Parallels Workstation

Getting Started Guide

Contents

C H A P T E R 1

Introduction

In this chapter we'll talk about the virtual machine technology that is used by Parallels® Workstation and will familiarize you with the main characteristics of a virtual machine created by Parallels Workstation.

In This Chapter

Key Terms and Technologies

In hopes of making your experience as effortless as possible, we've designed Parallels Workstation to be extremely user-friendly, even if you're a computer "newbie." This section highlights some of the terms you'll need to know as you work your way through this guide.

Virtual machine (VM): The whole point of Parallels Workstation is simulating other computers running inside your physical computer. This computer-within-your computer has its own operating system, its own software suite, and its own "screen."

You might call it a PC simulator, an imitation PC, or a mock computer. But in the computer-science industry, it has a standard name: a virtual machine. Every time you start up Parallels Workstation, you're actually turning on a virtual machine running Windows or any other operating system you want to use.

Each virtual machine behaves as though it's running on a PC with these components:

- an Intel Pentium or AMD processor;
- a generic motherboard compatible with Intel i815 chipset;
- RAM up to 1500 MB;
- VGA and SVGA monitor with VESA 3.0 support. After creating a virtual machine, the monitor resolution will be either 640x480 or 1024x768 (VGA and SVGA). Later you will have the oppotrunity to either install Parallels Tools with a video driver in Windows, or set your own screen resolution;
- 1.44 MB floppy drive (mapped to a physical drive or to an image file);
- up to four IDE disk drives. These can be either virtual hard drives (from 20 MB up to 128 GB each, in the form of hard drive image files) or CD/DVD-ROM drives (mapped to either actual drives or image files);
- Ethernet network card compatible with RTL8029. Parallels Workstation supports bridging to wireless network adapters;
- up to four serial (COM) ports (mapped to a real port, to a socket or to output file);
- up to three bi-directional parallel (LPT) ports (mapped to real port, to printer or to output file);
- 2-port USB 1.1 controller;
- AC'97-compatible sound card. Sound recording is supported;
- a standard PC keyboard;
- a PS/2 scroll-wheel mouse.

A virtual machine lets you do tricks like these:

- Simultaneously run multiple operating systems (OSes) and their programs on a single computer.
- Create numerous virtual machines, each with a full set of standard virtual hardware. Operating systems and applications are isolated inside these virtual machines and share physical hardware components with the real computer.
- Switch between operating systems without having to restart the computer

- Simplify your computer setup, combining them into one. The result: reduced hardware costs, lower operating expenses, and increased productivity.

Primary Operating System (Primary OS): This is the operating system that loads when you hit the power button on your computer.

Guest Operating System (Guest OS): This is the reason you bought Parallels Workstation: it's a second, different operating system that you can run simultaneously. The guest OS on your computer might be Windows XP, or Linux, or any of several other operating systems—and they can all be running simultaneously in different windows!

Hard Disk Image: Just as a virtual machine is a simulated PC, a hard disk image is a simulated hard drive. It's actually just a file (of a size you can specify) on your real hard drive, but it looks to the virtual machine like its own actual drive.

ISO Image: A file that contains the entire contents of a CD-ROM disc or DVD, commonly used to install a guest operating system in a VM.

FDD Image: A file that contains the contents of a floppy disk, used to install specific guest operating systems, such as OS/2.

Supported Guest Operating Systems

The current version of Parallels Workstation officially supports the following guest operating systems:

Microsoft Windows Guest Operating Systems:

- Windows Vista
- Windows Server 2003 Standard Edition SP0
- Windows Server 2003 Standard Edition SP1
- Windows Server 2003 Enterprise Edition SP0
- Windows Server 2003 Enterprise Edition SP1
- Windows Server 2003 Web Edition SP0
- Windows Server 2003 Web Edition SP1
- Windows XP SP2 Professional
- Windows XP SP2 Home
- Windows XP SP1 Professional
- Windows XP SP1 Home
- Windows XP SP0 Professional
- Windows XP SP0 Home
- Windows 2000 Professional Edition SP4
- Windows 2000 Server SP4
- Windows 2000 Advanced Server SP4
- Windows NT Workstation 4.0 SP6
- Windows NT Server 4.0 SP6
- Windows ME
- Windows 98
- Windows 95
- Windows 3.11
- Windows 3.1

Linux Guest Operating Systems:

- Red Hat Enterprise Linux WS4
- Red Hat Enterprise Linux AS4
- Red Hat Enterprise Linux WS3
- Red Hat Enterprise Linux ES4
- Red Hat Enterprise Linux ES3
- Red Hat Linux 9
- Red Hat Linux 8

- Red Hat Linux 7.3
- Debian Linux 3.1
- Fedora Core Linux 5
- Fedora Core Linux 4
- Fedora Core Linux 3
- SUSE Linux 10
- SUSE Linux 9.3
- SUSE Linux 9.2
- SUSE Linux 9.1
- SUSE Linux 9.0
- Mandriva Linux 10.1
- Mandriva Linux 10
- Mandriva Linux 9.2
- Ubuntu Linux 5.0.4
- Xandros Linux 4.0

FreeBSD Guest Operating Systems:

- FreeBSD 5.4
- FreeBSD 5.3
- FreeBSD 4.5
- FreeBSD 4.1

OS/2 and eComStation Guest Operating Systems:

- OS/2 Warp 4.5
- OS/2 Warp 4
- OS/2 Warp 3
- eComStation 1.2
- eComStation 1.1

Sun Solaris Guest Operating Systems:

- Solaris 10
- Solaris 9

MS-DOS Guest Operating Systems:

- MS-DOS 6.22

System Requirements

Note. Before installing the product, please make sure that all computers where you wish to install and run Parallels Workstation meet the hardware and software requirements described in this section.

Hardware Requirements

The physical computer running Parallels Workstation should meet the following hardware requirements:

- 700 MHz processor which supports the Pentium III instructions set. 1.5 GHz or faster is recommended.
- 32-bit or 64-bit platform. Note that to run Parallels Workstation 2.2 on 64-bit platform you should have a 32-bit primary OS installed on it.
- Memory to run the primary OS plus memory required for each guest operating system and its applications. Please see your primary and guest operating systems documentation for their memory requirements. 1 GB or more is recommended.
- Disk space required for virtual machines should be estimated according to volume of data you intend to store on virtual hard disks. A typical Windows XP virtual machine after the system installation occupies about 2 GB on the hard disk. Parallels Workstation itself takes about 23 MB.
- Any SVGA video card with an 8-bit display adapter supported by your primary OS. 16-bit color depth or higher is recommended.
- Optional: a 3.5" floppy drive, a CD/DVD-ROM drive.
- If you intend to access the Internet in virtual machines, you should have an Ethernet adapter installed on your computer that is supported by your primary OS.
- Optional: serial port, parallel port, USB controller.

Software Requirements

If one of the following primary operating systems is running on your computer, Parallels Workstation can be successfully installed on it.

Microsoft Windows Primary Operating Systems:

- Windows Vista
- Windows 2003 Standard Edition SP0
- Windows 2003 Standard Edition SP1
- Windows 2003 Enterprise Edition SP0
- Windows 2003 Enterprise Edition SP1
- Windows 2003 Web Edition SP0
- Windows 2003 Web Edition SP1
- Windows XP SP2 Professional
- Windows XP SP2 Home
- Windows 2000 Professional Edition SP4
- Windows 2000 Server SP4

You should have Internet Explorer version 5.0 or higher installed on your computer.

Linux Primary Operating Systems:

- Fedora Core Linux 4 stock 2.6.11-1.1369_FC4
- Red Hat Enterprise Linux WS4 stock 2.6.9-5
- Red Hat Enterprise Linux AS4 stock 2.6.9-5
- Red Hat Enterprise Linux ES4 stock 2.6.9-5
- Red Hat Linux 9 stock 2.4.20-8
- Debian Linux 3.1 stock 2.6.8-2-386
- SUSE Linux 10.0 stock 2.6.13-15
- SUSE Linux 9.3 2.6.11.4-20a
- SUSE Linux 9.2 stock 2.6.8-24.11
- SUSE Linux 9.1 stock 2.6.4-52
- SUSE Linux 9.0 stock 2.4.21-69
- Mandriva Linux 10 stock 2.6.3-7

The following software packages should be installed:

- Sources of currently installed kernel (if you didn't install the kernel manually, then you should install kernel-sources package from your distribution);
- glibc [glibc]
- gcc [gcc], ld [binutils] (included in any development package)
- X Window System including
    - xf86vidmode extension (for fullscreen only)

- XKB extension (for keyboard national layouts and leds support)
- Qt 3.0.5 library multithreaded [qt3]

PAE Support

Current version of the Parallels Workstation supports up to 4 GB PAE (Physical Address Extension). If your processor supports more than 4 GB PAE:

- In Windows primary OS on the first starting a virtual machine you will be prompted to create a new configuration with 4 GB PAE in boot.ini.
- In Linux primary OS kernel PAE setting should be changed manually.

See Troubleshooting section in Starting a Virtual Machine topic.

C H A P T E R 2

Installing Parallels Workstation

In this chapter you'll learn how to install Parallels Workstation on your computer. Installation process is different in Windows and Linux primary OSes.

In This Chapter

Parallels Workstation for Windows: Step-by-Step Installation

Note: You must have Power User or Administrator rights to be able to install the Parallels Workstation on a computer running Windows.

To install Parallels Workstation:

1 Download Parallels Workstation installation file from Parallels site.

- To download a trial version access the Parallels Download Center http://www.parallels.com/en/download.

- To buy a full-scale version visit the Parallels Buy Online page http://www.parallels.com/en/buyonline.

  Select the Windows EXE file for downloading.

2   Locate the downloaded self-extracting `Parallels-Wst-2.2.xxxx-Win.exe` file and double-click it. The Parallels Setup Wizard greets you with the following screen.
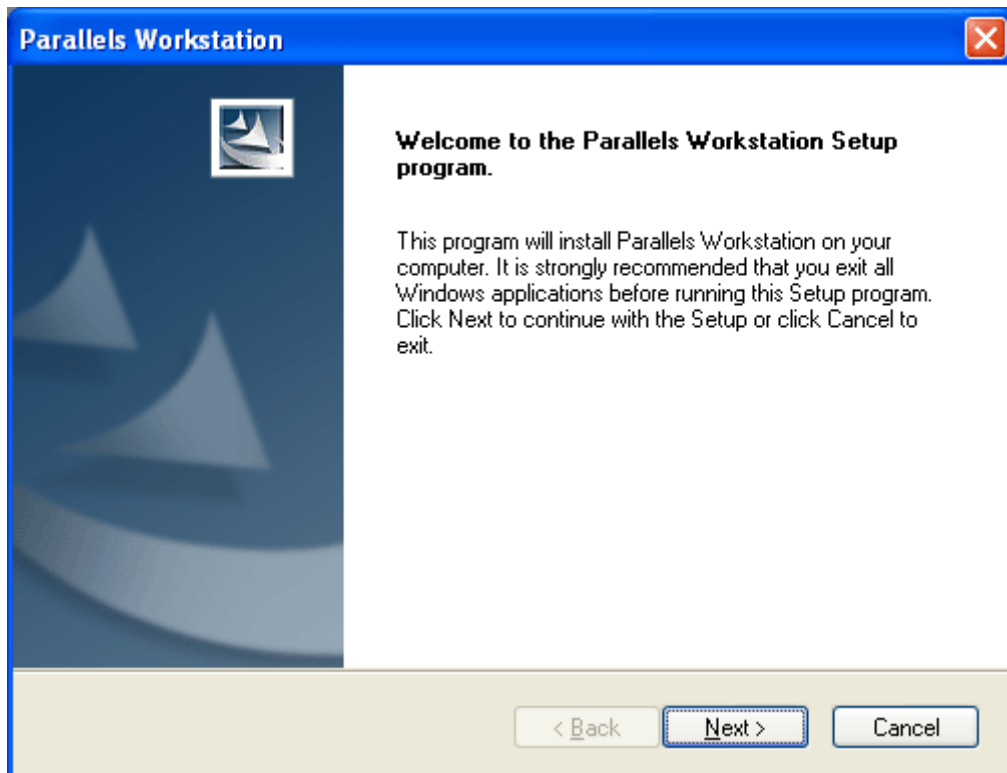
Click Next button to display user license agreement which you must accept to continue installing Parallels Workstation.

