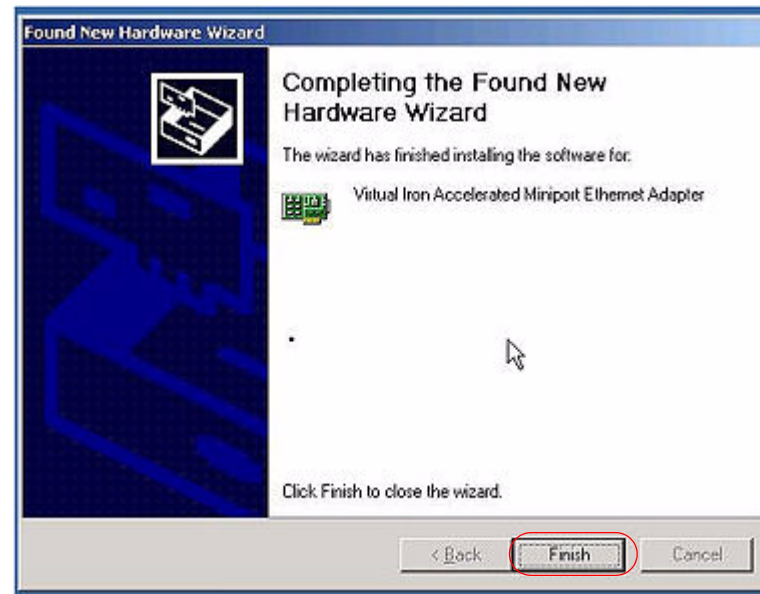


11. Click **Install**.



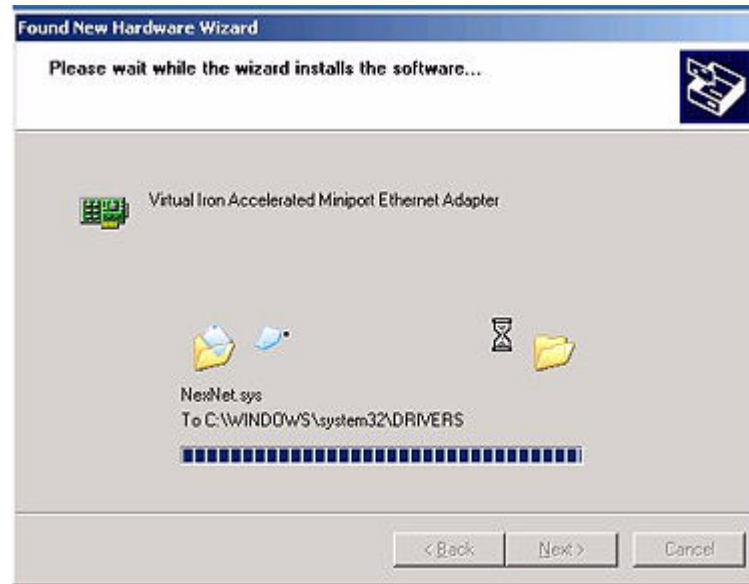
12. A status bar appears while files are copied. It may take a few minutes for the Setup Wizard to install Virtual Server Tools.
13. Both the **Found New Hardware Wizard** and **Completing Virtual Server Tools Setup Wizard** windows appear at this point.

IMPORTANT: Perform the **Completing the Found New Hardware Wizard** steps **BEFORE** you shutdown the system as directed in the **VS Tools Setup Wizard**.

