Chapter 2

Working with VMware Workstation Pro

VMware Workstation 12 has a number of changes that differ from the previous Workstation 6.5 product used in the book. The following activities have been modified to work properly with the new VMware Workstation 12 product and should be used in place of the activities in the book.

Activity 2-1: Performing an Unattended Installation of VMware Workstation

Time Required: 10 minutes

Objective: Use Microsoft Installer to perform an unattended installation of VMware Workstation.

Requirements: Completion of Activity 1-2

Description: Superior Technical College plans to install VMware Workstation on all IT Department computers. To make this process more efficient, you decide to use an unattended installation. In this activity, you practice using this method by using the unattended silent installation option.

1. If necessary, log on to your Windows host as the local administrator or a user who's a member of the local Administrators group. (Being a member of the Administrators group ensures that you have the rights to change system settings and install the VMware service.)

2. Since the unattended installation process is command driven, you will need to open an administrative command window. Click **Start**, **All Programs**, **Accessories** and then right-click **Command Prompt** and select the **Run as administrator** option. If necessary enter the password for the administrator and click Yes in the User Account Control window.

3. Change the default path to the location of the VMware Workstation file you downloaded in Activity 1-2. For example, if you saved your VMware Workstation installation file in the C:\Downloads folder, enter the following command to change the default prompt to your Download path:

	CD \Downloads

4. Enter the following command to start the silent unattended installation, substituting "x.y-###" with your version number and build number and sssss-sssss-sssss-sssss with your serial number, if you have one. If you will be using the 30-day trial, omit the SERIALNUMBER paramenter. Press Enter and allow the installation process a few minutes to finish. You should then see the VMware Workstation icon appear on the desktop.

	vmware-workstation-full-12.x.y-###.exe /s /nsr /v EULAS_AGREED=1 ADDLOCAL=ALL SERIALNUMBER="sssss-sssss-sssss-ssssss"

NOTE: *Be sure to leave at least one space between each of the command options.*

5. (Since the installation process does not provide any dialog boxes, it is difficult to know when it has finished. The best way to know when the installation is complete is to monitor CPU usage until it remains under 10%.)

6. After installation is complete and the VMware Workstation icon is displayed on the desktop, close the command window and log off. You are now ready to check out the installation by performing the steps in Activity 2-2.

Activity 2-2: Testing your VMware Installation

Time Required: 10 minutes

Objective: Verify your VMware Installation.

Requirements: Completion of Activity 2-1

Description: In this activity you verify that VMware Workstation installed correctly by checking on the license number and preference settings.

1. If necessary, boot your Windows host computer and log on using your assigned user name and password. It is not necessary to a member of the local Administrators group.

2. Double-click the VMware Workstation icon to display the Welcome to VMware Workstation dialog box. Enter your license or click the "I want to try VMware Workstation 12 for 30 days" radio button, enter your email address, click **Continue,** and then click **Finish** to display the VMware home screen.

3. If you are using an evaluation license you will see the number of days left in your evaluation period. You can use the Help menu to enter a license key at a later time.

4. From the VMware menu, click **Edit** and then click on the **Preferences..** link to open the Preferences page.

5. Click the **Workspace** option and verify the default location is set to C:\Users\username\Documents\Virtual Machines path.

6. Click on the **Devices** option and verify that Auto run is disabled on the host computer.

7. Click on the Shared VMs option and record the Shared location path and port number below:

   Path: _____

   Port number: _____

8. Click **Cancel** to return to the VMware Workstation Home page without making any changes.

9. Click **File, Exit** to close VMware Workstation console.

10. Open control panel and use the Programs and Features option to remove VMware Workstation 12 from your Windows computer. When you see the Save the following VMware Workstation configurations message, be sure to remove the check marks from the Product license information and VMware Workstation configuration check boxes.

Activity 2-3: Performing a Standard Installation of VMware Workstation

Time Required: 15 minutes

Objective: Perform a standard installation of VMware Workstation 12.

Requirements: The VMware Workstation setup file you obtained in Chapter 1.

Description: Assume that you are a technician for Computer Technology Training, and your manager, Lucas McMann has asked you to install and configure a Windows Server virtual server for use in the Superior Technical College data center. Lucas would like you to use VMware Workstation 12 as a workbench to install, configure, and test the virtual servers that will later be deployed in the college's data center using VMware VSphere. In this activity, you perform a standard installation of VMware Workstation 12 in Windows.

1. Log on to your Windows host as the local administrator or a user who's a member of the local Administrators group. (Being a member of the Administrators group ensures that you have the rights to change system settings and install the VMware service.)

2. In Windows Explorer, navigate to the folder containing the setup file you downloaded, and double-click the VMware-workstation-full-11.#.exe file to start the installation wizard. (The # represents the installation file's version and build number.) If Window's User Account Control (UAC) message box opens, click Yes to continue.

NOTE: *If you are running the file from a network drive, you may receive a security warning message box. Click Run to continue.*

3. In the Welcome window, click **Next** to display the License Agreement page. Scroll down to review the license agreement and then click the **I accept the terms in the license agreement** radio button to display the Setup Type window.

4. You can select a typical or custom installation. For the purposes of this activity, verify click the **Custom** option button to display the VMware Workstation Features window.

5. Leave the default features of Core Components, VIX Application Programming Interface and Visual Studio PlugIn. Notice that the Enhanced Keyboard option would need to be selected to support international keyboards. Leave the default path of Program Files (x86)\VMware\VMware Workstation and then click Next to display the Workstation Server Component Configuration window.