3   On the License Agreement screen use either the `PgDn` key or the down arrow $\downarrow$ key on your keyboard to read the entire agreement. Select the I accept the terms of the license agreement option. The Next button becomes enabled; click it to proceed with the installation.

You may print the license agreement for your records using the Print button.
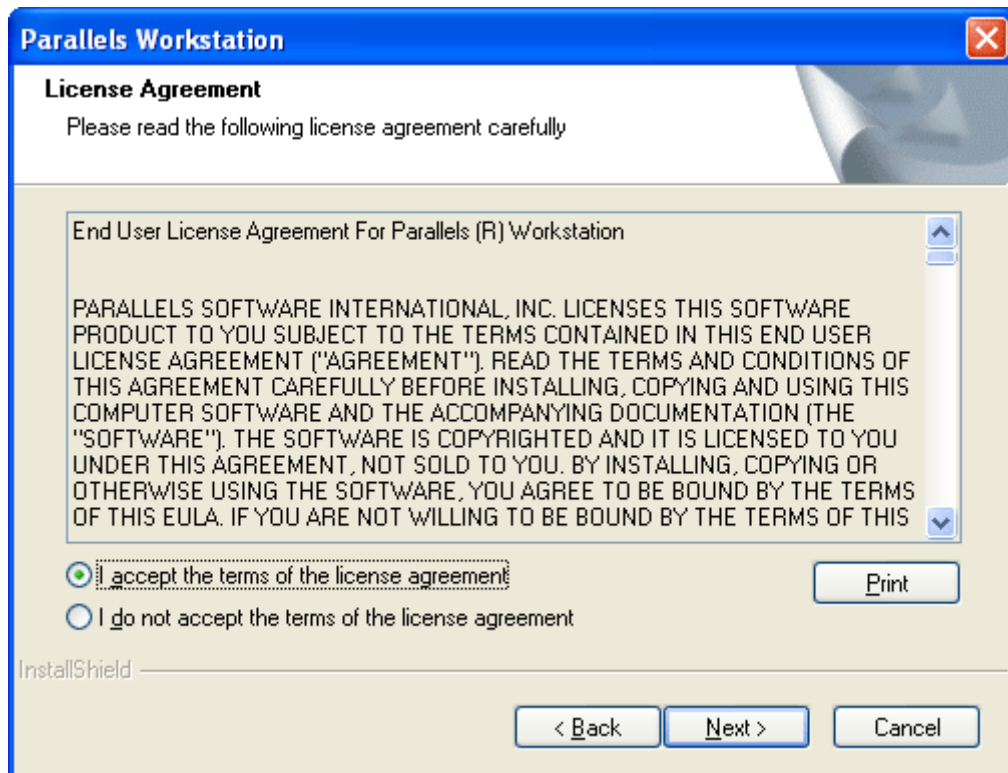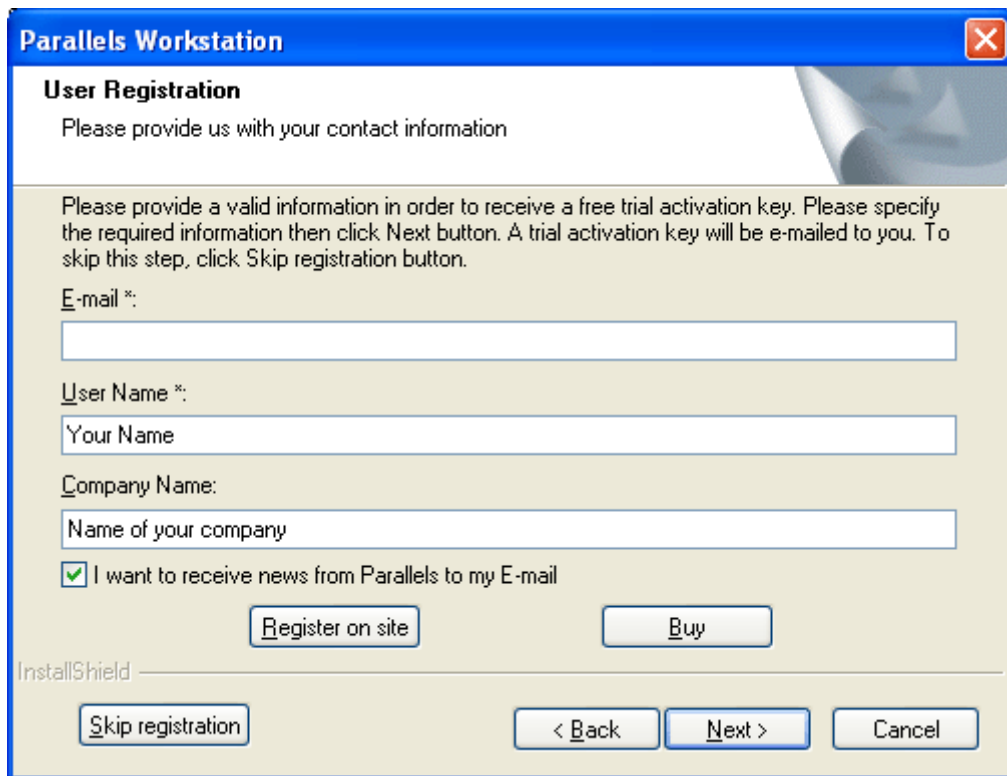
4   In the User Registration screen you can enter your contact information that will be used for sending you a trial activation key. Please enter your E-mail and User name. Specifying Company name is optional. Check I want to receive news from Parallels to my E-mail if you want to be informed about new Parallels products. You will be sent a free trial activation key soon after this.

If you prefer to register on Parallels site, click the Register on site button.

To buy Parallels Workstation and receive a permanent activation key, use the Buy button.

If you want to put off the registration, click Skip registration to proceed to next step.

Note. The User registration screen does not appear if you reinstall Parallels Workstation.

5 In the Customer Information screen, you can activate your copy of the Parallels Workstation. To do this, enter your Activation key. Entering User Name and Company Name is optional. Register on site and Buy buttons are provided for obtaining a trial activation key and a permanent activation key respectively. The Register on site button opens the Parallels site where you can register and get a trial activation key; the Buy button opens the Parallels online store where you can purchase a permanent activation key.

When finished, click the Next button to move to the Choose Destination Location screen.

Notes. 1. You are not obligated to specify activation information right now. It is possible to do it later in the installed application in the Activate Product window. To skip this step, click the Activate later button.

2. The **Customer Information** screen may not appear if you reinstall Parallels Workstation after removing it. If you chose to save license information when removing, this step will be omitted.

6   On the Choose Destination Location screen you should specify a folder where Parallels
Workstation will be installed. If you are not satisfied with the default folder, click the
Change button to find another one. Note that Parallels Workstation should be installed only
on the bootable system disk.
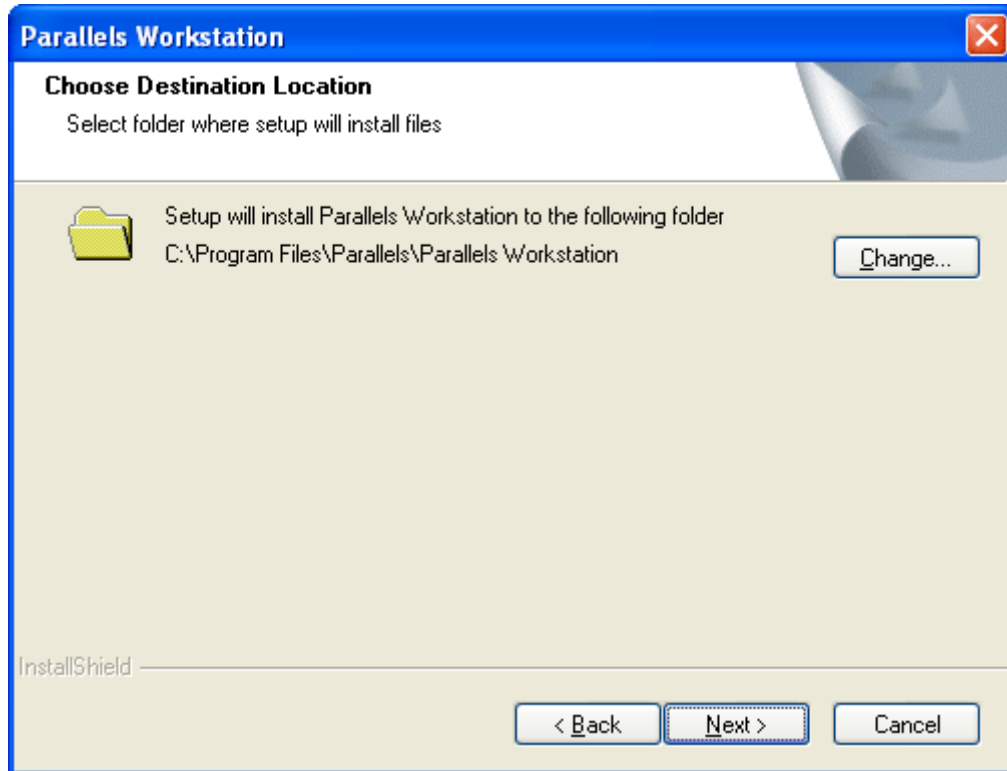
Press the Next button to display the Select Program Folder window.

7   In this window you have to define the name of the Parallels Workstation folder in the Programs list of the Windows Start menu.
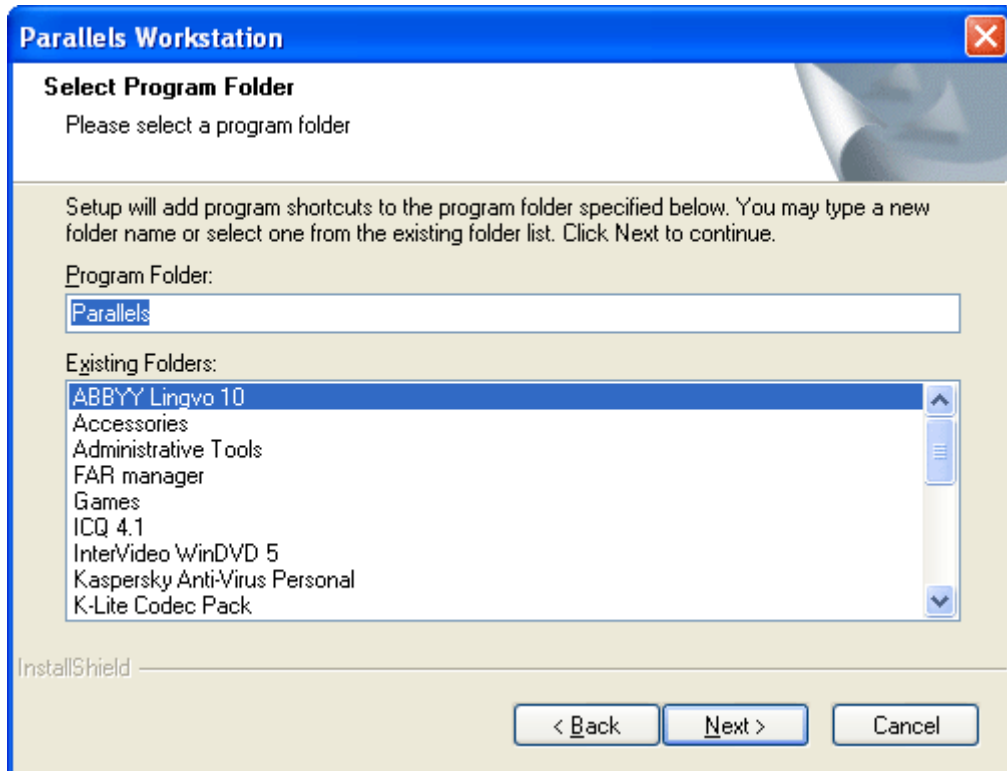
By default, setup wizard offers to create a new folder called Parallels. However, you may choose one of the folders currently existing in the Programs list and presented in the Existing Folders list on this screen.