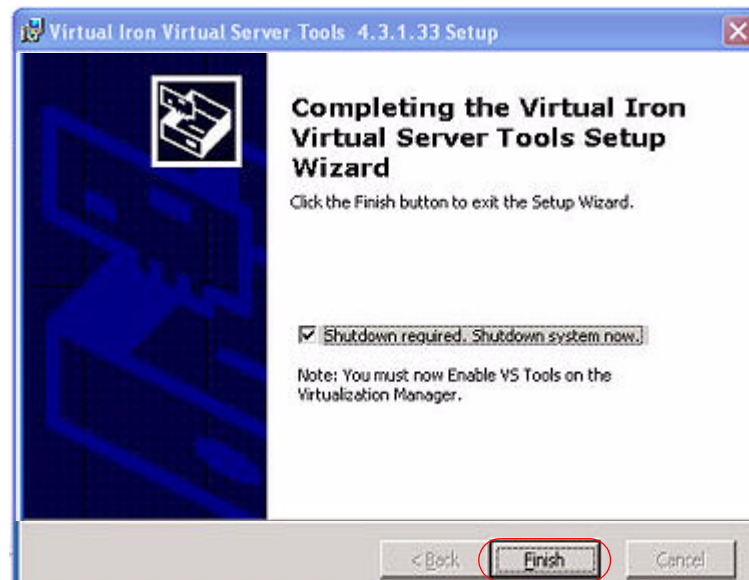


14. Click **Finish** in **Found New Hardware Wizard**.

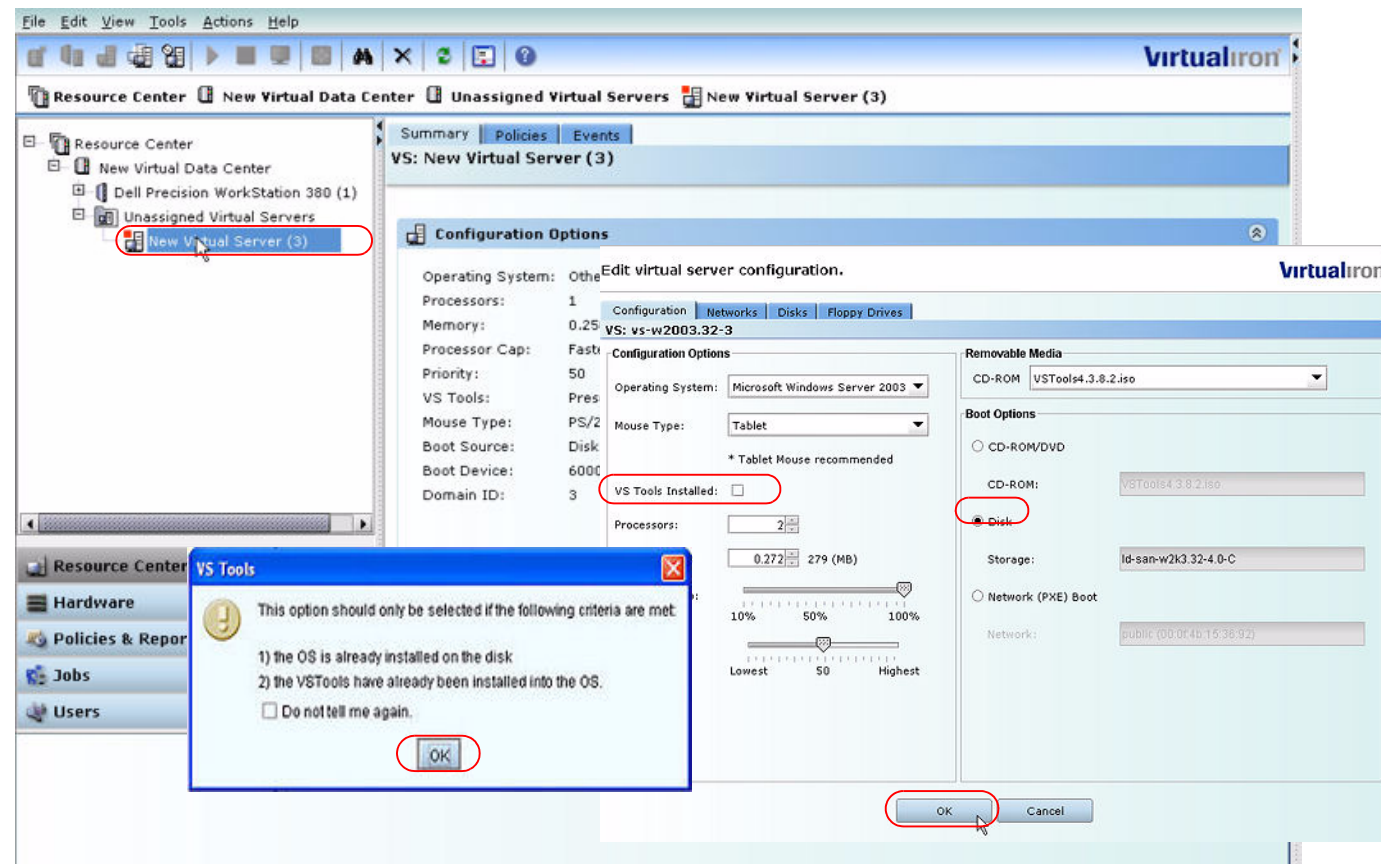
15. Wait while the accelerated hardware drivers are installed. Click **Next**.