6. Record the path to the Shared VMs folder and the default HTTPS port and click Next to display the Software Updates window.

    Path: _____

7. Verify that the Check for product updates on startup option is selected and then click Next to display the User Experience Improvement Program window.

8. Click to remove the check from the Help improve VMware Workstation check box and then click Next to display the Shortcuts window.

9. Verify that the Desktop and Start Menu Programs folder are selected and then click Next to display the Ready to Perform the Requested Operations window.

10. Click **Continue** to start the installation process. You have a few minutes to take a break while the file copying and installation take place. After the file copying is finished, the Enter License Key window will be displayed.

NOTE: *During the installation, if you see any Windows Security warning messages asking whether you want to install certain device software, such as the USB controller, click the option to install the software driver and continue the installatio*n.

11. If you have a license key, you may enter it at this time or click Skip to use a 30-day trial period. If you click Skip, you will also be given a chance to enter the key the first time you create or run a virtual machine.

NOTE: *You can also use the Help menu in the administrative console to enter the serial number (covered later in "Using the Administrative Console Menus").*

12. After the License key page, the Setup Wizard Complete window will be displayed. Click the Finish button to close the window and return to the desktop.

13. You have now successfully completed lab activity 2-3. You may either close VMware Workstation and log out of your computer, or leave VMware Workstation open for the next activity.

Activity 2-4: Creating a Virtual Machine for Windows Server 2008

Time Required: 10 minutes

Objective: Create a virtual machine for a later installation of Windows Server 2016.

Requirements: Completion of Activity 2-1

Description: Now that you have installed VMware Workstation 12, your next task in developing and testing a server for the Superior Technical College is to create a Windows Server 2016 virtual machine that you can use to install and configure the new server environment. In this activity, you create a virtual machine that you will later use to install the Windows Server 2016 guest OS.

1. If necessary, log on to your workstation with your assigned username and password.
2. Start VMware Workstation by using one of the installed shortcuts.
3. Check the default document path to store virtual machines by clicking Edit, Preferences to display the Workspace window and verify that the default path is C:\Users\username\Documents\Virtual Machines. Click OK to close the Preferences window.
4. Click the Create a New Virtual Machine button from the Home tab to start the New Virtual Machine Wizard.
5. In the Welcome window, click the Custom option button, and then click Next to display the Choose the Virtual Machine Hardware Compatibility window.
6. In the Hardware compatibility list box, click Workstation 6. Notice that the Limitations section lists no SATA or EFI support and a 32GB memory limit. Click VMware Workstation 12 in the list box to change the setting back. Notice Workstation 12 has no limitations on SATA and that it supports 64 GB RAM and up to 16 virtual CPUs. Click Next to display the Guest Operating System Installation window.
7. In the Guest Operating System Installation window, click the I will install the operating system later option button, and then click Next.
8. In the Select a Guest Operating System window, click the Microsoft Windows option button, click the Version list arrow, and then click the Windows Server 2008 R2 x64. Click Next to display the Name the Virtual Machine window.

NOTE: *The Windows Server you select in Step 9 should match the ISO file you downloaded in Chapter 1.*

9. By default, the virtual machine name matches the OS version, and the virtual machine folder is created in Documents\Virtual Machines. Change the virtual machine name to Windows Server 2008R2, record the path shown in the Location text box, and then click Next to display the Firmware window.

_____

10. Verify that the default BIOS firmware type is selected and then click Next to display the Processor Configuration window.
11. In the Processor Configuration window, verify that one processor is selected and then click Next to display the Memory for Virtual Machine window.

12. The Memory for the Virtual Machine window shows the minimum, recommended, and maximum memory for the OS you're installing. If you have limited memory on your host computer and are planning to run multiple virtual machines at the same time, be sure the total memory doesn't exceed the threshold in the Memory tab of the Preferences dialog box (explained later in "Using the Administrative Console Menus") and then record the memory size you select below and click Next.

_____

NOTE: *You can change the amount of memory later, as long as the virtual machine is stopped.*

13. In the Network Type window, verify that the Use network address translation (NAT) option is selected (unless your instructor specifies another option for your network environment), and then click Next. (You can change this option at any time, even while the virtual machine is running.)

14. In the Select I/O Adapter Types window, make sure the LSI Logic SAS (Recommended) option button is selected, and then click Next.

15. In the Select a Disk Type window, leave the default SCSI (Recommended) option button selected, and then click Next.

16. In the Select a Disk window, make sure the Create a new virtual disk option button is selected, and then click Next.

17. In the Specify Disk Capacity window, enter 100 in the Maximum disk space size (GB) text box, and verify that the Store virtual disk as a single file option is selected. Usually, you don't want to allocate disk capacity now unless you're installing a production server and performance is a major concern, so leave the default option selected, and then click Next.

18. In the Specify Disk File window, verify that the name for the virtual disk file is the same as the virtual machine name entered in Step 10, with the .vmdk extension added. After verifying the filename and location, click Next to display a summary window.

19. Verify your selections in the summary window click Finish. The virtual machine is then created, and the administrative console is displayed with a new tab for the virtual machine.

20. You may leave VMware Workstation open for the next activity.

Activity 2-5: Installing Ubuntu Linux with Easy Install

Time Required: 20 minutes

Objective: Perform an automated installation of Ubuntu Linux on a virtual machine.