Click Next to proceed.

8 On the Select shortcuts screen, specify where Parallels Workstation shortcuts should be added. The first option, Create the application shortcut on the Desktop adds Parallels Workstation icon on the Windows desktop. The second option, Create the application shortcut in the Start menu adds an additional link into program folders list above the folders. The third option, Put the application shortcut on the Quick Launch panel adds Parallels Workstation icon to the Windows Quick Launch panel located in the Taskbar.
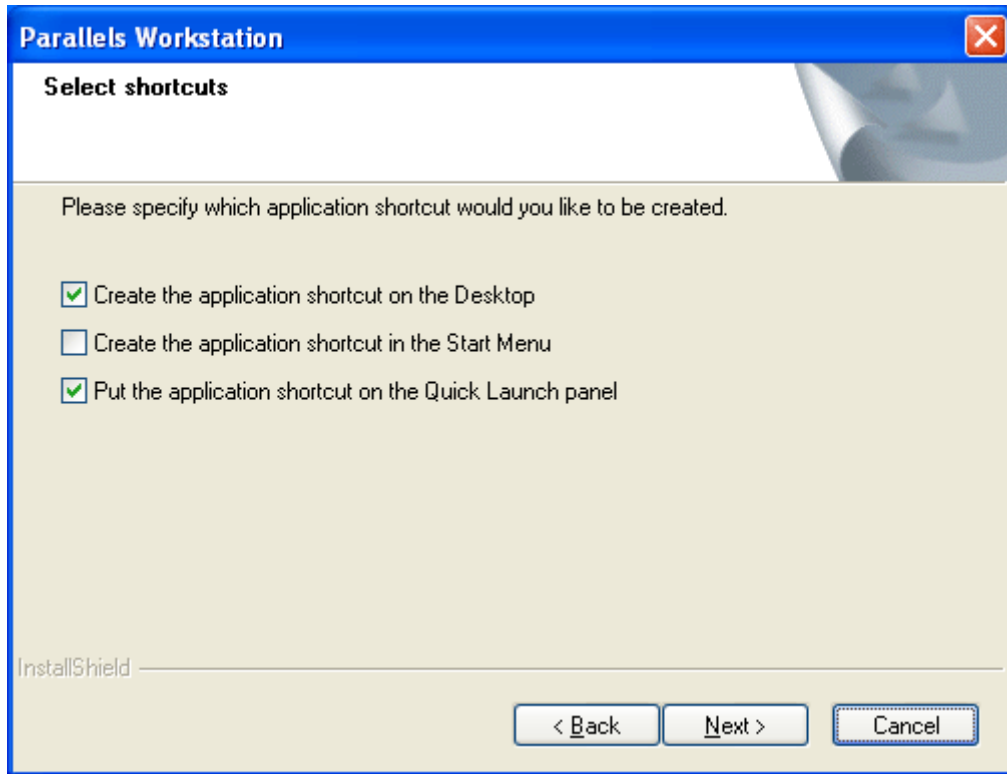
Click Next to move to the next screen.

9 On the Ready to Install the Program screen, if you are satisfied with the information entered, click Install to start the Parallels Workstation installation.

You can return to the previous steps by clicking the **Back** button.
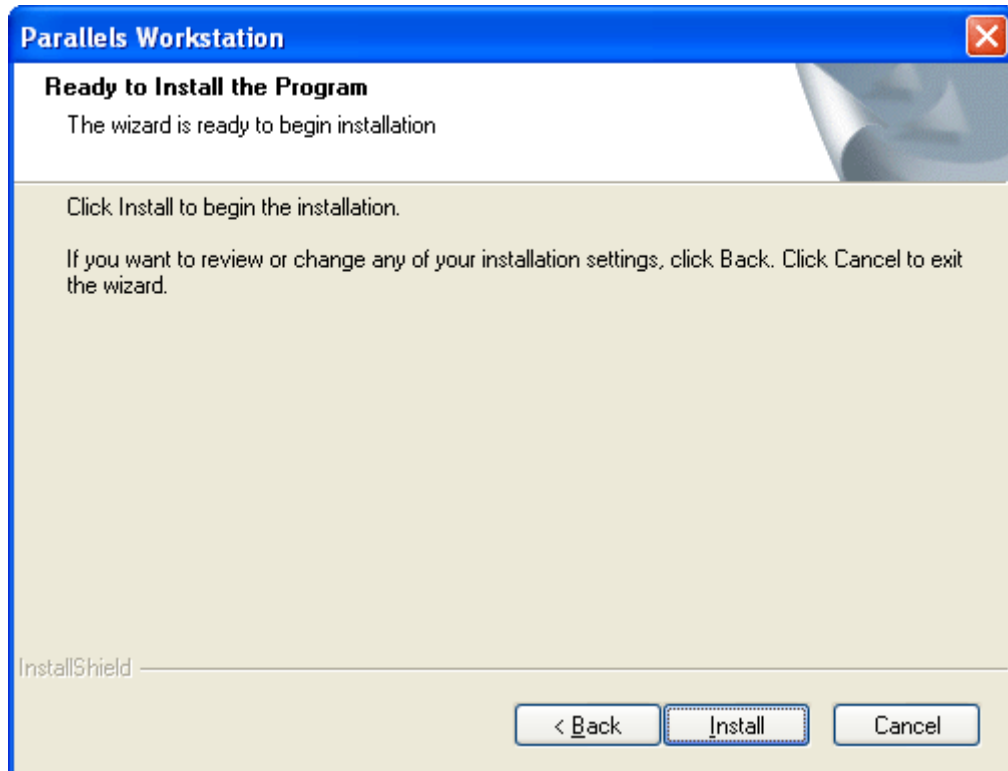
10 If your Windows primary system is configured to warn you every time an unsigned driver is installed, you will receive the following message box:
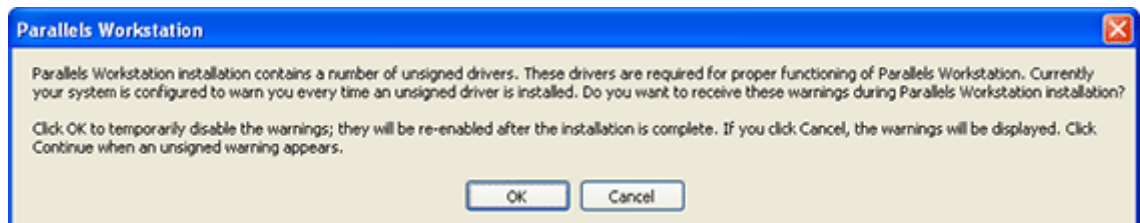
Click **OK** to disable the unsigned driver warnings during Parallels Workstation installation. They will re-enabled later when the installation will be complete.

If your system is configured to block the unsigned drivers installation, you will receive the similar message prompting you to allow installation of these drivers. Click **OK**, otherwise Parallels Workstation can not be installed at all.

11 Installation progress is shown in the Setup Status window.
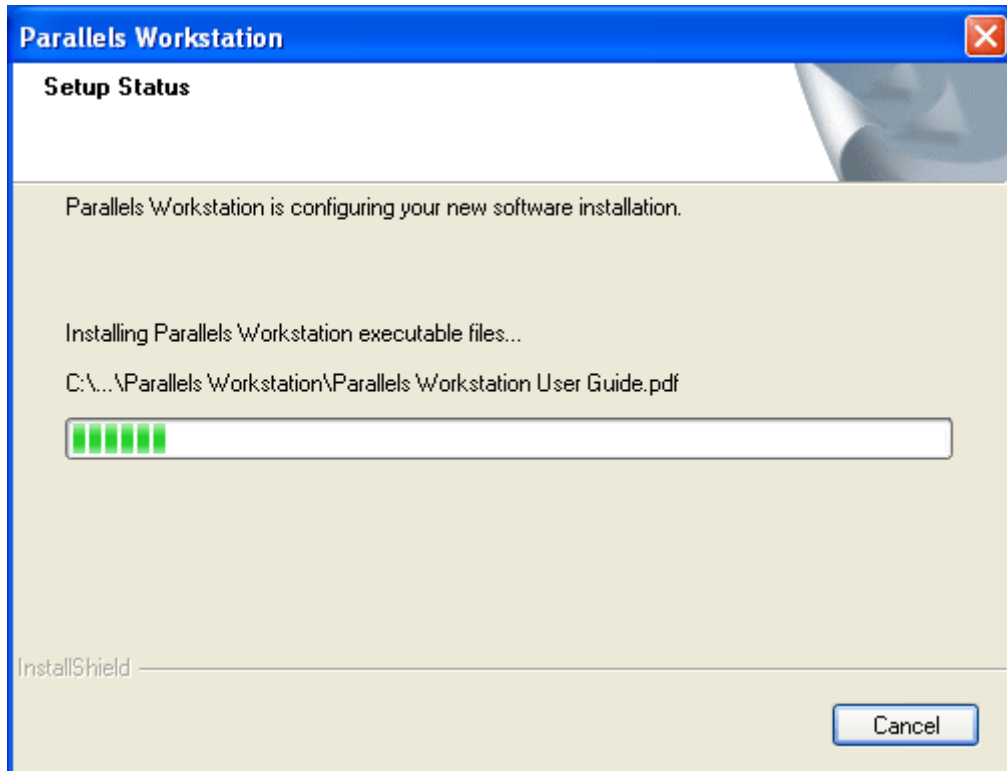
12 When Parallels Workstation is installed, the wizard displays its final screen.
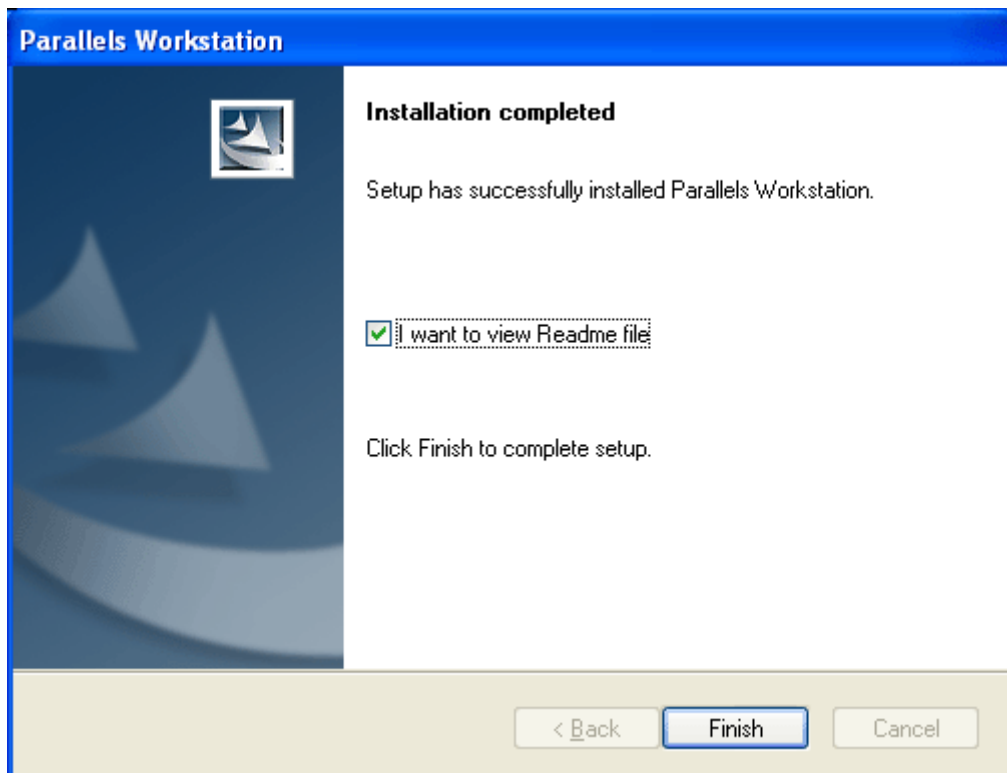
To complete the installation, click Finish. If you check I want to view Readme file option, the Readme file will be opened in Notepad.

