

Parallels Desktop®

User's Guide

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CHAPTER 1

Introduction

Parallels Desktop[®] enables you to use the hardware resources of your Intel-based Mac more efficiently by sharing them between multiple virtual machines running on it.

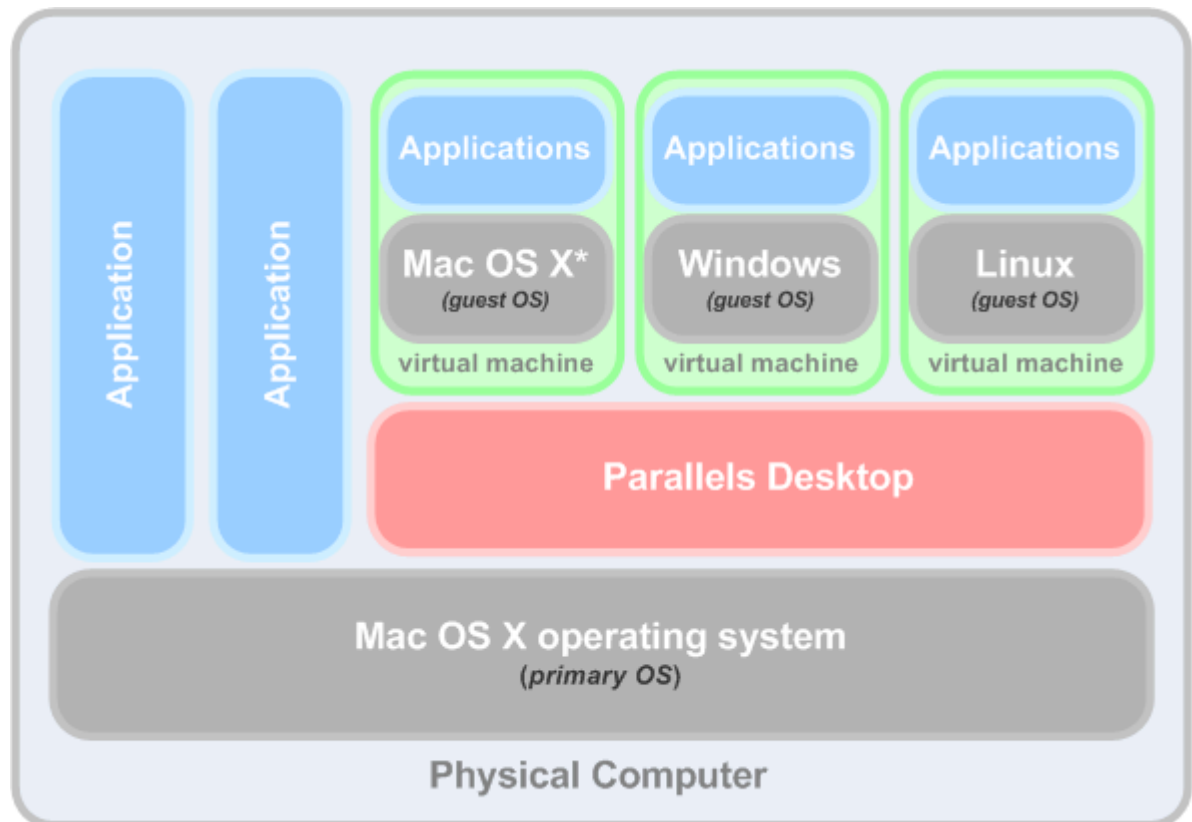
This chapter provides general information about Parallels Desktop for Mac and this guide.

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About Parallels Desktop

Parallels Desktop® is a virtualization solution that enables you to create virtual machines on Macintosh computers with Intel® processors (1.66 GHz and faster). You can install a Windows, Linux, Mac OS X, or another operating system in each of your virtual machines and work with them and their applications side by side with your Mac OS X applications.



* You can install only the server versions of Mac OS X in virtual machines.

Built on Parallels' award-winning hypervisor-based virtualization technology, Parallels Desktop enables you to:

- create powerful and easy to use virtual machines
- use 32-bit and 64-bit operating systems inside your virtual machines
- use Windows and Linux applications side by side with your Mac OS X applications, without need to restart your Mac
- coherently work with the files and applications of your Mac and virtual machine
- create Parallels virtual machines from physical computers and third-party virtual machines

To enhance your experience of running more than one operating system on your Macintosh computer, Parallels Desktop for Mac includes several utilities: Parallels Transporter® (p. 263), Parallels Mounter (p. 267)®, and Parallels Image Tool (p. 268)®.

About This Guide

This guide is aimed at a wide range of users who want to use Parallels Desktop to create, configure, and run Parallels virtual machines.

Abbreviations used in the text

In the present guide, the following abbreviations are used:

- *OS* is used instead of *operating system* in long sentences where using it will not change the meaning of the sentence.
- *VM* is used instead of *virtual machine* in long sentences where using it will not change the meaning of the sentence.

Definitions

Primary operating system (primary OS): In this guide, this term is used to refer to the operating system that controls the I/O devices of the computer and that is loaded when the physical computer is turned on, that is, Mac OS X.

Guest operating system (guest OS): The term is used to refer to an operating system that is installed in a virtual machine.

Help Usage Tips

Use the icons in the upper part of the help window to:

- go to the online documentation page
- watch an online video tutorial
- contact the Parallels support team

To print a help page, click on the **Print** icon . If this doesn't work, right-click the **Print** icon and choose **Print Frame**.