Requirements: Completion of Activity 2-3 and the Ubuntu Linux ISO image file (obtained from your instructor or downloaded from the Ubuntu Web site at www.ubuntu.com)

Description: Your company is looking at using a Linux server to host database and Web applications. In this activity, you use VMware's Easy Install feature to create a virtual machine running Ubuntu Linux.

1. If necessary, log on to your workstation with your assigned username and password.
2. Start VMware Workstation. If necessary, click the Home tab. Click the Create a New Virtual Machine button to start the New Virtual Machine Wizard.
3. Click the Typical option button, and then click Next.
4. In the Guest Operating System Installation window, click the Installer disc image file (iso) option button. Click the Browse button, navigate to the location of the ISO file, and double-click the file. Verify that VMware has detected the OS and shows that it will use Easy Install. Click Next.
5. In the Easy Install Information window, enter your full name, username (must be all lowercase), and password to create the default Ubuntu user account, and then click Next.
6. By default, the virtual machine name matches the OS version, and the virtual machine folder is created in Documents\Virtual Machines. Change the virtual machine name to UbuntuVM-iii (where iii represents your initials), and then click Next to display the Specify Disk Capacity window.
7. In the Specify Disk Capacity window, accept the recommended disk size in the Maximum disk size (GB) text box, click the Store virtual disk as a single file option, and then click Next.
8. Verify that the entries in the Ready to Create Virtual Machine summary window are correct verify that the Power on this virtual machine after creation option is selected. Click Finish to start.
9. The virtual machine is then created, and the automated installation of Ubuntu Linux begins. Read and respond to any messages. During the installation, VMware Tools will be installed along with Ubuntu Linux OS. When the installation is finished, power off the new virtual machine and close VMware Workstation. Record your Ubuntu username and password below:

   Username: _____

   Password: _____
10. You may stay logged in to your Windows host for the next activity.

Activity 2-6: Moving an Existing Virtual Machine

Time Required: 15 minutes

Objective: Be able to move an existing VM to another host and add it the administrative console, and practice removing and adding tabs.

Requirements: Completion of Activities 2-5

Description: Now that you have created and tested the Ubuntu virtual machine on your VMware Workstation, you next will need to move the machine to a production environment. In this activity you will simulate this process by moving your existing Ubuntu virtual machine to a different directory, removing the Ubuntu virtual machine from the administrative console, and then adding it back.

1. If necessary, start your Windows host computer and log on with your assigned user-name and password.
2. Open Windows Explorer, and create a directory named LinuxVMs on the root of the C drive.
3. Move the folder named UbuntuVM-iii (where iii represents your initials) from your Documents\Virtual Machines folder to your new LinuxVMs folder, and then close Windows Explorer.
4. If necessary, start VMware Workstation. Notice that the tab for your UbuntuVM-iii has been removed and that the UbuntuVM-iii machine in the Library pane has an "X" icon in it caused from moving the virtual machine files.
5.   In the Library pane, right-click your UbuntuVM-iii under My Computer, click Remove, and then click the Remove button from the VMware message box to confirm removing UbuntuVM-iii from the Library.

NOTE: *The following steps simulate the process you would use to add the Ubuntu virtual machine to another VMware Workstation host.*

6. From the Home tab, click the Open a Virtual Machine icon and navigate to the C:\LinuxVMs\UbuntuVM-iii folder.
7. Click the UbuntuVM-iii configuration file (extension vmx), and then click Open to add the virtual machine to your administrative console.
8. Start UbuntuVM by clicking the UbuntuVM-iii tab, and then clicking the Power on this virtual machine link.
9. In the "This Virtual Machine may have been moved or copied" dialog box that opens, click the I moved it option button to retain the original virtual machine's UUID code. (This step is important to maintain the machine's MAC address on the network.) Then click OK to start UbuntuVM.
10. If the Home tab is removed accidentally, you can add it back easily. To practice this, first, remove the Home tab by right-clicking it and clicking Close Tab.
11. Restore the Home tab by pointing to Tabs and then clicking Go to Home Tab.
12. Shutdown the UbuntuVM by clicking the Shut Down Guest option from the power button located to the right of the Help menu option and then clicking the Shut down option from the VMware Workstation message box.
13. This completes activity 2-6. You may leave VMware Workstation running and stay logged on for the next activity.

Activity 2-7: Working with the Administrative Console Menus

Time Required: 15 minutes

Objective: Practice using menu options in the VMware Workstation administrative console.

Requirements: Completion of Activities 2-6

Description: In this activity, you practice using menu options in the VMware Workstation administrative console.