Parallels Workstation for Linux: Step-by-Step Installation

Notes: 1. Make sure that the required packages and libraries enlisted in the software requirements (page 10) for the Linux primary OS are installed on your system.

2. To install Parallels Workstation on a Linux computer, you need `root` privileges.

To install Parallels Workstation:

1 Download the Parallels Workstation installation file from Parallels site.

- To download a trial version access the Parallels Download Center http://www.parallels.com/en/download.

- To buy a full-scale version visit the Parallels Buy Online page http://www.parallels.com/en/buyonline.

Depending on what file types your system supports, download the RPM package, or DEB package, or TZG archive respectively.

2 Launch the Terminal program.

3 Run the

```
su
```

command to gain `root` privileges. Enter the password to the `root` account when you are asked for it.

4 If `.rpm` is supported in your system:

- Locate the `.rpm` package file `Parallels-2.2.xxxx-lin.i386.rpm`.

- To start installing Parallels Workstation, issue the following command:

```
rpm -i Parallels-2.2.xxxx-lin.i386.rpm
```

Proceed to step 7.

5 If `.deb` is supported in you system:

- Locate the `.deb` package file `Parallels-2.2.xxxx-lin.deb`.

- To start installing Parallels Workstation, issue the following command:

```
dpkg -i Parallels-2.2.xxxx-Lin.deb
```

Proceed to step 7.

6 If both `.rpm` and `.deb` are not supported in your system:

- Locate the `.tgz` package file `Parallels-2.2.xxxx-lin.tgz` and extract it into any existing directory:

```
tar -xzpf Parallels-2.2.xxxx-lin.tgz -C <directory name>
```

- Go to the directory where you unpacked the `.tgz` file and issue the next command

```
cd parallels-2.2.xxxx-lin
```

- Run the following command

```
./install.sh
```

7 After the installation completes, you should run the post-installation script. Issue the following command:

```
parallels-config
```

8 When prompted, press Enter on the keyboard.

9 Read the license agreement up to the end by pressing Spacebar on your keyboard. To accept the agreement, type "y" or "yes" (in either upper or lowercase) and press Enter.

10 The Parallels Workstation configuration procedure configures, compiles and installs drivers. After the process is finished you will be informed about the successful completion.

11 In the Terminal, issue the

```
exit
```

command to leave the root account. You can now run Parallels Workstation!

Troubleshooting

If you receive a "Can not configure!" or "Can not compile!" message (note that you should have kernel sources installed), you can view log file and try to fix problem yourself. The log file is named /usr/lib/parallels/comp.log.<log number>.error

If you can not fix the problem yourself, please send the log file and problem description to reports@parallels.com. We will assist you as soon as possible.

Starting Parallels Workstation

In This Chapter

Starting Parallels Workstation in Windows Primary OS

- Select **Programs** --> **<Parallels Folder Name>** --> **Parallels Workstation** in the Windows **Start** menu, where **<Parallels Folder Name>** denotes the name of the Parallels Workstation folder in Windows **Start** menu that you have specified while installing.

- You may also start Parallels Workstation by double-clicking its icon on the desktop, by single-clicking its shortcut in **Start** menu, or by single-clicking its icon in the Quick Launch panel, if you have added the corresponding shortcuts during installation.

Starting Parallels Workstation in Linux Primary OS

- Log in, launch the **Terminal** program and run

```
parallels
```

in the command line.

C H A P T E R 4

Creating a Virtual Machine

In the Parallels Workstation window click the button. Now the New Virtual Machine Wizard appears — a series of screens that will help you build and configure a virtual machine — appears.
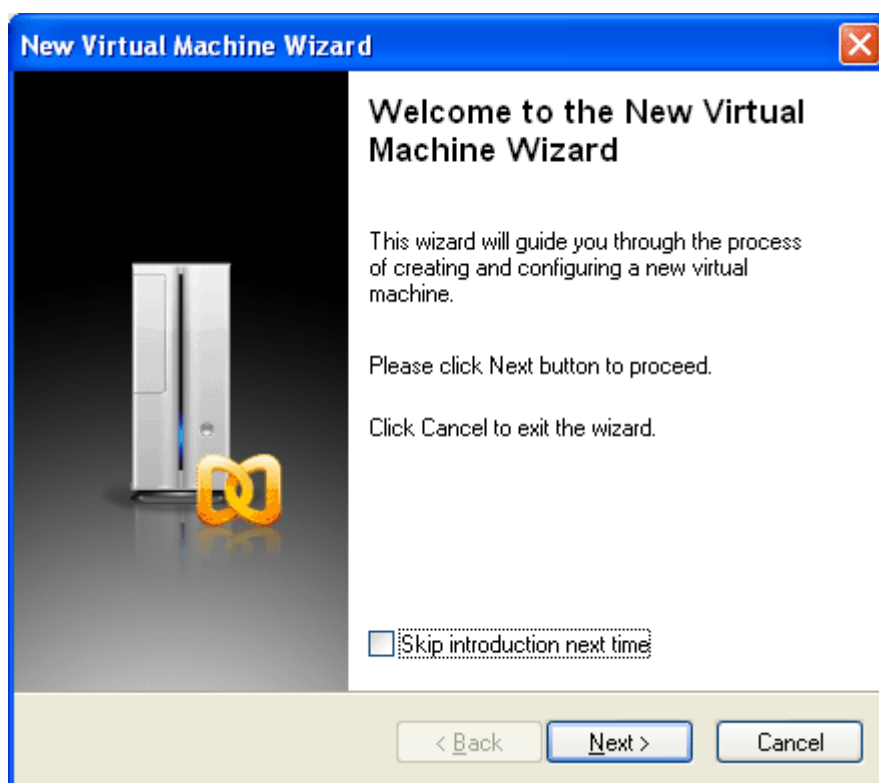
Click the Next button.
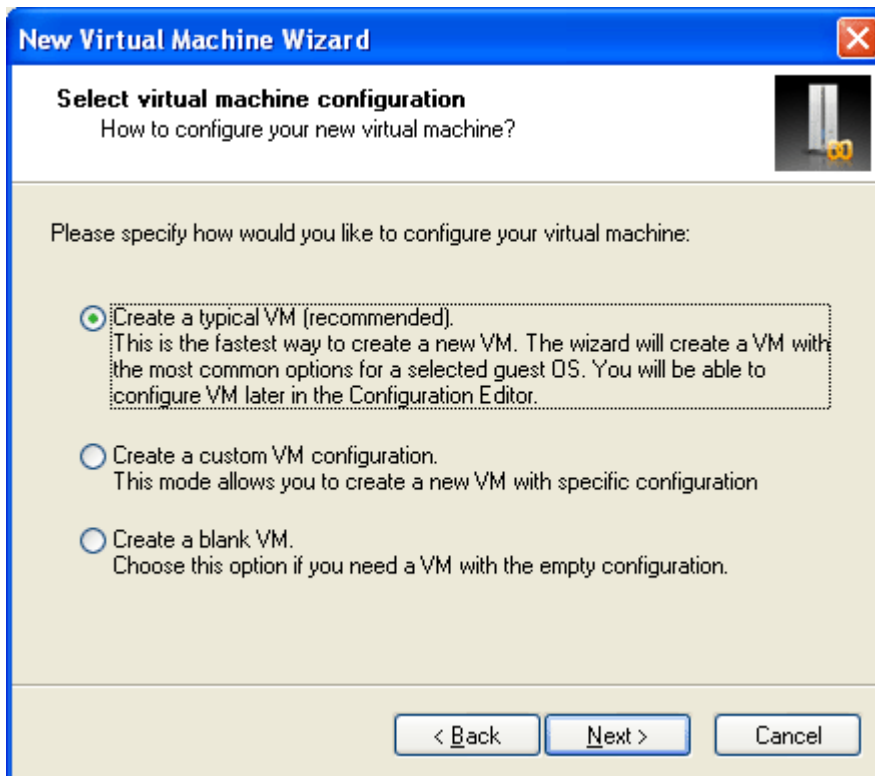
You'll notice the first option, Create a typical VM, is selected. We highly recommend that you leave this selection untouched, especially if you are new to virtualization; it's the easiest way to create a new virtual machine. Click Next.
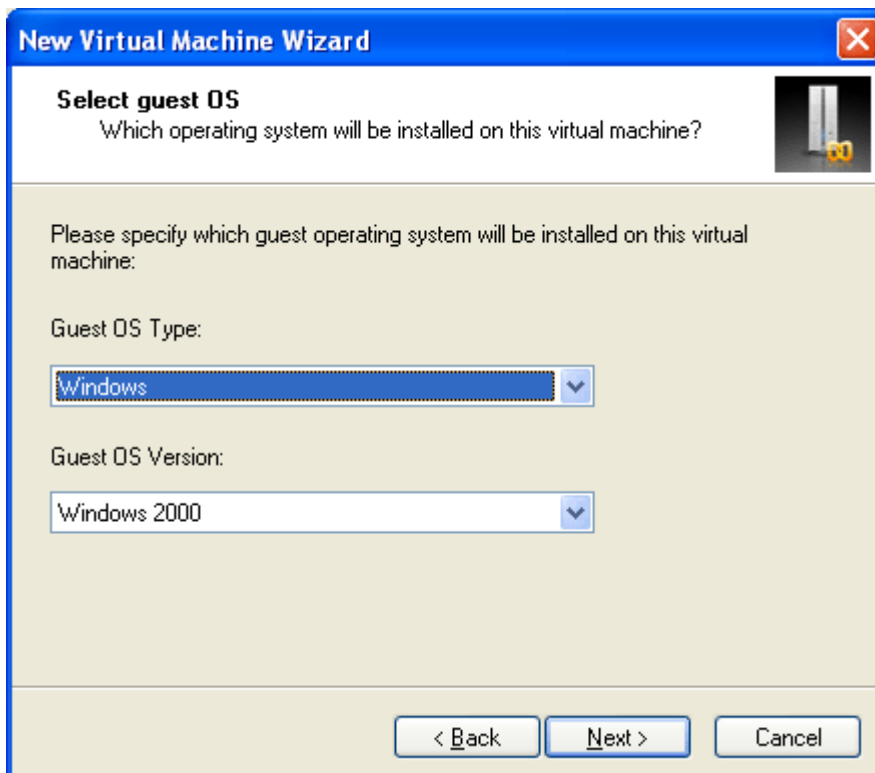
On the next screen, you specify what guest operating system you'll be running on your virtual machine. Choose the operating system from the first pop-up menu (for example, Windows), and then choose the version from the second one (Windows 3.1, Windows 95, Windows XP, or whatever).

After specifying the guest OS, click Next.

In this final step, you're asked to name your virtual machine. The name doesn't really matter unless you plan to create several VMs running the same operating system; in that case, you'll want to give them distinct names ("Windows XP for Games" and "Windows XP for Work", for example).

This dialog box also lets you specify where you want to store the files that make up your virtual machine. Unless you indicate otherwise, the wizard will name the VM after the guest OS you've specified and store it in the Parallels folder. (You can change this default folder in Parallel Workstation's Edit -> Preferences -> Common dialog box. For more information, consult the full Parallels Workstation 2.2 User Guide by choosing Help -> Contents.)