Organization of this Guide

This guide consists of the following chapters:

- **Introduction** (p. 7) (you are reading it now). Provides basic information about the product and this guide.
- **Virtual Machine Technology Basics** (p. 13). Provides information on the specification and technologies of virtual machines.
- **Installing Parallels Desktop** (p. 16). Provides instructions on product installation.
- **Principles of Working With Parallels Desktop** (p. 30). Provides basic information on how to work with Parallels Desktop.
- **Setting Up a Virtual Machine** (p. 71). Provides instructions on creating a new virtual machine and adding an existing one.
- **Working in a Virtual Machine** (p. 116). Provides basic information on how to work with virtual machines.
- **Integrating Mac OS X and Your Virtual Machine** (p. 147). Provides information on how to enhance the integration between Mac OS X and your virtual machine.
- **Configuring a Virtual Machine** (p. 168). Provides information on how to change the virtual machine configuration.
- **Managing Virtual Machines** (p. 233). Provides basic information on how to manage your virtual machines.
- **Working With Snapshots** (p. 249). Provides information on how to make and use snapshots.
- **Using Boot Camp Partition in a Virtual Machine** (p. 255). Provides information on how to use a Boot Camp Windows partition in a virtual machine.
- **Using Parallels Add-ons** (p. 263). Provides information on how and when you can use Parallels Transporter, Parallels Image Tool, and other Parallels add-ons.
- **Troubleshooting and Limitations** (p. 271). Provides the solutions for some of the known issues.

Documentation Conventions

Before you start using this guide, it is important to understand the documentation conventions used in it.

The table below presents the existing formatting conventions.

Formatting convention	Type of Information	Example
Special Bold	Items you must select, such as menu options, command buttons, or items in a list.	Go to the Resources tab.
	Titles of chapters, sections, and subsections.	Read the Basic Administration chapter.

<i>Italics</i>	Used to emphasize the importance of a point, to introduce a term or to designate a command-line placeholder, which is to be replaced with a real name or value.	These are the so-called <i>EZ templates</i> . To destroy a Container, type <code>vzctl destroy <i>ctid</i></code> .
Monospace	The names of commands, files, and directories.	Use <code>vzctl start</code> to start a Container.
Preformatted	On-screen computer output in your command-line sessions; source code in XML, C++, or other programming languages.	Saved parameters for Container 101
Monospace Bold	What you type, as contrasted with on-screen computer output.	# rpm -V virtuoizzo-release
Key+Key	Key combinations for which the user must press and hold down one key and then press another.	Ctrl+P, Alt+F4

Besides the formatting conventions, you should also know about the document organization convention applied to Parallels documents: chapters in all guides are divided into sections, which, in their turn, are subdivided into subsections. For example, **About This Guide** is a section, and **Documentation Conventions** is a subsection.

Getting Help

Parallels Desktop offers several options for accessing necessary information:

- Parallels Desktop Help. This document contains extensive information about the product, its usage and troubleshooting. To open Parallels Desktop Help, choose **Parallels Desktop Help** from the Parallels Desktop **Help** menu.
- Context-sensitive help. You can open a help page for the active window by pressing F1.
- Online documentation (http://www.parallels.com/products/desktop/pdfm5_docs-en_US/). The PDF documentation for Parallels Desktop and other Parallels products, such as Parallels Transporter and Parallels Image Tool. To open the online documentation page, choose **Online Documentation** from the Parallels Desktop **Help** menu.
- Parallels Command Line Reference Guide. This document contains information on using the `prlctl` command line utility designed to manage Parallels Desktop and its virtual machines from the Terminal. To access the document, go to the Online documentation (http://www.parallels.com/products/desktop/pdfm5_docs-en_US/) page on our website.
- Parallels API references and the SDK programmer's guide. These guides are aimed at IT-professionals mainly and can be found on the Online documentation (http://www.parallels.com/products/desktop/pdfm5_docs-en_US/) page on our website.
- Parallels website (<http://www.parallels.com>). Explore the Support web page that includes product help files and the FAQ section.
- Parallels Knowledge Base (<http://kb.parallels.com/>). This online resource comprises valuable articles about using Parallels Desktop and other Parallels products.

Feedback

If you spot a typo in this guide, or if you have thought of a way to make this guide better, you can share your comments and suggestions with us by completing the feedback form at the Parallels documentation feedback page (<http://www.parallels.com/en/support/usersdoc/>).

CHAPTER 2

Virtual Machine Technology Basics

This chapter provides a brief description of Parallels virtual machines, their specifications, and the underlying technologies.

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Virtual Machine Technology Overview

The Parallels Desktop software is based on the virtual machine technology that allows you to share the hardware resources of the physical computer between the primary operating system (the operating system installed on this physical computer) and multiple virtual machines running on this computer.

The virtual machine technology can be successfully used on computers that support the Intel virtualization technology (Intel VT-x). This technology allows Parallels Desktop to emulate virtual processors inside virtual machines.

Intel VT-x implemented in the architecture of the new Intel processors is specially developed for platforms running multiple operating systems. VT-x processors allow more precise emulation of virtual processors. To learn more about Intel virtualization technology, visit the Intel website.

Parallels Virtual Machine

Taking the best from the virtual machine and Intel virtualization technologies, Parallels Desktop enables you to create virtual machines with a variety of virtual hardware devices.