1. If necessary, start VMware Workstation and click the UbuntuVM tab to make it active.
2. Click Edit, Preferences from the menu to open the Preferences dialog box. Click the Updates link, and verify that the Software updates options are checked. Click the Automatically update VMware Tools on a virtual machine check box to enable automatically updating VMware Tools.
3. Click the Hot Keys tab, and record the default hot key setting:

   _____
4. Click the Workspace link, and record the default path to your virtual machine files:

   _____
5. Click OK to close the Preferences dialog box.
6. Click the VM menu and click the Power option. Record the available options in the space below:

   _____
7. Click the **Start Up Guest** option to start your UbuntuVM-iii virtual machine.
8. Click **View**, **Full Screen** from the menu to switch the view of your virtual machine.
9. Press Ctrl+Alt+Enter to switch back and forth between full screen and administrative console views. Notice that you can also use the Full Screen button on the toolbar to switch in and out of full screen mode.
10. Switch out of full screen mode. Click **VM** from the toolbar menu, point to Power, and record the options available for powering off or shutting down your Ubuntu VM:

    _____
11. Click the **Shut Down Guest** option to shutdown the Ubuntu virtual machine.
12. Click the **VM** menu and record all available power on options:

    _____
13. Click the **Power on** option to start your Ubuntu virtual machine. When you see the logon window asking for the username, click the **VM** menu and notice that all items are available.
14. Suspend the virtual machine by clicking **VM** from the menu, pointing to Power, and clicking **Suspend Guest**.
15. Click the **VM** menu and record the available Power options:

    _____
16. Click **VM**, point to Power, and record any power options that weren't listed in Step 6:

    _____
17. Click the **Resume Guest** option and record the results on the following line. Do you think UbuntuVM started faster than it did in Step 7? If so, when you're ending a virtual machine session, you might want to suspend the virtual machine instead of powering it off.

    _____

18. Click the **Power Off** option from the toolbar. You should see a warning message asking you to shut down the guest before powering off. This step prevents loss of data and possible corruption of programs or files on the virtual machine. If you're logged off the guest OS, clicking OK and powering off the virtual machine should be safe. However, when possible, using the shutdown procedure is best. To shutdown your Ubuntu VM, click **Cancel**, click the arrow to the right of the Power icon, and then click **Shut Down Guest**. When asked to confirm this action, click the **Shut Down** button to power off the virtual machine.

19. This completes the activities in this section. You may close VMware Workstation.

Activity 2-8: Working with Menu Options

Time Required: 15 minutes

Objectives: Practice using options in the VM menu.

Requirements: Completion of Activity 2-6

Description: In this activity, you view the menu options that are available when a virtual machine is powered on and powered off. Before starting the activity ensure that all your VMs are powered off.

1. If necessary, start VMware Workstation and click the Ubuntu tab to select this virtual machine.

2. Click the VM menu and record the 4 options that are available when a VM is powered off.

    _____

3. With the VM menu still open, hover your cursor over the Power On option, and record the three power on options:

    _____

4. Click the Power On option to start your Ubuntu VM.

5. When you see the Ubuntu logon window asking for the username, click the VM menu and notice that all options are now available.

6. Suspend the virtual machine by clicking VM, pointing to Power, and clicking Suspend.

7. Click the VM menu and verify that the options are the same as in when the VM was powered down in step 2.

    _____

8. Click VM from the menu, point to Power, and record the power options available when a VM is in a suspended state:

    _____

9. Click the Resume Guest option to resume the UbuntuVM virtual machine and record your results on the following line along with what you feel is an advantage of suspending a VM rather than powering it off.

    _____

10. Open the VM menu and click the Power Off option from the Power list. VMware will display a warning message informing you that you should shut down the guest operating system before powering off. To prevent data loss, you should log off the guest OS before powering it off. Click the Cancel button and then power off the Ubuntu VM by using the Shut Down option from the Ubuntu system men.

11. You may leave VMware Workstation session running for the next activity.

Activity 2-9: Installing Windows Server 2008 on an Existing Virtual Machine

Time Required: 30 minutes

Objectives: Perform a manual installation of Windows Server 2008 R2 on an existing VM.

Requirements: Completion of Activity 2-4 and the Windows Server 2008 ISO image file from chapter 1.

Description: An instructor at Superior Technical College wants you to create a special virtual machine that has multiple disk partitions to be used in an operating systems class. Because VMware's Easy Install option doesn't have the partitioning options you need, you change settings for an existing virtual machine and then perform a manual installation of Windows Server 2008.

1. Click the **SRV2008R2** tab to make it active.

2. Configure your virtual machine to use an ISO image file, as described previously in "Working with CD/DVD-ROM Drives and ISO Image Files section."

3. Next you set the virtual machine's BIOS to select the CD/DVD drive as the first boot device. Click **VM** on the menu, point to **Power**, and click **Power On to Firmware**. If necessary, click **OK** to bypass any informational messages and continue to the BIOS screen. Click in the BIOS screen to transfer keyboard control to the virtual machine.

4. Use the arrow keys to select the **Boot** option, and check to see that the CD-ROM device is first in the boot sequence. If not, use the arrow keys to highlight the **CD-ROM** device, and then press the + key to move it to the top of the list.

5. Use the arrow keys to select **Exit**, and then press **Enter** twice to save your changes and restart the virtual machine. The virtual machine now reads the setup program from the CD-ROM and starts the Windows Server 2008 installation process.

6. In the Install Windows screen, verify that the settings for the Installation language, time and currency format, and keyboard or input method are correct, and then click **Next**.

7. Click the **Install now** button to display the **Select the operating system you want to install** window. Click the **Windows Server 2008 R2 Enterprise (Full Installation)** option and then click **Next**. Make sure you don't select the Sever Core version as this will not install the Graphical User Interface.)

8. Review the license terms, click **I accept the license terms** check box, and then click **Next**.

9. In the Which type of Installation do you want? window, click **Custom (advanced)** option to continue to the next window.