Click Finish to begin creating the virtual machine. When the new configuration is generated and opened in the Parallels Workstation window, the auto-update feature asks if you want Parallels Workstation to perform regular automatic checks for updates.
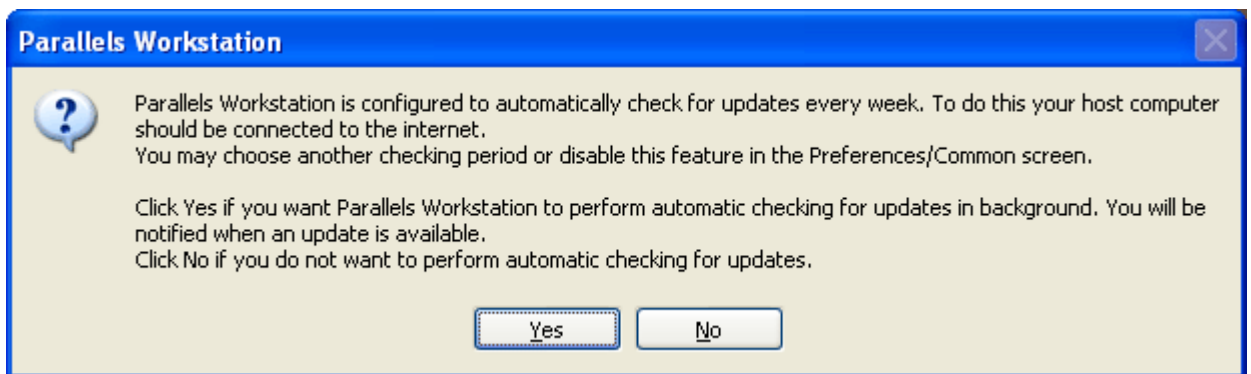
We recommend that you turn this feature so you will be automatically informed when Parallels Workstation updates are released. For more information about the auto-update feature see Auto-Updating Parallels Workstation in Windows or Auto-Updating Parallels Workstation in Linux in the Parallels Workstation 2.2 User Guide. You can access the guide by selecting the Help -> Contents drop-down menu in the Parallels Workstation menu bar.

Next, you will need to activate your copy of Parallels Workstation.

C H A P T E R   5

Activating Parallels Workstation

Before installing a guest operating system onto your first virtual machine, you must activate your copy of Parallels Workstation. You will be not able to power on a virtual machine until your copy of the Parallels Workstation is activated with a trial or a permanent activation key.

In This Chapter

Activating Parallels Workstation in Windows Primary OS

The installation wizard allows you to enter your activation key during Parallels Workstation installation. If you have not done this, perform the following steps.

Getting an Activation Key

If you already have an activation key, skip this section and proceed to **Activating Your Copy of Parallels Workstation** below in this topic.

To get an *evaluation key*:

1 Click **Help** in the menu and select **Activate Product**. This opens the **Activate Product** screen.

2 In the **Activate Product** screen, click the **Evaluate** button to open the **User Registration** window.

3   In the User Registration window, specify your e-mail and your name. Entering the name of your company and optional information in the respective tab is not necessary. Specify if you want to receive news from Parallels to your e-mail.

4   Click the Register button to send this information to Parallels. You will be sent a free trial activation key to your e-mail in a short time.

Alternatively, you may register on Parallels site. Use the Register on site button to proceed to creation of the account on site. You will receive a free trial activation key on your e-mail soon after this.

To get a `permanent activation key`:

1   Click Help in the menu and select Activate Product. This opens the Activate Product screen.

2   In the Activate Product screen, click the Buy button to open the Parallels Online Store where you can purchase a permanent activation key.

Activating Parallels Workstation

Perform the following steps:

1   Click Help in the Parallels Workstation main menu and select Activate Product.

2   In the Activate Product window fill in the following fields:

   ▪   In the Activation key field, type the key provided to you. When you fill in this field, the Activate button becomes active.

- Specify your name and name of your company in the **User Name** and **Company Name** fields. Information taken from Windows system settings is automatically prompted here. These fields are optional.

3 Click the **Activate** button. If you have entered a valid activation key, the following confirmation message will be displayed: `"Parallels Workstation has been activated successfully. Thank you!"` From this point on your copy of the Parallels Workstation is active and you may use all of its features and capabilities.

Activating Parallels Workstation in Linux Primary OS

Getting an Activation Key

If you already have an activation key, skip this section and proceed to **Activating Your Copy of Parallels Workstation** below in this topic.

To get an *evaluation key*:

1 Click **Help** in the menu and select **Activate Product**. This opens the **Activate Product** screen.

2 In the **Activate Product** screen, click the "**obtain a free trial activation key**" link to open the **User Registration** window.

3 In the User Registration window, specify your e-mail and your name. Entering name of your company and optional information in the respective tab is not necessary. Specify if you want to receive news from Parallels to your e-mail.

4 Click the Register button to send this information to Parallels. You will be sent a free trial activation key to your e-mail in a short time.

Alternatively, you may register on Parallels site. Click the Register on site button to proceed to creation of the account on site. You will receive a free trial activation key on your e-mail soon after this.
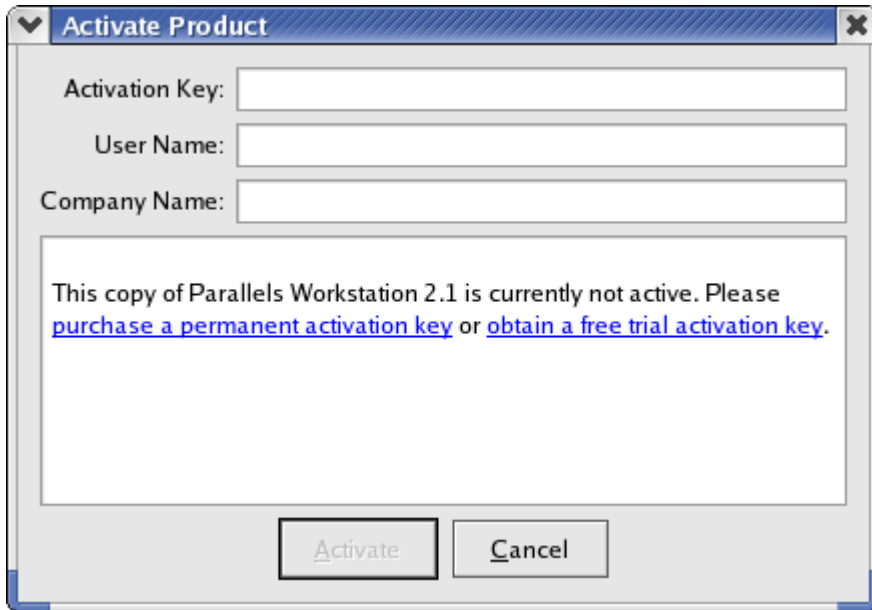
To get a `permanent activation key`:

1 Click Help in the menu and select Activate Product. This opens the Activate Product screen.

2 In the Activate Product screen, click the "purchase a permanent activation key" hyperlink to open the Parallels Online Store.

Activating Parallels Workstation

To activate Parallels Workstation in Linux do the following:

1 Click Help in the Parallels Workstation main menu and select Activate Product.

2 In the Activate Product window, fill in the following fields:

- In the Activation key field type the key provided for you. When you fill in this field, the Activate button becomes active.

- Specify your name and name of your company in the User Name and Company Name fields. These fields are optional.

3 Click the Activate button. If you have entered a valid activation key, the following confirmation message will be displayed: "Parallels Workstation has been activated successfully. Thank you!" From this point on, your copy of the Parallels Workstation is active and you may use all of its features and capabilities.

C H A P T E R   6

Installing a Guest Operating System

When it comes to installing the guest OS, you will have a few options. You can install directly from a CD/DVD or floppy disk, or install the OS from an image of any of these disks. All kind of disk images can be made using the **Parallels Image Tool** included in the Parallels Workstation distribution. See the **Using the Parallels Image Tool** chapter in **Parallels Workstation 2.2 User Guide**, which is accessible through the **Help**->**Contents** menu in the menu bar.

Note: To install a guest OS from any physical disk when running Linux primary OS, you should have system privileges to access the corresponding device of your host computer. Otherwise you will not be able to connect CD/DVD-ROM or floppy drive of your virtual machine to proper physical device.

Here are the General Steps:

1   Start Parallels Workstation.

2   Either open a virtual machine you previously created or choose to create a new one.

To open the virtual machine you've just created, click **File** menu and select the name of the configuration file in the end of the list.

To install from a physical CD/DVD or CD/DVD .iso image:

1   In the Parallels Workstation window, click on the CD/DVD-ROM 1 in the **Resources** list. This opens the **Configuration Editor** window with **CD/DVD-ROM Options**.

Important: Make sure that the **Enabled** and the **Connect at startup** options are selected.

2   Connect the CD/DVD-ROM drive to the guest OS distribution. For this, do the following.

If you want to install from a real CD/DVD:

In the **CD/DVD-ROM Options** screen, click the **Use real CD/DVD-ROM** option and specify which real drive to connect to the virtual device in the **CD/DVD-ROM Drives** list.

Now simply insert the CD/DVD disk with the operating system distribution into the appropriate drive of your computer.

If you're installing from an `.iso` image file:

In the **CD/DVD-ROM Options** screen, click the **Use image file** option and specify the path to the `.iso` distribution file in the **Image File** field.

3   In the **Connect to** list select **IDE 0:1**. This enables not just reading but installing guest OS from the selected CD/DVD-ROM drive.

4   Now that we've made all of these changes, it is essential that you save the virtual machine configuration. In order to do this:

Click **OK** on the **Configuration Editor** screen, then click the button in the Parallels Workstation window or select **Save** in the **File** menu.

5 Now, start the virtual machine by clicking Power On on the toolbar. Capture the input devices in the guest OS screen as we discuss in the chapter Capturing and Releasing Keyboard and Mouse in a Virtual Machine (page 39). All you have to do now is follow the installation instructions for the specific operating system.

If you receive a PAE warning on virtual machine startup, see the Troubleshooting subtopic below for instructions on correcting the problem.

To install from a physical floppy disk or a floppy image:

1 In the Parallels Workstation window, click on the Floppy in the Resources list. This opens the Configuration Editor window with Floppy Options.

Important: Make sure that the Enabled and the Connect at startup options are selected.

2 Connect the floppy drive to the guest OS distribution. For this, do the following.

If you want to install from a real floppy disk:

In the Floppy Options screen, select the Use real floppy option and specify which real drive to connect to the virtual device in the Floppy Drives list.

Insert the floppy disk with the operating system distribution into the appropriate drive of your computer.

If you're installing from an .fdd image file:

In the Floppy Options screen, check the Use image file option and specify the path to the .fdd distribution file in the Image File field.

3 Now that we've made all of these changes, it is essential that you save the virtual machine configuration. In order to do this:

Click OK on the Configuration Editor screen, then click the button in the Parallels Workstation window or select Save in the File menu.

4 Now, start the virtual machine by clicking Power On on the toolbar. Capture the input devices in the guest OS screen as we discuss in the chapter Capturing and Releasing Keyboard and Mouse in a Virtual Machine (page 40)). All you have to do now is follow the installation instructions for the specific operating system.

If you receive PAE warning on virtual machine startup, see troubleshooting sections below for instructions on correcting the problem.

Troubleshooting

In Windows Primary OS

If when starting a virtual machine in Windows primary OS you receive the warning "Parallels Workstation has detected that your primary operating system is running in PAE mode...", this means that your host computer configuration does not conform to Parallels Workstation requirements. Current version of the Parallels Workstation supports up to 4 GB PAE. To bypass this problem:

- Follow Parallels Workstation prompts to create new configuration with 4 GB PAE.
- Boot into this configuration. When launching Windows primary OS select the configuration that has in parentheses "for Parallels Workstation" on the Please select the operating system to start screen.

In the future boot into the Windows configuration with 4 GB PAE to work with Parallels Workstation.

In Linux Primary OS

If when starting a virtual machine in Linux primary OS you receive the warning "Parallels Workstation can not be started due to VM memory mapping fail..." or when running a guest OS you receive the warning "Parallels Workstation experience problem when trying to allocate physical memory in PAE mode...", it could mean that the currently running kernel supports PAE greater than 4 GB physical memory while the current version of Parallels Workstation supports up to 4 GB PAE only. To fix the problem you have to change the auto detected PAE value to 4096 MB. Do the following:

- Add to your boot loader the kernel option "mem=4096M" (refer to your boot loader documentation for details).

C H A P T E R   7

Parallels Tools

Although Parallels Workstation lets your guest OS access your computer's video card, network cards, and other hardware, it also simulates its own set of PC hardware (Key Terms and Technologies (page 5) topic).

If you've installed Windows (except 3.1), Solaris, OS/2, or eComStation, Parallels provides special add-ons called Parallels Tools that improve some hardware components and add helpful extra features. For example, they let you:

- use higher resolution and color depth for the guest OS monitor,
- use the cursor in the guest OS without pressing a special key combination,
- share the same clipboard between your guest OS and primary OS, so that you can exchange text and pictures,
- improve network connections and sound quality.