A Parallels virtual machine works like a stand-alone computer with the following hardware:

CPU	Up to 8-core Intel Celeron CPU
Motherboard	Intel i965 chipset based motherboard
RAM	Up to 8 GB of RAM
Video Adapter	VGA and SVGA with VESA 3.0 compatible Video Adapter
Video RAM	Up to 256 MB of Video RAM
Floppy Disk Drive	1.44 MB Floppy Disk Drive mapped to an image file or to a physical floppy drive.
IDE Devices	Up to 4 IDE devices
▪ Hard Disk ▪ CD/DVD-ROM Drive	Hard Disk Drive mapped to an image file (up to 2 TB each) CD/DVD-ROM drive mapped to a physical drive or to an image file
SCSI Devices	Up to 15 SCSI devices
▪ Hard Disk ▪ Generic SCSI Device	Hard Disk Drive mapped to an image file (up to 2 TB each) Generic SCSI device
Network Interfaces	Up to 16 Network interfaces: including Ethernet virtual network card compatible with RTL8029
Serial (COM) Ports	Up to 4 Serial (COM) ports, mapped to a socket or to an output file
Printer (LPT) Ports	Up to 3 Parallel (LPT) ports, mapped to output file, to a real port, or to a printer
Sound Card	AC'97-compatible Sound Card, sound recording support
Keyboard	Generic PC keyboard
Mouse	Wheel mouse

Each virtual machine is stored in Mac OS X as a bundle of files (.pvm) that contains the virtual machine configuration file (.pvs), the virtual hard disk file (.hdd), and other files of the virtual machine.

A virtual machine may have the following files:

.pvm	A bundle that contains the virtual machine files.
.pvs	A virtual machine configuration file. It defines hardware and resources configuration of a virtual machine. The configuration file is generated when the virtual machine is created.
.sav	A file created when the virtual machine is suspended. It contains the state of the virtual machine and its applications for the moment the suspend was invoked.
.mem	A file containing memory dump for the suspended virtual machine. For a running virtual machine, it is a temporary virtual memory file.
.hdd	A bundle of files that represents a virtual hard disk of a Parallels virtual machine. When you create a virtual machine, you can create it with a new virtual hard disk or use an existing one.
.iso/.dmg	Image files of CD or DVD discs. Virtual machines treat ISO and DMG images as real CD/DVD discs.
.fdd	A floppy disk image file. Virtual machines treat FDD images as real diskettes. If you install a Windows guest OS in the Express Windows installation mode, Parallels Desktop creates the <code>unattended.fdd</code> floppy disk image file and places it to the virtual machine folder. The file is required for Windows Server 2003, Windows XP, and Windows Vista installation.
.txt	Output files for serial and parallel ports. The output .txt files are generated when a serial or parallel port connected to an output file is added to the virtual machine configuration.

For a virtual machine that has any of Windows OSs installed (starting from Windows 2000), the following subfolders are created automatically in the virtual machine folder:

- The **Windows Applications** folder. This folder contains aliases for the Windows applications installed in the virtual machine. Aliases are used for supporting the file extensions transparency.
- The **Windows Disks** folder. This folder contains aliases for the Windows disks available in the virtual machine.

CHAPTER 3

Installing Parallels Desktop

This chapter describes the system requirements and provides the information on how to install Parallels Desktop on your Mac and activate it.

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System Requirements

Before installing Parallels Desktop, make sure that your computer meets the hardware and software requirements listed below.

Hardware Requirements

- Any Macintosh computer with an Intel processor (1.66 GHz or greater). To run 64-bit operating systems in virtual machines, an Intel Core 2 or later processor is required.
- Minimum 1 GB of memory, 2 GB of memory is recommended.

Note: Your Mac must have enough memory to run Mac OS X and your Mac applications, plus the memory required for the virtual machine's operating system and the applications installed in it.

- At least 450 MB of disk space on the boot volume for the program installation.
- About 15 GB of disk space for each virtual machine.

Software Requirements

- Mac OS X Snow Leopard v10.6
- Mac OS X Leopard v10.5.2 or later
- Mac OS X Tiger v10.4.11 or later

To get information about your Mac OS X version, type of processor, and amount of memory, choose **About This Mac** from the **Apple** menu.

Installing Parallels Desktop

If you purchased Parallels Desktop from the Parallels online store, download the latest build from Parallels Download Center (http://www.parallels.com/download/desktop/pdfm5-en_US). When the download is complete, open the Parallels Desktop DMG package file. To start the installation, double-click **Install**.

If you purchased a boxed copy of Parallels Desktop, insert the Parallels Desktop installation disk into the optical drive of your Mac. Open the Parallels Desktop DMG package and double-click **Install**.

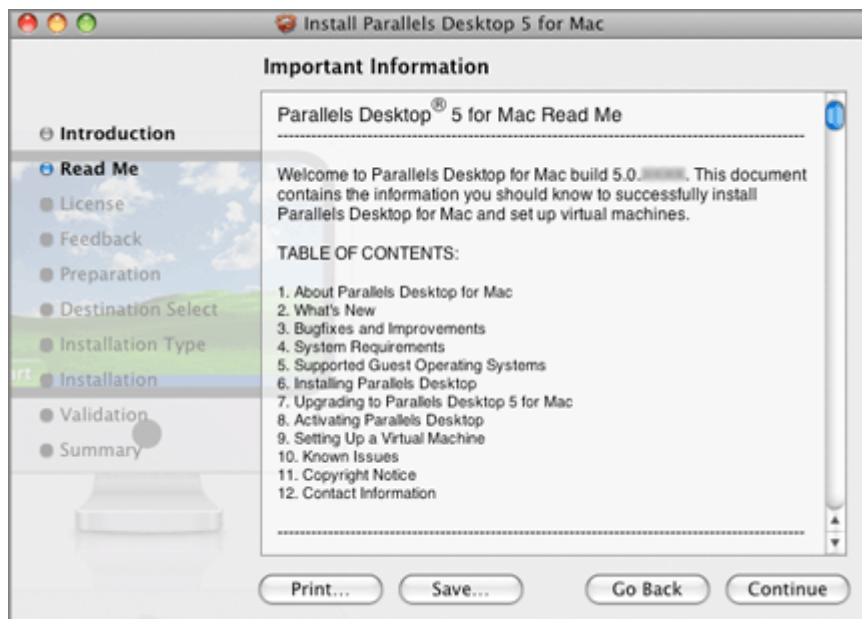
- 1 Parallels Desktop will connect to the Parallels update server and check for available updates. If there is a newer version of Parallels Desktop available, you will be offered to install the most recent version of Parallels Desktop. If you do not want to install the most recent version, you may choose to install the version from the installation media.