10. Verify that **Disk 0 Unallocated Space** is selected in the Where do you want to Install Window? window and that you have a total size of 10ingoo0 GB from the virtual disk you created in Activity 2-4. Click **Next** to begin the installation process. This typically takes about 15 minutes, with at least one restart.

11. When the installation is complete you will be asked to change password before logging in for the first time. Click **OK** to set the Administrator password. Enter the password in both the new password and Confirm password fields and click the right arrow. Note that your password must be at least 8 characters long and contain a combination of numbers and letters.

12. Click **OK** to confirm the password change and display the Server 2008 desktop and Initial Configuration Tasks window. You can use this window to enter a product key and activate Server 2008 as well as perform a variety of configuration tasks including activating Windows by entering a product key and registering it with Microsoft.

13. Click **Close** to close the Initial Configuration Tasks window and return to the desktop.

14. Log off the Windows Server 2008 VM by clicking **Start** and then clicking the **Log off** button.

15. Leave the Windows Server 2008 VM running for the next activity.

Activity 2-10: Installing VMware Tools on a Windows Virtual Machine

Time Required: 15 minutes

Objectives: Install VMware Tools on an existing Windows 2008 Server virtual machine.

Requirements: Completion of Activity 2-9

Description: In this activity, you learn how to install VMware Tools on your existing Windows Server 2008 virtual machine.

1. If necessary, open the administrative console and start your **SRV2008R2** virtual machine.

2. Log on to Windows Server 2008 by clicking **Send Ctrl+Alt+Del** option from the **VM menu** and then entering your password.

3. Press **Ctrl+Alt** to move the mouse pointer outside the virtual machine window.

4. Click **VM**, **Install VMware Tools** from the menu. VMware may display a Software Updates dialog box informing you that VMware Workstation is connecting to the VMware server. If the update stalls, click **Cancel** to cancel the software update.

5. If you see the AutoPlay dialog box, click the **Run setup64.exe** option to start the installation wizard and display the VMware Tools Welcome window.

6. Click **Next** to display the Setup Type window.

7. In the Setup type window, make sure the **Typical** option button is selected, and then click **Next**.

8. In the Ready to Install the Program window, click **Install**.

9. If you see warning messages about unsigned drivers, click **Continue Anyway** to continue. When the installation is completed, click **Finish**, and then click **Yes** to restart the virtual machine.

10. After the installation is restarted, power off your virtual machine. You may leave VMware Workstation open for the next activity.

Activity 2-11: Adding a Hard Drive to a Windows Virtual Machine

Time Required: 15 minutes

Objectives: Use the administrative console to add a hard drive to a virtual machine.

Requirements: Completion of Activity 2-5 or Activity 2-9

Description: An IT instructor wants her students to learn how to work with disk options in Windows Server 2008 and would like you to go through the process with her. In this activity, you test the process of adding a hard drive to your Windows Server 2008 VM and then format and access the new disk.

1. Click the **SRV2008R2** tab and verify that the virtual machine is powered off.

2. Click **VM**, **Settings** from the menu and verify that the current Hard Disk is SCSI.

3. In the Hardware tab, click the **Add** button to start the Add Hardware Wizard.

4. In the Hardware Type window, click to select **Hard Disk**, if necessary, and then click **Next**.

5. In the Select a Disk Type window, verify that **SCSI** is selected and that the mode is Persistent, and then click **Next**.

6. In the Select a Disk window, verify that the **Create a new virtual disk** option button is selected, and then click **Next**.

7. In the Specify Disk Capacity window, change that the maximum disk size of **40 GB** to **10 GB**, and be sure the **Allocate all disk space now** check box is *not* selected. Click to select the **Store virtual disk as a single file** option, and then click **Next**.

8. In the Specify Disk File window, enter **TempDisk2** for the virtual disk file, and then click **Finish** to place the file in your virtual machine folder.

9. In the Virtual Machine Settings dialog box, click **OK** to save your changes. The next time you start this virtual machine, you can initialize and format the new hard disk.

10. Power on your Windows Server 2008 virtual machine and log on as Administrator.

11. Open Disk Management by clicking **Start**, right-clicking **Computer**, and clicking **Manage**. In the Computer Management window, click to expand **Storage**, and then click **Disk Management**.

12. Right-click **Disk 1** and click **Online**. Right-click **Disk 1** a second time and click **Initialize Disk**.

13. In the Initialize Disk window, verify that the **Disk 1** check box is selected and that **MBR** is set as the partition style, and then click **OK**. By default the new disk will be initialized as a Basic disk.

14. In the Disk Management window, convert the new hard drive to a dynamic disk by right-clicking **Disk 1** in the right pane and clicking **Convert to Dynamic Disk** to display the Convert to Dynamic Disk dialog box. Verify that only Disk 1 is selected and then click **OK** to convert the disk to the Dynamic format.

15. To create and format two 4 GB volumes on the new hard drive, right-click the **Unallocated** bar next to Disk 1 and click **New Simple Volume**.

16. In the New Volume Wizard's welcome window, click **Next**.

17. In the Specify Volume Size window, type **4000** in the Simple volume size in MB text box, and click **Next**.

18. In the Assign Drive Letter or Path window, accept the default drive letter and click **Next**.

19. In the Format Partition window, verify the **Format this volume with the following settings** option is selected and that NTFS is the file system. If necessary, click the **Perform a quick format** check box and then click **Next**.

20. In the summary window, click **Finish** to create and format your new volume.

21. Repeat Steps 14 through 19 to create a second volume with the remaining 4 GB of unallocated space and then close the Server Manager windows.