Note: In a Solaris guest OS, a network driver is required to support networking in a virtual machine.

Parallels Tools can be easily installed manually after completing the guest OS installation.

Installing Parallels Tools in a Windows guest OS is described below. For other guest OSes, please refer to the Creating Virtual Machine->Installing Parallels Tools section of the Parallels Workstation 2.2 User Guide, which is available through the Help->Contents menu in the menu bar.

Installing Parallels Tools in Windows

To install Parallels Tools in a Windows guest OS, do the following:

1   First, boot your guest OS and log in. In order to install tools properly, do not begin the installation until the OS completes its startup and you are logged in.

2   Select Install Parallels Tools in the Parallels Workstation VM menu.

3   You are warned about the necessity of having your guest OS fully started and logging in: "You can install the Parallels Tools only if the guest operating system is running and you are logged in. If you are not logged in now, select Cancel and run Parallels Tools installation later." If you are logged in, click OK to start installing.

4   The Parallels Tools Setup wizard starts and greets you. Click Next to move to the Choose Destination Location screen. If you do not like the default directory, select another one using the Change button. Then click Next.

5   On the Setup Type screen you should choose between the *complete* setup and a *custom* one. The complete setup installs all of the tools available for your guest OS. If you select custom setup, the Select Components screen asks you to select the desired tools from the tools available for your guest OS.

6 Choose the program folder on the Select Program Folder screen, then the Check Setup Information screen displays the options selected. If they are correct, click Next to begin the installation.

7 By default a Windows operating system is configured to warn you every time an unsigned driver is installed. Parallels Tools installation wizard supposes to temporarily disable these warnings.

When you receive the following message: "Parallels Tools installation contains a number of unsigned drivers. These drivers are required for proper functioning of Parallels Tools. Currently your system is configured to warn you every time an unsigned driver is installed. Do you want to receive these warnings during Parallels Tools installation?" click OK to disable the unsigned driver warnings during Parallels Tools installation. They will re-enabled later when the installation will be complete.

8 After the wizard copies the tools, the Installation Completed screen asks if you want to restart the computer now. In all Windows guest OSes, except 98 and NT, you must restart the virtual machine after this setup procedure. Click Finish, and your virtual machine will be restarted and ready for work with the tools installed.

Note: In Windows 98 and Windows NT some drivers require additional steps to perform after this setup. Please refer to the Creating Virtual Machine->Installing Parallels Tools section of the Parallels Workstation 2.2 User Guide, which is available through Help->Contents in the menu bar.

Troubleshooting When Installing Tools

Parallels Tools installation is invoked by the Windows AUTORUN feature for the CD/DVD-ROM drive. It is enabled by default, however if you have disabled it manually, nothing happens after you select the Install Parallels Tools command. (In either case, the vmtools.iso CD image will be connected to the virtual machine CD-ROM drive, however it is not visible to the user.) To solve this problem do one of the following:

▪ Enable the AUTORUN function for the CD-ROM drive in your Windows guest OS.

▪ Start the tools installation manually.

Open the contents of the vmtools.iso in Windows Explorer, find PrlTools.exe file, and start it.

C H A P T E R 8

Capturing and Releasing the Keyboard and the Mouse in a Virtual Machine

When you power up a virtual machine, you've got two computers running at once: your actual computer, and the simulated PC that's running inside it. But you've got only one mouse and keyboard! How, then, is Parallels Workstation supposed to know when a certain mouse or keyboard activity is intended for the primary OS, and when for the guest OS?

The Automatic Handoff

One obvious answer is: Whenever the cursor is inside the guest OS window, then it belongs to that OS. When the cursor moves out of the guest window, it belongs to the primary OS once again.

And indeed, that's exactly how things work if you've installed Parallels Tools as described in the previous chapter.

The Manual Handoff

But Parallels Tools are not available for all guest operating systems; furthermore, some people may prefer to trigger the keyboard/mouse handoff manually. You can use any of three methods to make the virtual machine "capture" the keyboard and mouse:

- Click anywhere inside the virtual machine window.
- Select **Capture Input** in the **VM** menu.
- Press `Ctrl+I` on your keyboard.

Once the guest OS captures your cursor, you can't move it outside of the Parallels Workstation window until you release it.

To release the keyboard and mouse to primary OS:

- Press the keyboard shortcut for releasing your keyboard/mouse. The factory setting is `Ctrl+Alt`, but you can change this key combo in the **Edit** -> **Preferences** -> **Hot Keys** tab.

The keyboard and the mouse will be released immediately.

C H A P T E R 9

Keyboard Shortcut Limitations in Windows Primary OS

If your computer is running Windows primary OS, it will intercept `Ctrl+Alt+Del` key combination pressed in guest OS. To send `Ctrl+Alt+Del` to guest OS:

- either press `Ctrl+Alt+Ins` while the keyboard is captured inside a Virtual Machine window,
- or select **Send Ctrl+Alt+Del** in the Parallels Workstation **VM** menu.

C H A P T E R   1 0

Starting, Stopping, and Resetting a Virtual Machine

Starting a Virtual Machine

Once you've set up a virtual machine and installed a guest OS, Parallels Workstation is ready for work whenever you are.

Just click the Power On ⏵ button on the Parallels Workstation toolbar (or choose VM -> Power On). The virtual machine switches on, its control panel opens in the Parallels Workstation window, and the guest OS "boots up," looking just as it would on a real PC.

Note that the virtual machine can only be powered on if your copy of Parallels Workstation has been activated with a permanent or trial activation key. If your copy is not activated, the "This copy of Parallels Workstation is currently not active" warning will appear. If this is the case, you will need to go back and activate your copy (see the Activating Parallels Workstation (page 29) chapter).

Stopping a Virtual Machine

You shut down your virtual machine just as you would on a real PC. For example, if you're running Windows, you click the Start button and click Shut Down. Only if you can't stop the guest OS this way, you may use the Parallels Workstation controls to do so, like this:

- Click the Power Off 🔴 button on the Parallels Workstation toolbar,
- Choose VM -> Power Off in menu.

Resetting a Virtual Machine

You should always restart a guest OS using its built-in Restart command. For example, in Windows, click Start, then Shut Down, then Restart.

If that doesn't work, for some reason, only then should you use the Parallels Workstation controls, using one of the following options:

- Click the Reset button on the Parallels Workstation toolbar (or select VM->Reset).
- Select Send Ctrl+Option+Del in the VM menu (or press Ctrl+Alt+Del(Ins) while the keyboard is captured inside a virtual machine window).

C H A P T E R   1 1

Running a Virtual Machine in Fullscreen Mode

In order to make a virtual machine feel even more like a regular computer, you may sometimes want to expand the guest OS screen so that instead of huddling in a window, it occupies your entire monitor, edge to edge.

In this fullscreen mode, primary OS and all of its programs are hidden. The Parallels Worksatation menu, toolbar, and status bar will be hidden as well.

If you want to run the virtual machine in fullscreen mode, make sure it's already running. Then do one of these three things:

- click the Fullscreen Mode toolbar button,
- select View->Fullscreen in the menu,
- press Alt+Enter on your keyboard.

To shrink the virtual machine screen to the usual (windowed) mode:

- press Ctrl+Alt or Alt+Enter on your keyboard.

C H A P T E R   1 2

Accessing the Internet

If you want to access the Internet in a virtual machine, start by making sure your computer can itself get online.

Then proceed like this:

1 If your virtual machine is currently running, turn it off (click its **Power Off** ⬛ button). You can change a VM's configuration only when it's shut down.

2 In the Parallels Workstation window, click **Network Adapter** in the **Resources** list to open the **Configuration Editor** screen which contains the **Network Adapter Options**.
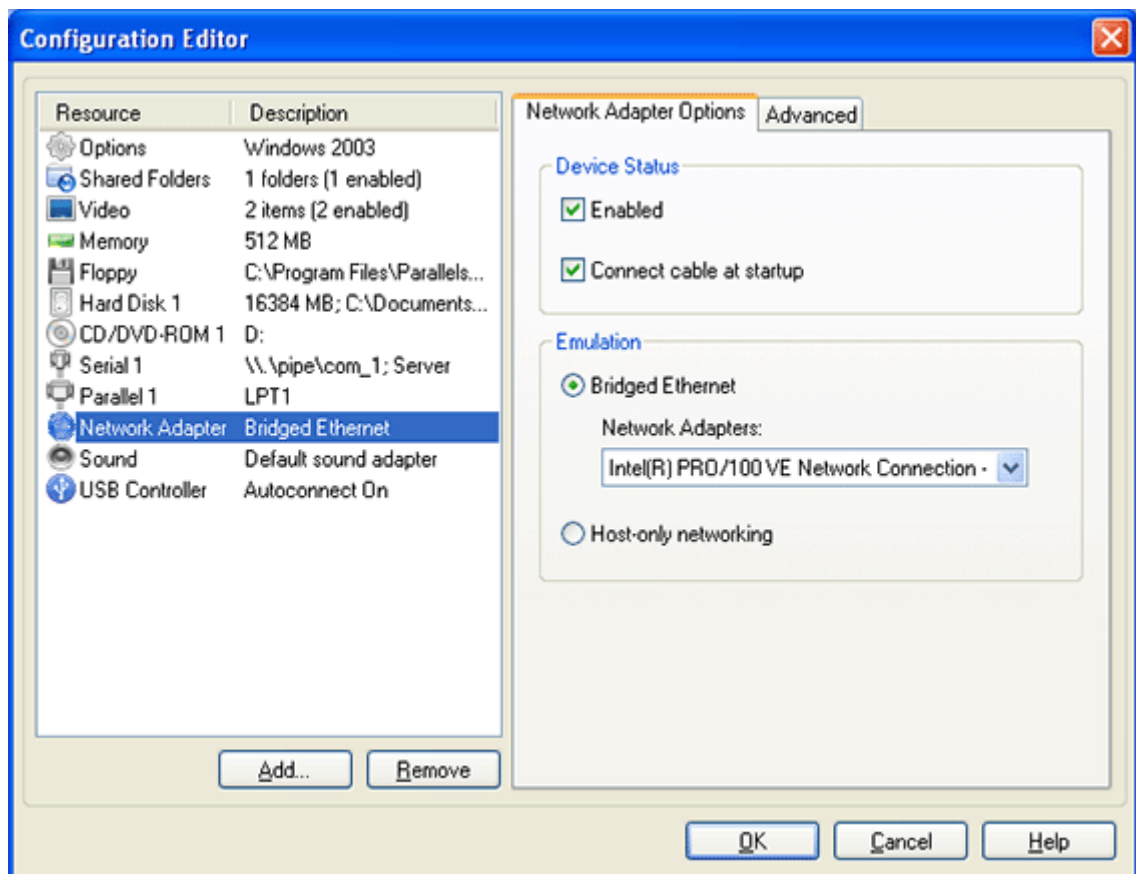
3 In **Network Adapter Options**, make sure that the **Enabled** and **Connect cable at startup** options are selected. In the **Emulation** group, select the **Bridged Ethernet** option and then choose a name of your network adapter in the list:

- **default** adapter to use the adapter which connects to the Internet your real compter,

- or a specific adapter if you have a different one installed.

4 Next, click **OK** on the **Configuration Editor** screen, then click the [Save] button in the Parallels Workstation window (or choose **File -> Save**).

5 Now, start the virtual machine by clicking Power On ▶ on the toolbar. Capture the input devices in the guest OS screen (Capturing and Releasing Keyboard and Mouse in a Virtual Machine (page 39) chapter), if necessary.

6 Configure network options in your guest operating system, just as you would on a new PC.

Once you're connected to the Internet, you can use your virtual machine to access email, surf the web, chat, and more!

C H A P T E R   1 3

Creating Shared Folders

Having Parallels Tools installed lets you to transfer texts and small pictures between your main computer and virtual machine. To be able to exchange files you should setup shared folders. Shared folders are folders in your primary OS that are visible to the guest OS also. In your computer shared folders appear as usual folders, while in guest OS they are objects of the network neighborhood.

Using shared folders is possible for the following guest OSes:

▪ Window 2000/XP/2003.