- If you click **Install current**, Parallels Desktop will be installed from the installation media.
- If you click **Download and install new version**, the latest version of Parallels Desktop will be downloaded and installed on your Mac.

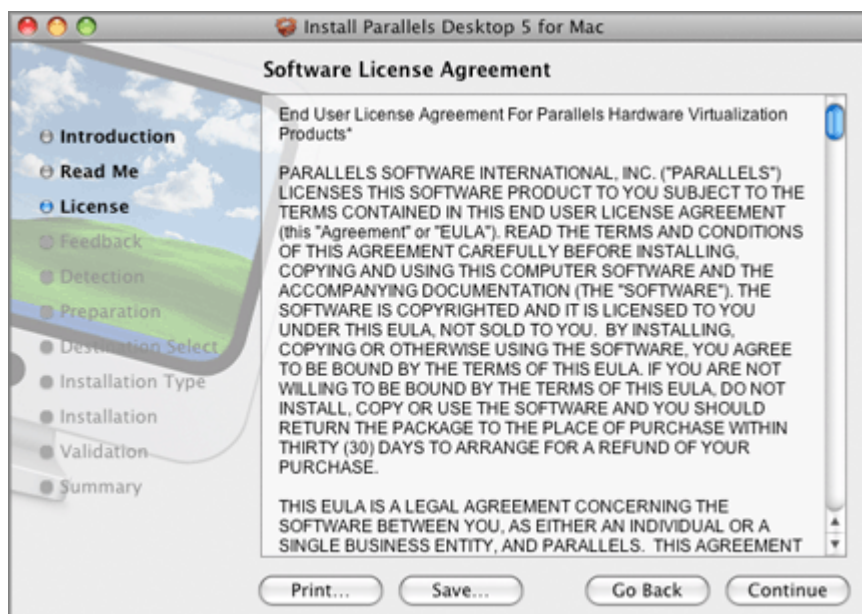
If there is no update available or your Mac is not connected to the internet, Parallels Desktop will be installed from the current installation source.

- 2 In the **Welcome** window, click **Continue**.
- 3 In the **Important Information** window, read the product Read Me file. Click **Print** to print the document or **Save** to save it for future reading. When finished, click **Continue**.



Note: You can return to the previous steps by clicking the **Go Back** button.

- 4 In the **Software License Agreement** window, carefully read the license agreement. We recommend to print the license agreement for your records using the **Print** button or to save it for future reading using the **Save** button. When you are ready, click **Continue**.



In the pop-up dialog, click **Agree** if you agree with the terms and conditions of the license agreement.

- 5 In the **Customer Experience Program** window, read about the Parallels Customer Experience program and click **Continue**.

In the pop-up dialog, click **Yes** if you want to participate in the program. If you don't want to participate, click **No**.

Note: If you choose not to participate, you may join the program later using the **Feedback** pane (p. 70) of Parallels Desktop Preferences.

- 6 In the **Select a Destination** window, select the hard disk where to install Parallels Desktop. You can install Parallels Desktop only on the boot volume, that is the hard disk where Mac OS X is installed. Other disks, if any, are unavailable for selection. Click **Continue**.

Note: If you have only one volume on your Mac, this step is omitted.



- 7 Click **Install** to start the Parallels Desktop installation.
- 8 Enter your password when prompted and click **OK**.
- 9 The installation progress is shown in the **Installing Parallels Desktop** window.
- 10 The Installer informs you that the installation was successful. To complete the installation, click **Close**.

After the installation, you can launch Parallels Desktop from the **Applications** folder on your Mac. The Parallels Desktop add-ons like Parallels Transporter (p. 263) and Parallels Image Tool (p. 268) are available from the **/Applications/Parallels/** folder.

Activating Parallels Desktop

To fully run Parallels Desktop, you should activate it with an activation key. If you purchased a boxed version of the program, you can find the activation key printed on the installation CD sleeve. If you purchased the program online, the activation key was sent to your e-mail. If you downloaded a copy of Parallels Desktop to evaluate it before buying, you can get a trial activation key valid for a certain period of time.

After you activate your copy of Parallels Desktop, you can run virtual machines, install operating systems and various applications in them.

If you upgraded Parallels Desktop to version 5 from the previous version, you need an upgrade activation key to activate Parallels Desktop 5. For detailed information, see [Upgrading to Parallels Desktop 5](#) (p. 24).

Activating Your Copy of Parallels Desktop

To activate Parallels Desktop:

- 1 Choose **Activate Product** from the **Help** menu.
- 2 In the activation dialog, specify your name and your company name in the **Name** and **Organization** fields (optional), and type the activation key into the **Activation Key** field. Click **OK** to activate your copy.