16. The installer prompts you to shutdown your virtual server. Click **Finish** to exit the Setup Wizard.

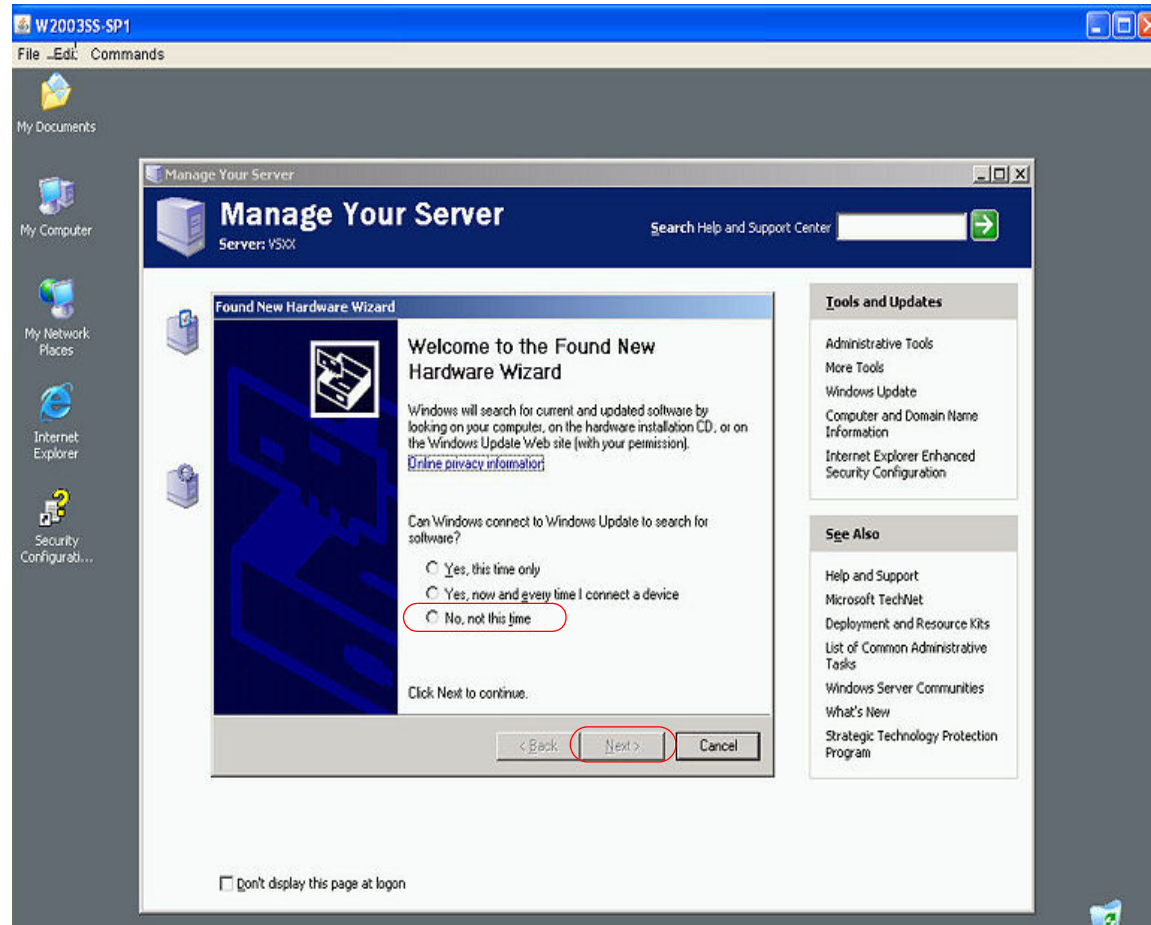


17. You must now enable VS Tools on the VI-Center: After the virtual server stops, In the **Resource Center** view, select the virtual server in the navigation tree.
18. In the **Summary** pane, click **Edit**.
19. In the Configuration Options window, make sure **Disk** is selected in the **Boot Options** section of the window. Click **VS Tools Installed**. Click **OK** in the VS Tools popup.
20. Select **None** from the list of options in the Removable Media pulldown menu. Click **OK** in the **Edit Virtual Server Configuration** window.