Adding a Shared Folder

1 Open the virtual machine configuration, click the button to open the Configuration Editor.

2 In the Configuration Editor, select the Shared Folders tab. Select the Enable shared folders option.
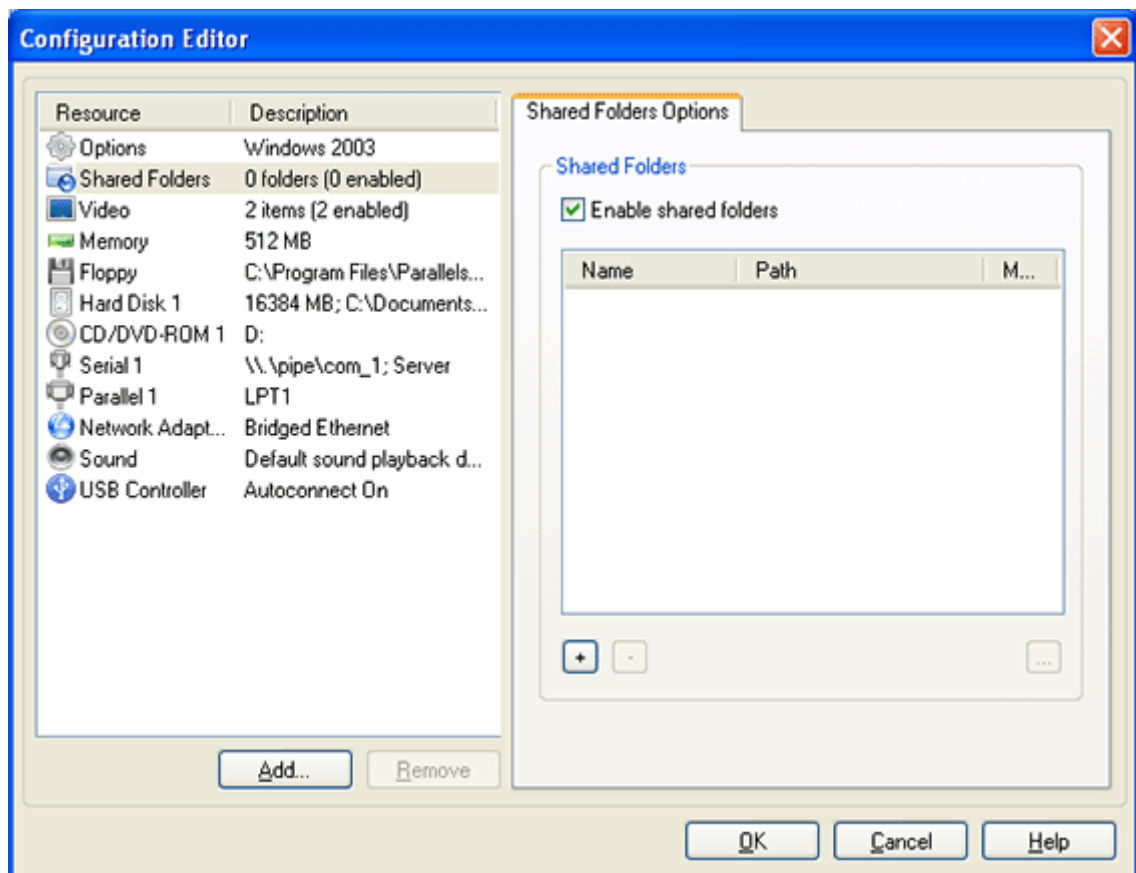
3 In the Shared Folders tab, click the [+] button to open the Shared Folder Properties dialog box.

4   In the Shared Folder Properties dialog box:

specify a name for the folder which will appear in your guest OS in the Name field;

specify a folder in the file system your primary OS that will be shared in the Path field;

if you want to restrict writing to this folder from inside the guest OS, select the Read Only check box. You will be able to save files to this folder in the primary OS only;

make sure the Enabled check box is selected;

and click OK.
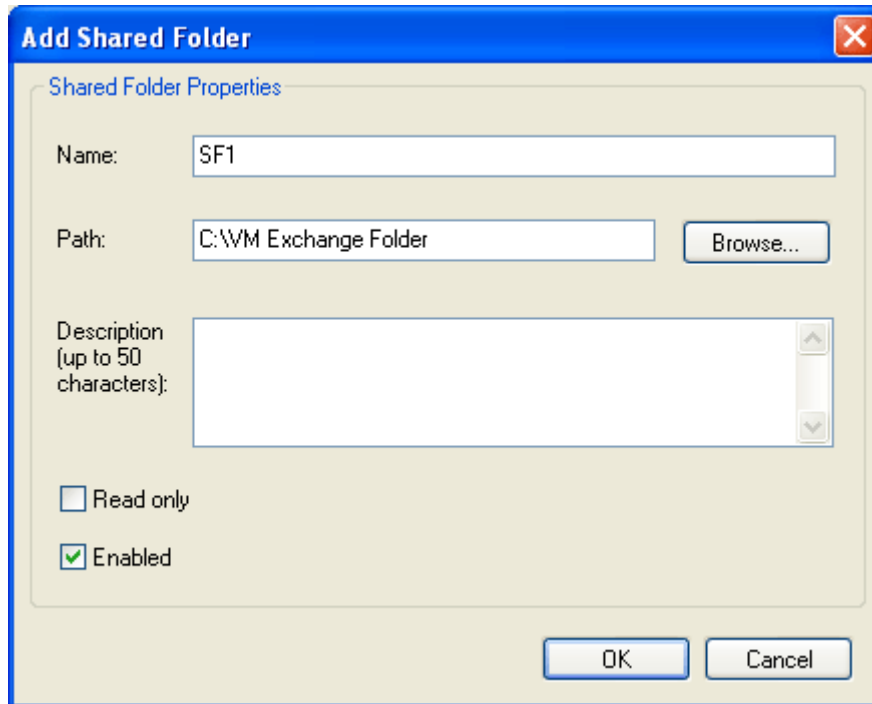
5   Click OK in the Configuration Editor.

6   Click [Save] to save the virtual machine configuration.

Note. To view the content of shared folders in a virtual machine you should have Parallels Tools installed. Refer to the Parallels Tools (page 37) chapter.

Viewing Shared Folders

To view the contents of the shared folders in the guest OS:

1   Start the virtual machine.

2   Open Windows Explorer.

3   In the Explorer, select My Networks Places, then select Entire Network, and find the Parallels Shared Folders.

4   Click the Parallels Shared Folders to view the list of shared folders available in your virtual machine.

When working with a shared folder inside a virtual machine, keep in mind that the ability to save files into this folder depends on its **Read Only** setting.

C H A P T E R 1 4

How to Build a Windows XP Virtual Machine

Many users are going to create a Windows XP virtual machine, and this section will give you a step-by-step description of how to do that. Here we go:

▪ Start Parallels Workstation as we discussed in the Starting Parallels Workstation (page 24) section.

▪ Create a virtual machine for Windows XP.

To initiate this process use either the [New VM] button or the **File->New VM** menu item. Follow the steps of the New Virtual Machine Wizard as described in the Creating a Virtual Machine (page 25) section.

▪ Now we are ready to install the Windows XP guest operating system. Insert the installation CD or DVD with the full version of Windows XP into the CD/DVD-ROM drive of your computer.

▪ Click the **Power On** button to start the virtual machine. Installation starts, and the **Welcome to Setup** screen is shown soon.


```
Windows XP Professional Setup

    Welcome to Setup.

    This portion of the Setup program prepares Microsoft(R)
    Windows(R) XP to run on your computer.

        • To set up Windows XP now, press ENTER.

        • To repair a Windows XP installation using
          Recovery Console, press R.

        • To quit Setup without installing Windows XP, press F3.
```

`ENTER=Continue   R=Repair   F3=Quit`

Now you've got two computers running at once: your actual PC, and the simulated computer that's running inside it. But you've got only one mouse and keyboard! How, then, is Parallels Workstation supposed to know when a certain mouse or keyboard activity is intended for your primary OS, and when for the guest OS? To start communicating with virtual machine, you have to capture your mouse and keyboard inside the virtual machine: click somewhere inside the Windows XP screen.

Note. You can return to your primary OS at any time by pressing `Ctrl+Alt` on your keyboard.

After this press `Enter` on your keyboard.

▪ The license agreement is displayed on the screen. To scroll down press the `Pagedown` key. To agree press `F8`.

▪ In the lower part of the following screen, the Setup displays the list of hard disks and partitions available in the virtual machine. You should have the only one item, the unpartitioned space. Press `Enter` to set up Windows XP on this object.