22. Close the Server Manager window.

23. Click **Start**, **Computer**, and verify that your new drives shows up in the Hard Disk Drives window.

24. You may leave your Windows Server 2008 guest running and stay logged in for the next activity.

Activity 2-12: Using Unity View to Share Applications with the Host

Time Required: 15 minutes

Objectives: Use Unity view in VMware Workstation to access virtual machine applications from the host computer.

Requirements: Completion of Activities 2-11

Description: Some programmers in the IT Department want to run applications installed on their virtual machines on their host computers, too. In this activity, you test the Unity view feature of VMware Workstation to learn more about it.

1. If necessary, start your **SRV2008R2** virtual machine and log in as Administrator.
2. To enable Unity view, click **View**, **Unity** from the menu. Any applications running in the guest OS are placed in Unity mode automatically.
3. A virtual Start menu appears above the Start menu in your host OS. If it isn't visible, hover the mouse above the **Start** button on your host OS until the SRV2008R2 menu is displayed.
4. Click **SRV2008R2**, point to **Programs**, point to **Accessories**, and click **Notepad**.
5. Notepad appears in your host OS, but it's actually running in the guest Windows 2008 OS. You can see this most clearly when you're running two different OSs, such as the Windows Server 2008 guest OS on top of a Windows 7 host, because the application uses the virtual machine's OS interface (see Figure 2-13). A border also appears around the window, and a VMware icon is shown on the title bar.
6. Enter some text into Notepad.
7. From the Notepad menu bar, click Save As from the File menu. If necessary expand Computer and then save the document in the new E: drive you created in the previous activity.
8. To exit Unity view, point to the Start Menu and then click Windows Server 2008R2 to display the pull down menu and then click the **Exit Unity** button. (You can't access the virtual machine from the VMware Workstation console while in Unity view.)
9. Exit Notepad and shut down your virtual machine running for the next activity.

Activity 2-13: Working with Snapshot Manager

Time Required: 15 minutes

Objectives: Use Snapshot Manager to restore a virtual machine to previous saved states.

Requirements: Completion of Activity 2-9

Description: Follow these steps to create a snapshot tree of your Server 2008 R2 virtual machine, and then practice restoring your virtual machine to specific states:

1. In the administrative console, click the **SRV2008R2** tab to make this virtual machine active, if necessary.

2. Click **VM** from the menu, point to **Snapshot**, and click **Take Snapshot**. Enter **BaseMachine** in the Name field and enter a brief description stating that this snapshot is the server immediately after Installation. Click the **Take Snapshot** button to save your snapshot.

3. Start your Windows Server 2008 virtual machine and log on as administrator.

4. Create a folder named **WebBackup** in to root of drive C on your Windows Server 2008 virtual machine file system.

5. Copy all files from the **C:\WINDOWS\Web\Wallpaper** folder on your Windows Server 2008 virtual machine to the WebBackup folder.

6. In the administrative console, click **VM**, point to **Snapshot**, and click **Take Snapshot**, and name the snapshot **WebBackup**.

7. Create another folder named **WinBackup** in the C: drive root of your virtual machine file system.

8. Select three files from the C:\Windows folder and copy them to the **WinBackup** folder.

9. In the administrative console, click **VM** from the menu, point to **Snapshot**, and click **Take Snapshot**. Name the snapshot **WinBackup**.

10. Click **VM** from the menu, point to **Snapshot**, and click **Snapshot Manager**. Record the items in your snapshot tree:

    _____

11. In Snapshot Manager, click **BaseMachine** and then click the **Go To** button. When you see the VMware Workstation message warning you that your current state will be lost, click **Yes** to restore the snapshot. Your virtual machine will be automatically powered off.

12. Power on your Windows Server 2008 virtual machine and log on as the Administrator.

13. Use Windows Explorer to verify that neither the WebBackup or WinBackup folder exists. Record your results:

    _____

    _____

14. Repeat steps 11 - 13 to use Snapshot Manager to return to each snapshot, and check the status of the WebBackup and WinBackup folders. Record your results:

    _____

    _____

15. When you're finished, use Snapshot Manager to switch back to the BaseMachine snapshot.

16. You may leave your Windows Server VM running for the next activity.

Activity 2-14: Sharing Virtual Machine Files with Shared Folders

Time Required: 15 minutes

Objectives: Use shared folders to transfer files between a virtual machine and a host computer.

Requirements: Completion of Activity 2-5; access to a classroom network containing a shared virtual machine directory.

Description: The IT manager at Superior Technical College wants you to show employees how to use virtual machines to browse the Internet and download files. The files should then be scanned to check for viruses. After they're verified as safe, the files can be transferred to the programmer's host computer. In this activity, you prepare for this assignment by setting up shared folders on your host computer.

1. In the administrative console, click the **SRV2008R2** tab to make this virtual machine active, if necessary.

2. Click **VM**, **Settings** from the menu, and then click the **Options** tab.

3. Click the **Shared Folders** item on the left. Under Folder Sharing on the right, click the **Always enabled** option button to enable sharing, and then click the **Add** button to start the Add Shared Folder Wizard.

4. In the wizard's welcome window, click **Next**.

5. In the Name the Shared Folder window, click the **Browse** button, select **Desktop** in the Browse for a host Folder dialog box and then click **OK.** Leave the default name **Desktop**, and then click **Next**.