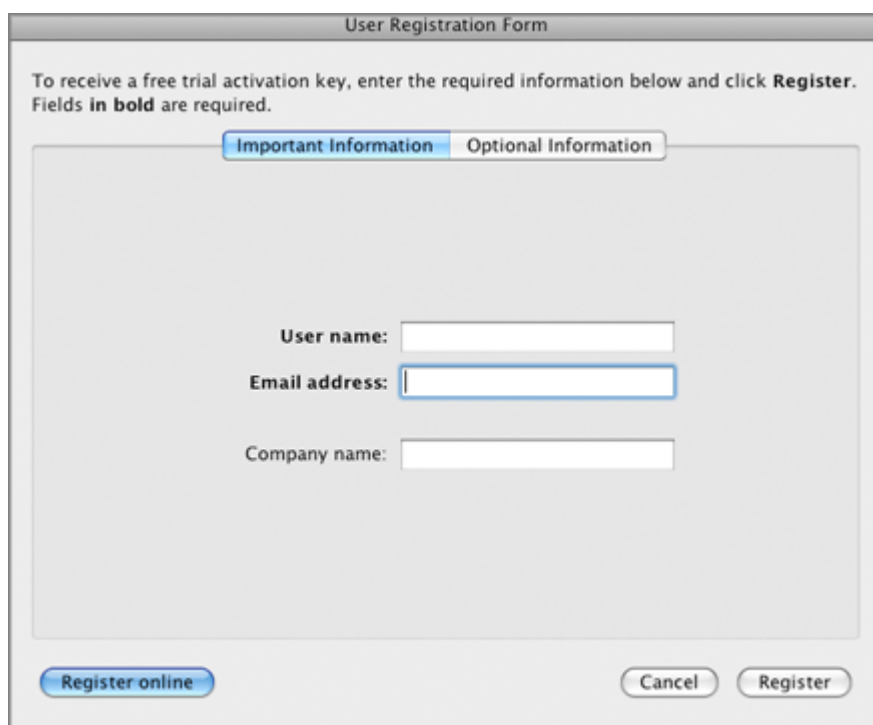


Now that your copy of Parallels Desktop is activated, you can create virtual machines, install operating systems in them, and work with the virtual machines' applications side by side with the applications of your Mac.

Getting a Trial Activation Key

After you download Parallels Desktop from Parallels Download Center and install it, follow the steps below:

- 1 Choose **Activate Product** from the **Help** menu.
- 2 In the activation dialog, click the **Get Trial** button.
- 3 In the **User Registration Form** dialog, specify your name and e-mail address. The **Company name** field is optional.

The image shows a 'User Registration Form' dialog box. At the top, it says 'To receive a free trial activation key, enter the required information below and click Register. Fields in bold are required.' Below this is a tabbed interface with two tabs: 'Important Information' (selected) and 'Optional Information'. Under the 'Important Information' tab, there are three text input fields: 'User name:', 'Email address:', and 'Company name:'. The 'Email address:' field is highlighted with a blue border. At the bottom of the dialog, there are three buttons: 'Register online' (highlighted with a blue border), 'Cancel', and 'Register'.

- 4 You can provide additional information using the **Optional Information** tab.
- 5 Click the **Register** button to send this information to Parallels.

A free trial activation key will be sent immediately to the e-mail address you provided.

If you want to register online at the Parallels website, click the **Register online** button. You will receive a free trial activation key by e-mail after you fill out and submit the online form.

When your free trial activation key expires, you will need to get a permanent activation key.

Getting a Permanent Activation Key

To purchase an activation key:

- 1 Choose **Activate Product** from the **Help** menu.
- 2 In the activation dialog, click the **Buy now** button to open Parallels Online Store (<http://www.parallels.com/en/buyonline>) where you can purchase an activation key.

Registering Parallels Desktop

After you have activated your copy of Parallels Desktop with a permanent activation key, you will be asked to register it.

We strongly recommend you to register your copy of Parallels Desktop. With registration, you will be able to:

- download and install the latest Parallels Desktop updates
- create a backup copy of the product key on the Parallels web server and restore it at any time
- contact the Parallels support team
- stay informed about Parallels news and announcements

All these services, including the product key backup, are free of charge for the registered users of Parallels Desktop.

If you do not want to register now, choose **Don't register**. To initiate the registration procedure later, select **Register Product** from the **Help** menu.

The registration procedure

- 1 In the registration dialog, enter your name and e-mail in the corresponding fields and specify where you are going to use Parallels Desktop.
- 2 **Note:** The registration dialog may differ from the one presented below.



- 3 If you choose **At work** from the **For use** list, you will be asked to specify some additional information. Parallels needs this information to know our customers better in order to provide them with the best software and service.

The image shows the registration window for Parallels Desktop 5 for Mac. The window has a grey header with the Parallels logo and the text "Parallels Desktop®5 for Mac". Below the header, there are several input fields and a checkbox. The "Name" field contains "Matt", the "Email" field contains "Johnson", and the "For use:" dropdown menu is set to "At work". A checkbox labeled "Get news from Parallels" is checked. Below these are fields for "Company:", "Country:" (set to "Select"), and "Phone:". At the bottom, there are two more dropdown menus: "How many Macs does your company have?" (set to "Select") and "How many Macs are you planning to purchase this year?" (set to "Select"). At the very bottom of the window, there are two buttons: "Don't Register" and "OK".

- 4 To register Parallels Desktop, click **OK**. If you don't want to register your copy of Parallels Desktop, click **Don't register**.

Upgrading to Parallels Desktop 5

To upgrade Parallels Desktop 3 or 4 to version 5, you should purchase the Parallels Desktop upgrade from Parallels Online Store (<http://www.parallels.com/en/buyonline>). An upgrade activation key will be sent immediately to the e-mail address you provided.

Note: Parallels Desktop 2 cannot be upgraded to Parallels Desktop 5.

You can upgrade Parallels Desktop 3 or 4 to any localized version of Parallels Desktop 5. For example, if you have the English version of Parallels Desktop 4 and want to upgrade it to the German version of Parallels Desktop 5, you should purchase the German upgrade, install it on your Mac, and activate with the upgrade activation key.

Before the upgrade, you should stop all your running virtual machines and close the previous version of Parallels Desktop. Generally, the upgrading procedure for Parallels Desktop is the same as for its installation. See *Installing Parallels Desktop* (p. 17).