- After this, you'll have to choose how to format your system volume. It is best to format the Windows XP system disk using NTFS quick formatting method. So, select the type of file system and mode of formatting and press Enter.
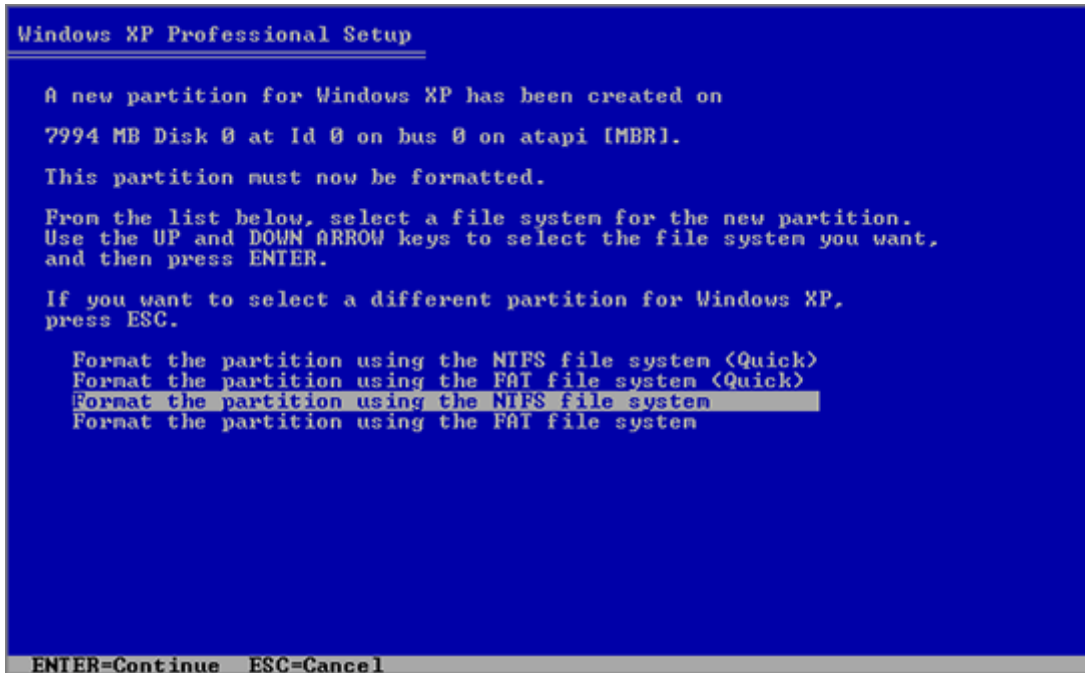
- The virtual machine will restart automatically. The text stage of the installation is completed. During the next stage, dialog boxes will be used. Select your Regional and Language Options and proceed to entering license key. Type it and click Next.
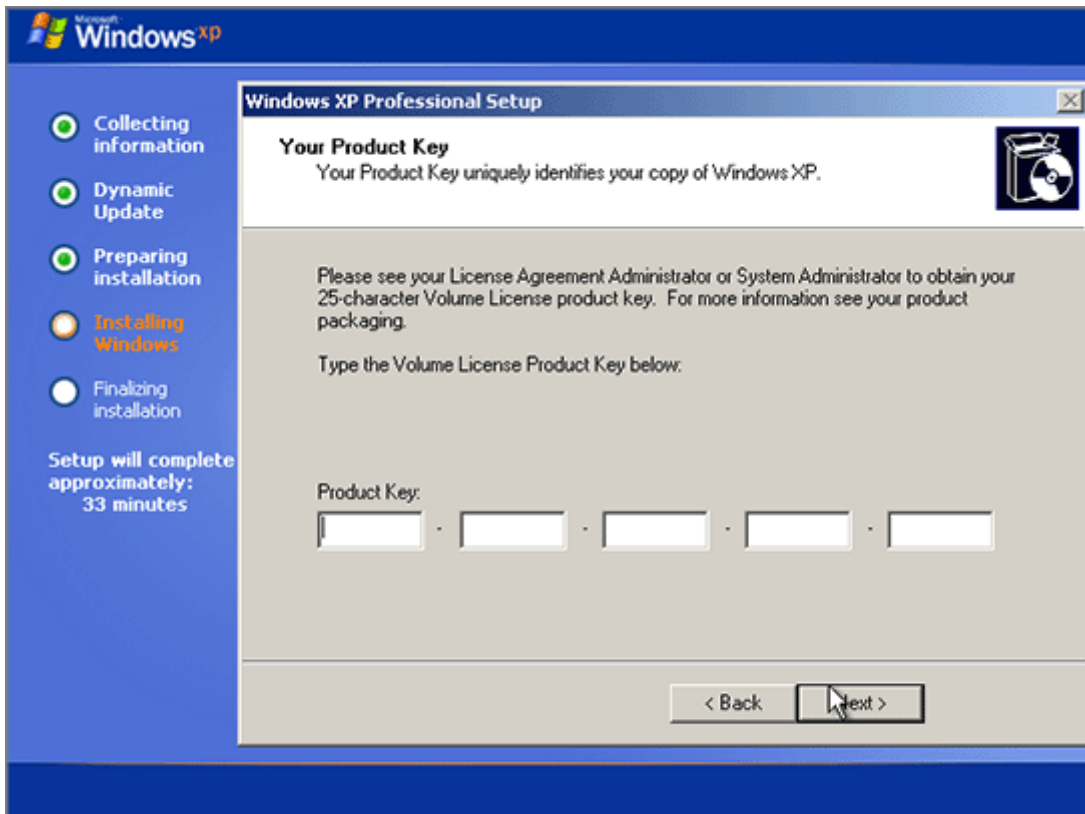
- On the next several screens you will be asked to enter computer name and administrator password, select your date and time zone, specify your network setting (we recommend to select typical ones).
- Next, you have to specify whether your computer will be a member of a domain. If you are creating the virtual machine for running it in corporate environment, ask system administrator whether you should specify the domain. Otherwise, choose the first option to make your virtual machine a member of workgroup.
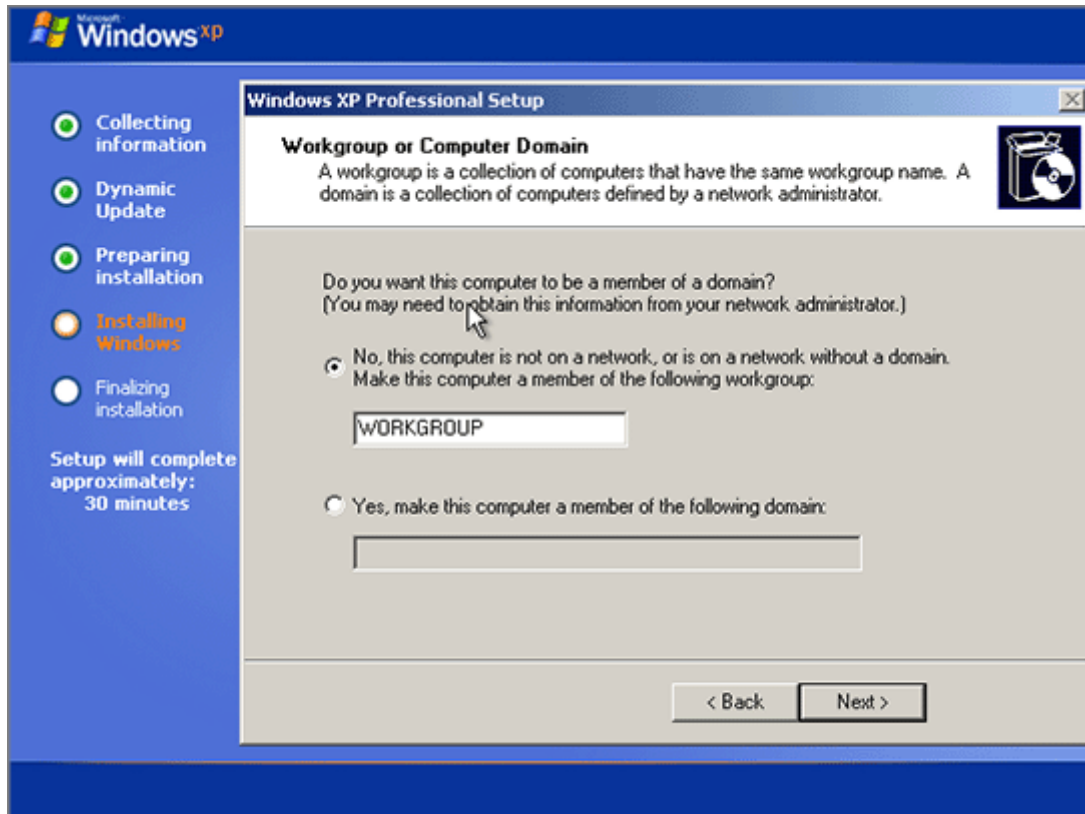
- After that, Setup adjusts the Display Settings for better image quality.
- In the Help protect my PC screen indicate whether you want to turn on the Automatic Updating feature. We recommend to turn automatic updates on.

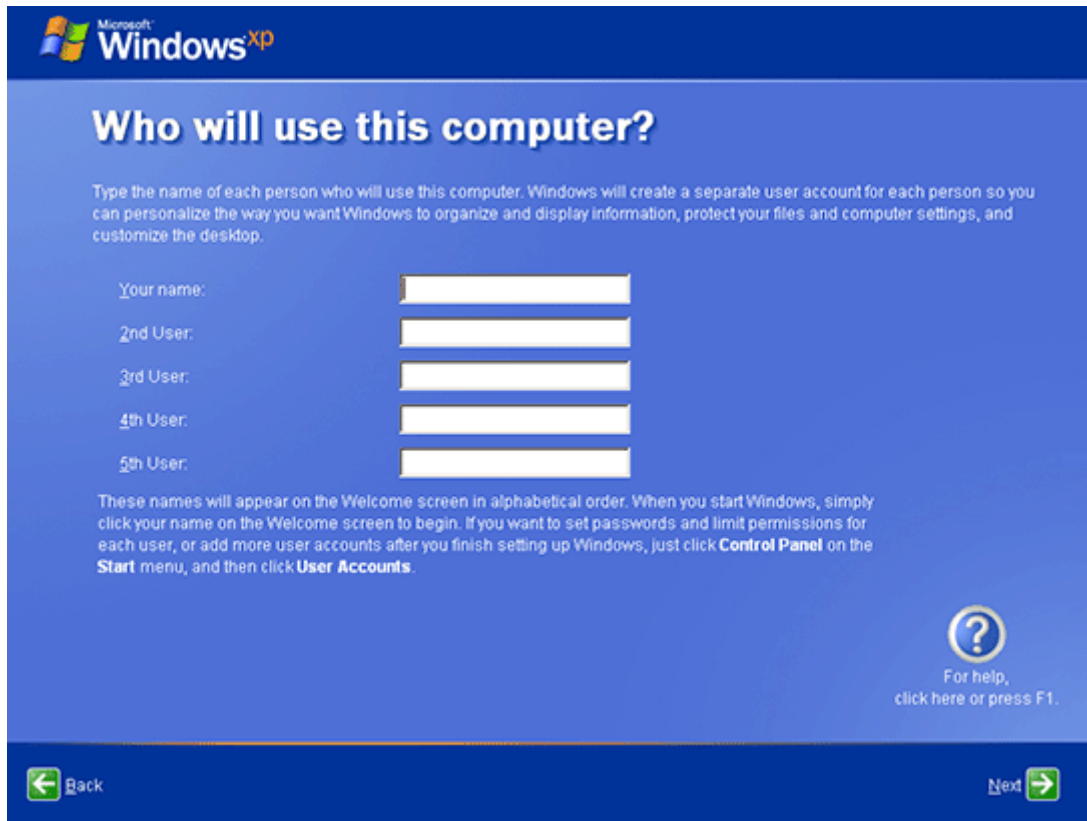▪ As the next step, choose the way your computer will be connected to the Internet. Select **Yes**.
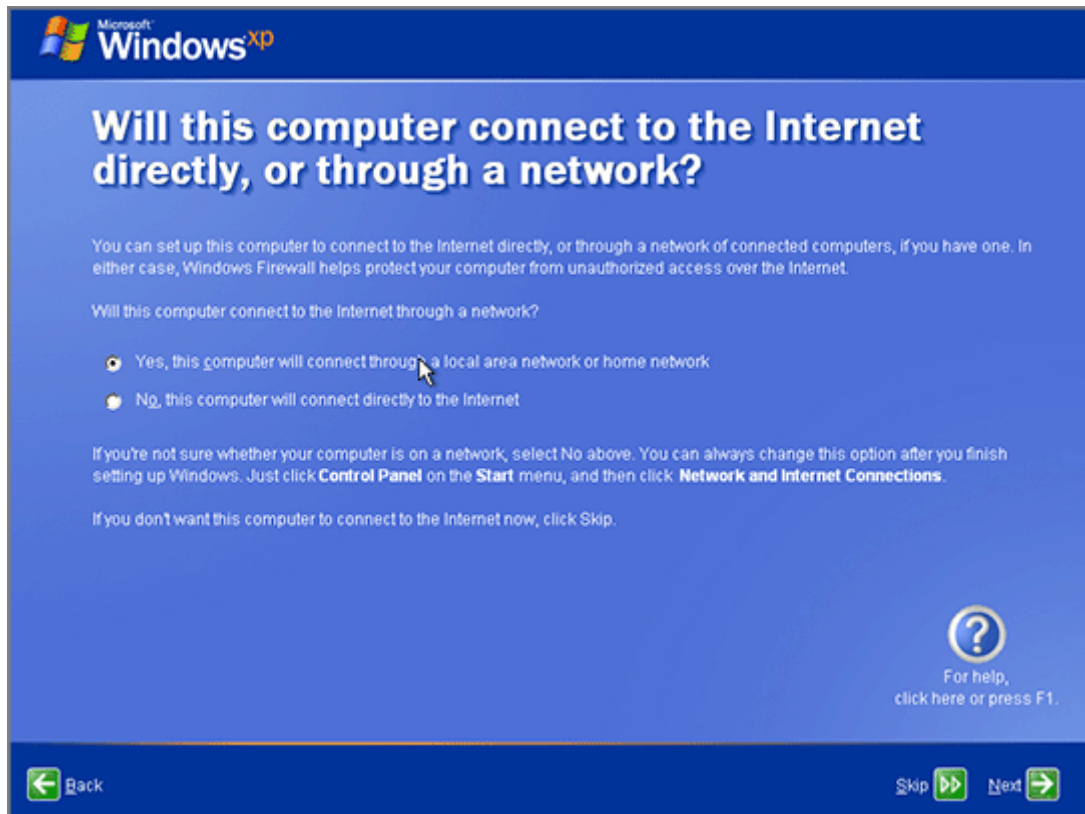
▪ If you want to register with Microsoft specify this in the following screen.

- Setup prompts you to create user accounts for each person who will use this virtual machine.

- Install Parallels Tools. Refer to the Parallels Tools (page 37) topic or to **Creating Virtual Machine/Installing Parallels Tools** section in the **User Guide**.

  After installation of Parallels Tools, you will be able to move the cursor smoothly between your guest Windows XP and primary OS without pressing `Ctrl+Alt`.

- Configure the virtual machine for your needs.

  Connect the virtual machine to the Internet or create a host-only network (refer to the Accessing the Internet (page 43) topic or to the **Managing Virtual Machines / Networking in Virtual Machine** section in the **User Guide**).

  To make the file exchange between primary OS and your virtual machine easier, create shared folders as discussed in the Creating Shared Folders (page 45) topic.

After this, you'll be ready to install programs and applications in your new Windows XP virtual machine. Enjoy the convenience of Windows XP and your primary OS side-by-side!