6. In the Specify Shared Folder Attributes window, verify that the **Enable this share** check box is selected, and click **Finish** to complete the wizard. Click **OK** to close the Virtual Machine Settings window.

7. If necessary start your Windows Server 2008 virtual machine and log on as Administrator.

8. Click **Start**, right-click **Network** and click **Properties** to open the Network and Sharing Center. Verify that **Private network** is displayed to the right of the home icon.

9. Click the **Change advanced sharing settings** link on the left side of the window and, if necessary, click the arrow to expand the Home or Work heading.

10. Under the Home or Work heading, click to select **Turn on network discovery** and **Turn on file and printer sharing** options, and then click **Save changes**.

11. Close the Network and Sharing Center window.

12. Open a computer window by clicking **Start**, **Computer,** right-click a blank area under the Devices section and then click the **Add a network location** option to open the Welcome to the Add Network Location wizard. Click **Next** to start the wizard.

13. Click to select the **Choose a custom network location** option and click **Next** to display the Specify the location of your Website window.

14. Click the **Browse** button and then click to expand the **vmware-host** server.   Click **Desktop** and then click **OK** to insert the \\vmware-host\Shared Folders\Desktop path in the network address dialog box.

15. Click **Next** to display the What do you want to name this location? window.

16. Accept the default display name of **Desktop** and then click **Next**.

17. Click **Finish** to complete the wizard and display the newly created share. Close the Desktop share window and notice that the Desktop share now appears under the Network Location heading in the Computer window. You can now view files on your host computer's desktop and copy files between it and the virtual machine with your new shared folder.

18. Power off your Windows Server 2008 virtual machine for the next activity.

Activity 2-15: Sharing Virtual Machine Files with a Mapped Virtual Disk

Time Required: 15 minutes

Objectives: Use the Mapped Virtual Disk feature to access virtual disk files when the virtual machine is powered down.

Requirements: Completion of Activity 2-5; access to a classroom network containing a shared virtual machine directory or the sample virtual machine files downloaded from this book's Web site.

Description: Sometimes you need to be able to access a virtual disk without powering on the virtual machine. In this activity, you learn how to access SRV2008R2's virtual disk while it's powered down.

1. If necessary, power off your Windows Server 2008 virtual machine, and then click the **SRV2008R2** tab to make it active.

2. Click **File**, **Map Virtual Disks** from the menu to open the Map or Disconnect Virtual Disks dialog box.

3. Click the **Map** button, and in the Map Virtual Disk dialog box, click the **Browse** button and navigate to the folder containing your Windows Server 2008 virtual machine files.

4. Click the virtual disk file (.vmdk extension) corresponding to the virtual disk you want to map the drive to, and then click **Open**.

5. In the Map to section, change the drive letter to the one you want the host computer to use when accessing this virtual disk.

6. Verify that the **Open drive in Windows Explorer after mapping** option is selected and then click **OK** to complete the drive mapping. You can now copy files from the virtual hard disk by using a physical drive letter on your host computer.

7. Before you can start the virtual machine, close any open folders using your mapped drive, and then click **File**, **Map or Disconnect Virtual Disks** from the menu to disconnect the drive mapping. The virtual machine can't start if its disk is in use by the host computer.

8. Leave VMware Workstation running for the next activity.

Activity 2-16: Working with Virtual Network Options

Time Required: 15 minutes

Objectives: Determine IP addresses of virtual machines and verify communication between them and the host computer.

Requirements: Completion of Activity 2-11

Description: In this project, you test communication between your virtual machines and the host computer.

1. First, you need to verify that both your Ubuntu and Windows 2008 virtual machines are set to host-only. To do this, click each virtual machine's tab and check the **Network Adapter** setting in the Devices pane. If the Network Adapter is not set to **Host-only**, click **Network Adapter**, click the **Host-only** option button, and then click **OK**.

2. Open a command prompt window on your host computer. Type **ipconfig /all** and press **Enter**. Record the IP addresses for VMnet1 and VMnet8:

   _____

3. If necessary, start the **UbuntuVM** and **SRV2008R2** virtual machines.

4. Open a command prompt window on your Windows Server 2008 virtual machine, type **ipconfig /all**, and press **Enter**. Record the IP address assigned to the Ethernet adapter Local Area Connection:

   _____

5. Verify that you can communicate with your host computer by typing **ping *IPaddress*** (replacing *IPaddress* with the one you recorded in Step 2 for VMnet1) and pressing **Enter**.

NOTE: *Four Ping requests are sent to the host computer. If they're successful, replies are reported with how long the host took to respond. If the virtual machine is unable to contact the host computer, you get a "Destination host unreachable" message.*

6. Open a terminal window on the UbuntuVM virtual machine. Type **ifconfig** and press **Enter** to determine this virtual machine's IP address.

7. Verify communication between UbuntuVM and the host computer by typing **ping *IPaddress*** (replacing *IPaddress* with the one you recorded in Step 2 for VMnet1) and pressing **Enter**.

8. From the Windows Server 2008 virtual machine, verify that you can communicate with UbuntuVM by typing **ping *IPaddress*** (replacing *IPaddress* with the IP address of UbuntuVM) and pressing **Enter**.

9. Verify that your Windows Server 2008 machine is the active virtual machine and the click **VM** and click **Settings** to display the Hardware settings windows. Use the procedure In step 1 to change the Network Adapter setting for your Windows Server 2008 virtual machine to NAT (used to share the host's IP address) and then click **OK** to save the setting and return to the Windows Server 2008 desktop.