You don't have to remove the previous version of Parallels Desktop before the upgrade: the installer will remove it automatically before installing Parallels Desktop 5.

Using an Upgrade Activation Key

After you have installed Parallels Desktop 5, you should activate it with an upgrade activation key. To launch the activation process, choose **Activate Product** from the **Help** menu and enter your upgrade activation key and the required information in the activation dialog. If you purchased your upgrade activation key for Parallels Desktop 5, you may need to confirm that you have a valid permanent key for the previous version:

- If you activated the previous version of Parallels Desktop with a permanent key, you will need to enter the upgrade key only.
- If you activated Parallels Desktop with a trial activation key, you will be prompted to enter two keys: the upgrade activation key for Parallels Desktop 5 and a permanent or upgrade key for the previous version.
- If you purchased the previous version of Parallels Desktop but haven't installed it on your Mac, you will need two keys to activate Parallels Desktop 5: the upgrade activation key for Parallels Desktop 5 and a permanent or upgrade key for the previous version.

Upgrading the Virtual Machine Configuration and Updating Parallels Tools

When you start a virtual machine created in the previous version, the upgrading procedure starts and runs automatically. During the upgrade, the virtual machine configuration and Parallels Tools are processed. The virtual machine can be used in Parallels Desktop 5 only after it is upgraded.

Note: In Linux virtual machines, X Server may fail to start after the upgrade, which means that you may need to upgrade Parallels Tools manually in text mode (p. 277).

If you encounter any problems during the upgrade, visit the upgrade troubleshooting page (www.parallels.com/support/pdfm5_upgrade-en_US) or use the online Troubleshooting guide available through **Help > Troubleshooting Guide**.

Updating Parallels Desktop

Parallels Desktop includes an updating feature that helps you keep your Parallels Desktop installation up-to-date. You can use the update feature only if your computer is connected to the Internet.

Update checks can be performed either *automatically* or *manually*.

- We recommend that you turn on *automatic* updating to be notified when an update is available. Parallels Desktop will regularly check for updates available and inform you about them.
- In addition to automatic updating, you can start the updating *manually* at any time.

Note: Before updating, you will be asked to quit Parallels Desktop. If you have any virtual machines running or paused, suspend or shut them down. When you start or resume your virtual machines after the update, reinstall Parallels Tools.

Automatic Updating

To use the automatic updating feature, your Mac computer should have a stable Internet connection.

Parallels Desktop enables you to set up an automatic check for updates and determine the frequency for this checking.

Note: To set up an automatic check for updates, you should register your copy of Parallels Desktop (p. 22) first.

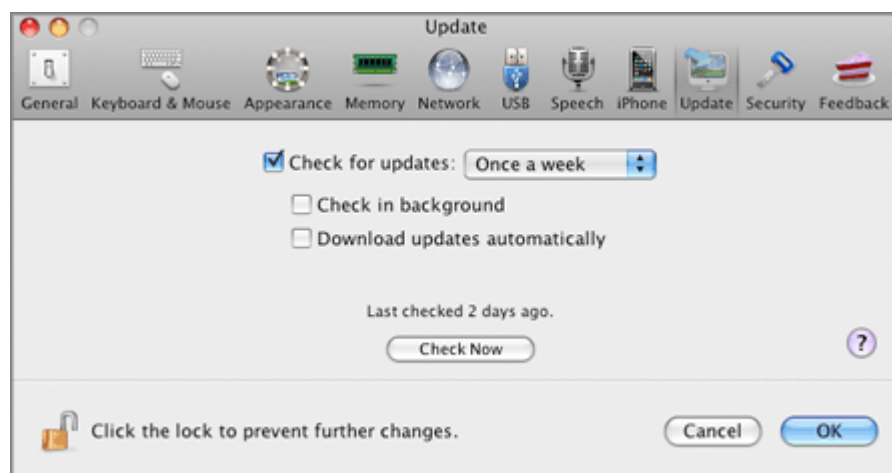
To set up automatic update checking:

- 1 Launch Parallels Desktop.
- 2 In the Parallels Desktop menu, select **Preferences** and go to the **Update** pane.
- 3 In the **Update** pane, you can define the necessary settings. To set up automatic checking for new versions, just select the **Check for updates** option and define the checking frequency. The system can search for new updates once a day, once a week, or once a month. With these options set, Parallels Desktop will access the Parallels update server and notify you when an update is available. If you do not need automatic checking, you can easily turn it off by clearing the **Check for updates** check box.

Checking for new updates may take some time and, if you do not want to have the process window on top of your desktop, you can hide it to the background. To do that, enable the **Check in background** option.

Select the **Download updates automatically** option if you want all new available updates to be downloaded at once without showing you the **Download** dialog.

From the **Update** pane, you can also perform a manual instant search for updates. To do that, just click the **Check Now** button. The updates available for your version of Parallels Desktop will be displayed in the **Download** dialog. Choose the update(s) you want to install and click the **Download** button. If your version of Parallels Desktop is up to date, you will see the corresponding message.



- 4 When you finish, click **OK** to save the changes and close the dialog.

Manual Updating

Parallels Desktop also enables you to check for updates manually whenever you want.

Note: To check for updates, you should register your copy of Parallels Desktop (p. 22) first.