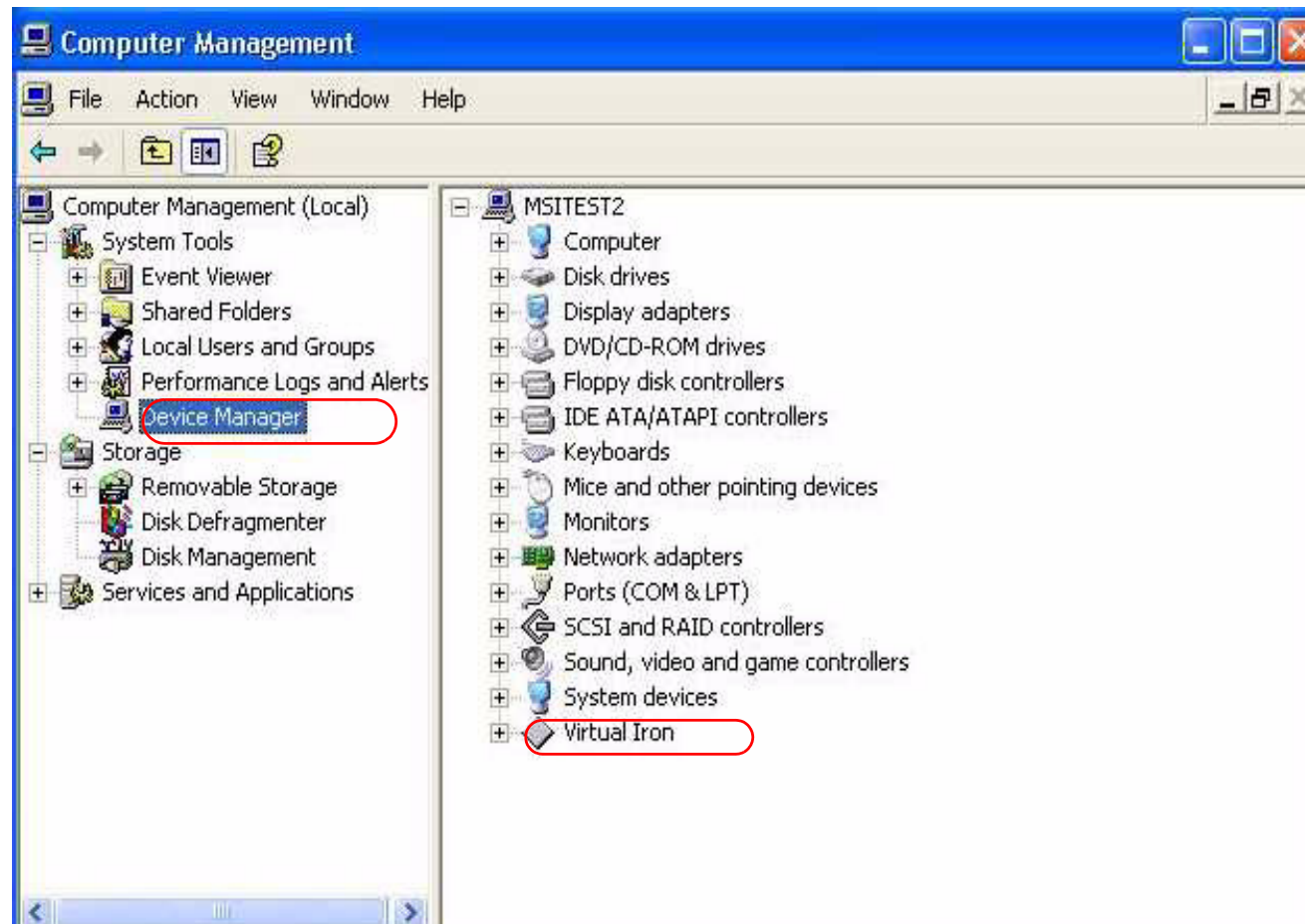
21. **Start** the virtual server. During boot, Windows® discovers the Virtual Iron® Ethernet driver. In the Found New Hardware Wizard, do the following:

- Select **No Not this time** when prompted to look for a driver update. Click **Next**.



- Check **Install Software Automatically**. Click **Next**.
- Windows begins installing the network driver.

This completes installation of the Virtual Iron® drivers, which appear under **Device Manager**.



22. Restart the virtual server guest operating system.

Special Considerations for Windows 2000 OS

When a Windows 2000 system is idle, it will appear to be consuming no CPU resources. Task Manager will show that the CPU is idle. However, Windows 2000 is actually executing instructions in its idle loop. These cycles will not be available for use by other virtual servers on the same node. In order to get Windows 2000 to act like the other more recent Windows operating systems and actually relinquish the CPUs when idle, do the following:

1. Make sure VS Tools are loaded and running in the Windows 2000 virtual server.
2. Open a browser within the Windows 2000 virtual server, and navigate to the VI-Center's IP address. You will see the Virtual Iron VI-Center home page.
3. Click the **VS Tools Installers** link. Click the **win /link**.
4. Click the **Win2000_idler_on.reg** link and download that file to the virtual server. Do the same for **Win2000_idler_off.reg**.
5. Double click **Win2000_idler_on.reg** to read the idler information into the Windows Registry.
6. On the Windows 2000 desktop. Right click the **My Computer** icon and select **Manage**.
7. Navigate to **Services** and **Applications > Services**.
8. Find the Virtual Iron Service and right-click **Restart**.

A side-effect of the idler is that it will appear that the **ViStats.exe** process is consuming all idle cycles in the virtual server. In fact, it only appears this way; it is actually releasing control to the underlying virtualization services so that idle cycles can be used by other virtual servers.

Turn the idler off by double-clicking the **Win2000_idler_off.reg** file and then restarting the Virtual Iron Service. Virtual Iron recommends that the idler is turned on.