10. If necessary, open a command prompt window. In the command prompt window, type **ipconfig /release** and press **Enter**. Then type **ipconfig /renew** and press **Enter** to force your virtual machine to release its old IP address and request a new one.

11. Verify that you can communicate with the host computer by typing **ping *IPaddress*** (substituting the IP address you recorded in Step 2 for VMnet8) and pressing **Enter**. If your host computer is connected to the Internet, you should now be able to use Internet Explorer to access the Internet from your Windows Server 2008 desktop. Document your results:

   _____
   _____

12. Close all open command prompt windows and power off both virtual machines. Leave VMware Workstation running for the next activity.

Activity 2-17: Cloning and Sharing the Ubuntu VM Virtual Machine

Time Required: 15 minutes

Objectives: Create a clone of an existing virtual machine.

Requirements: Completion of Activity 2-5; access to a classroom network.

Description: The IT instructors at Superior Technical College want to create a shared Ubuntu virtual machine for use by all students in the Linux class. In this activity you are to test the process of using the VMware Workstation sharing feature to create and share a cloned copy of your Ubuntu virtual machine.

1. If necessary, shut down the parent virtual machine, UbuntuVM.

2. You can share a VM by simply dragging it from the My Computer heading and dropping it on the Shared VMs heading. To share your Ubuntu VM, click and drag your Ubuntu VM from under My Computer heading and then drop it onto the Shared VMs heading to start the Share VM Wizard.

3. When you see the Welcome to the Share VM Wizard window, click Next to display the Select Transfer Type window. Under the How would you like to transfer the virtual machine to the "Shared Virtual Machines directory?" heading, click to select the **Make a full clone of the virtual machine** option and record the path to the shared virtual machine folder on the line below:

   _____

4. In the Shared Virtual Machine Name text box, add the word "-Shared" to the default name.

5. Click **Finish** to perform the cloning and registering processes and then click **Close** to exit the wizard. The shared clone is now available as a tab in the administrative console.

6. Power on the clone and log on. This shared VM will now be available from VMware Workstation running on other computers.

7. Power off the clone and exit VMware Workstation.

Activity 2-18: Importing a Physical Computer as a Virtual Machine

Note: This activity requires downloading and installing VMware Converter. The steps in this activity may vary slightly based on the version of the VMware Converter being used.

Time Required: Over one hour.

Objectives: Use VMware Converter to create a virtual machine from a physical computer.

Requirements: Completion of Activity 2-9

Description: Your IT manager wants to convert a Windows server to a virtual machine. As practice, you want to convert your workstation first. In this activity, you learn how to create a virtual machine from a physical computer.

1. Determine which physical computer you will be used to create the virtual machine.

2. If necessary, download the standalone version of VCenter Converter to a directory on the computer you will convert.

3. If necessary, perform the instructions in this step to install VCenter Converter. Double-click the installation file, click **Next** in the Welcome window, and then click **I Agree** and click **Next** to start the installation wizard. Click **Next** to select the default for Destination Folder and **Local Installation** as the Setup Type. Click **Install** to start the installation process. When the Installation Completed window is displayed, click to remove the check from the Run Client now option and then click **Finish** to close the window.

4. Create a folder using your Initials on the physical computer for storing the virtual machine files created from the physical computer you're importing.

5. Start VCenter Converter, by clicking Start, All Programs, VMware, VMware Center Converter Standalone Client. Click the **Convert Machine** option to display the Conversion window.

6. In the Source window, accept the default Powered-on machine in the Select source type textbox.

7. In the Specify the powered-on machine frame, click the **This local machine** option button and then click **View source details** link to view a windows showing the physical machine's specifications. After viewing the information, click **Close** and then click **Next** to display the Destination System window.

8. Click the down arrow to the right of the Select destination type textbox and then click to select the **VMware Workstation or other VMware virtual machine** option.

9. In the Select VMware Product, select the latest version of VMware Workstation.

10. In the Virtual machine details frame, enter a name for the virtual machine that includes your initials and then use the **Browse** button to select the folder you created in step 4. Click **Next** to display the Options window.

11. In the Data to copy option, if necessary, use the **Edit** link and select only the C: physical drive to include in the virtual machine image file.

12. Click the **Edit** link in Advanced options, click the **Post-conversion** tab, and then click to select the **Install VMware tools on the destination virtual machine** option. Click **Next** to display Summary window.

13. Verify your options and then click **Finish** to start the process. This may take over an hour depending on the size of the physical machine. During the cloning process, a log of activities will be displayed in the lower right-hand window.

14. After the virtual machine is created, verify the Log highlights windows to confirm the process was successful completed and then click **File, Exit** to close the VMware Center Converter window.

15. Copy the virtual machine folder to your host computer and then follow the instructions in this chapter to add the virtual machine to your administrative console.)The new virtual machine will use the same license as the physical computer. If you do not have a volume license on the original computer, you will need to power it down prior to starting the virtual machine. If you have a volume license key, you can start this virtual machine without triggering a licensing error.)

16. If possible, start your cloned virtual machine and verify that your new virtual machine can access the Internet.

17. Power down the virtual machine. As this is the last activity in this chapter, you may wish to exit VMware Workstation, close any open windows, and log off your host computer.