To check for updates manually:

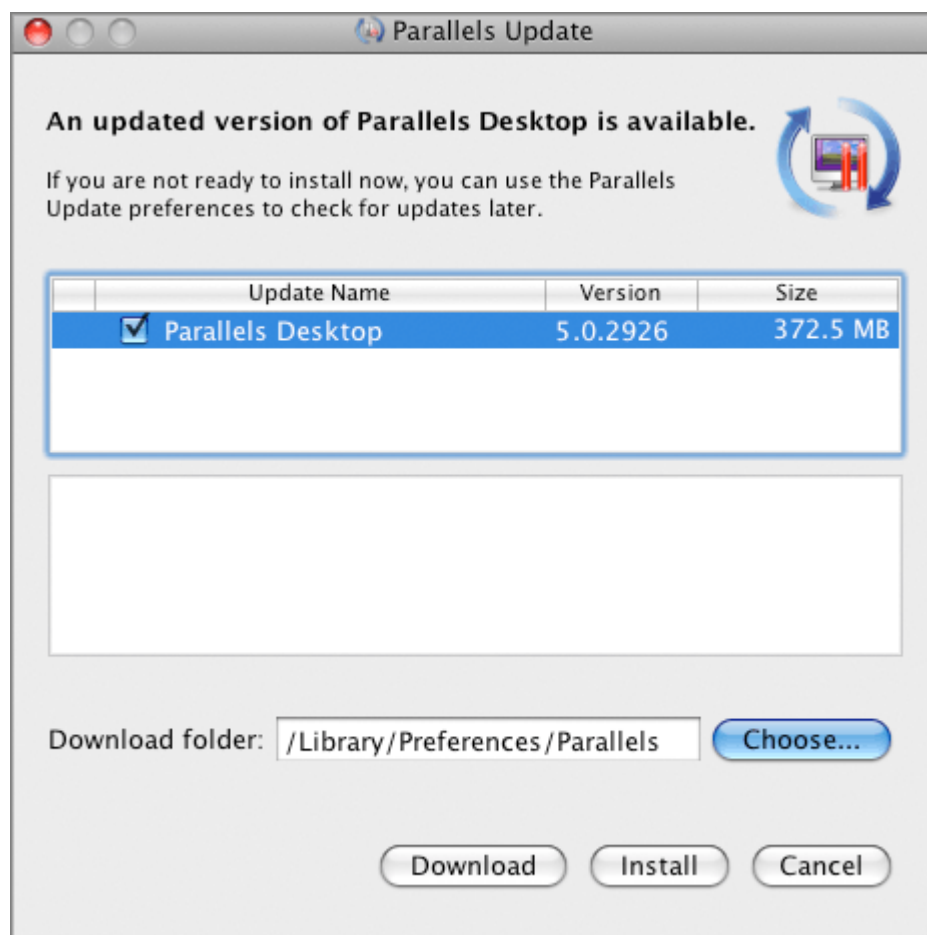
- 1 Launch Parallels Desktop.
- 2 From the **Help** menu, choose **Check for Updates**. The program will immediately start the search for updates.

While the updater accesses the Parallels update server and compares the available updates with the installed version, you can hide this window by selecting **Check in background**.

- 3 If there is one or more updates available, they will be listed in the **Parallels Update** window. Select the update to install and click **Install**.

You can also download the update by clicking the **Download** button. To change the download folder, type the path into the **Download folder** field or use the **Choose** button to locate the folder.

Note: You can install the downloaded update later by locating it in Finder and launching the installer.



- 4 Specify your user name and password to start the installation and click OK.
- 5 Follow the Parallels Desktop installer's instructions to install the update.

Note: If the installer displays a list of conflicting applications, quit these applications to be able to proceed with the installation.

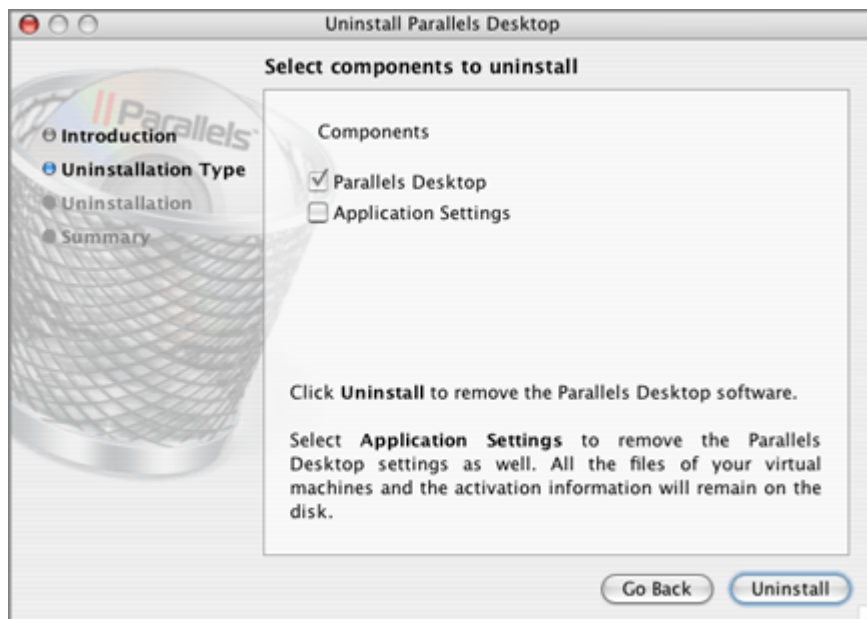
- 6 When the update is installed, click Close to quit the installer.

Removing Parallels Desktop

To remove Parallels Desktop:

- 1 Locate and open the DMG installation image file that you used to install Parallels Desktop. Click Uninstall.
- 2 In the Welcome dialog, click Continue.
- 3 In the Select components to uninstall window, select the components you want to remove and click Uninstall. Selecting the **Application Settings** option removes the Parallels Desktop settings, network settings, and the list of registered virtual machines from your computer.

Note: The operation of removing Parallels Desktop doesn't remove the virtual machines and their files from your Mac.



Confirm your choice of the components to be removed by clicking Uninstall.

- 4 Enter your password when prompted and click OK.
- 5 The uninstaller removes Parallels Desktop from your Mac.
- 6 When the removing is complete, click Close to quit the uninstaller.

Removing Parallels Desktop Without Installation Disc

Parallels Desktop can be removed without the installation disc using the Terminal.

To remove Parallels Desktop using the Terminal:

- 1 Open the Terminal (it is usually available in the /Applications/Utilities folder) and enter the following command:

```
# /Library/Parallels/Parallels\ Service.app/Contents/Resources/uninstaller.sh  
desktop
```

Note: If the Password: line appears, you will need to enter an administrator's password.

- 2 When Parallels Desktop is removed the following message appears:

```
[UN_PERCENT]:100[UN_OP]:Uninstall successfull[UN_MSG]:Removed Successfully
```

Note: The operation of removing Parallels Desktop doesn't remove the virtual machines and their files from your Mac.

CHAPTER 4

Principles of Working With Parallels Desktop

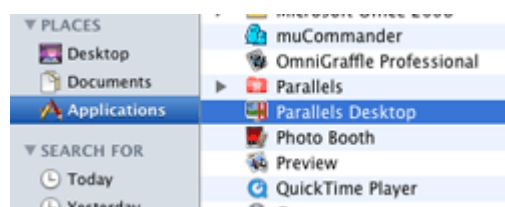
Before you start to work with Parallels Desktop and create virtual machines, you can learn the basic information about using it. This chapter provides essential information about starting Parallels Desktop, using its interface elements, and configuring its preferences.

In This Chapter

Starting Parallels Desktop	30
Interface Basics	35
Editing Parallels Desktop Preferences	47

Starting Parallels Desktop

To start Parallels Desktop, open the **Applications** folder in **Finder** and double-click **Parallels Desktop**.



When you start Parallels Desktop, its icon appears in the Dock.

To add the Parallels Desktop icon to the Dock, do one of the following:

- If Parallels Desktop is currently open, right-click its icon in the Dock and choose **Keep in Dock** from the shortcut menu.
- Open the **Applications** folder in **Finder** and drag the **Parallels Desktop** icon to the Dock.

When you launch the program for the first time, you will see the **Welcome** window (p. 31) that will help you start working in Parallels Desktop.

If you set Parallels Desktop not to show the **Welcome** window, when you open Parallels Desktop, you will see the **Parallels Virtual Machines** list (p. 36) that contains all virtual machines registered in Parallels Desktop.

The Welcome Window

When you start Parallels Desktop for the first time, the **Welcome** window appears. This window provides you with a fast access to the most common Parallels Desktop dialogs and assistants, which is especially useful when making your first steps in Parallels Desktop. When Parallels Desktop is running, you can open the **Welcome** window by selecting **Welcome to Parallels Desktop** from the **Help** menu.

Later on, if you do not want to see this window again, just disable the **Show at startup** option at the left bottom corner of the window. Next time you start Parallels Desktop, you will see the **Parallels Virtual Machines** list (p. 36) if you have one or more virtual machines registered in Parallels Desktop, or **New Virtual Machine Assistant** (p. 76) if you have no virtual machines registered.



From the **Welcome** window, you can navigate between the following options:

- **New Windows installation.** This option allows you to launch New Virtual Machine Assistant (p. 76, p. 33) to create a virtual machine with a Windows, Linux, or Mac OS X operating system.
- **Import virtual machines.** This option opens a Finder window that allows you to locate the virtual machine you want to add. It can be a Parallels, VMware, Microsoft Virtual PC, or VirtualBox virtual machine. If you open a Parallels virtual machine, it will be registered and added to the **Parallels Virtual Machines** list (p. 36). If you open a VMware, Microsoft Virtual PC, or VirtualBox virtual machine, Parallels Transporter will launch to convert it into the Parallels format. To learn more about Parallels Transporter, refer to *Parallels Transporter User's Guide*.
- **Use your virtual machines.** This option allows you to open the **Parallels Virtual Machines** list (p. 36) that contains all virtual machines registered in Parallels Desktop and third-party virtual machines (VMware, Virtual PC, Virtual Box) stored on your Mac. If you open a third-party virtual machine, Parallels Transporter will launch to convert it into the Parallels format. To learn more about Parallels Transporter, refer to *Parallels Transporter User's Guide*.

Note: This menu item appears in the welcome screen if you have at least one virtual machine.

You can open and view the Parallels Desktop brief tutorials on the Parallels website by clicking the **Watch video tutorials** button.

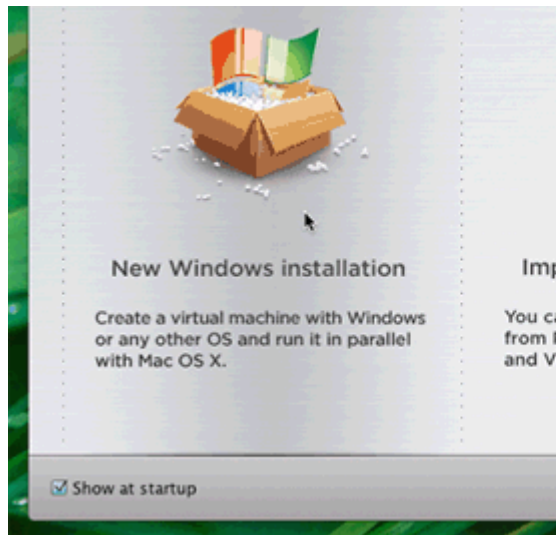
New Virtual Machine Assistant

If you have no virtual machines, you can start your work in Parallels Desktop with creating a new virtual machine in New Virtual Machine Assistant.

The assistant offers several installation modes. You can choose the mode that better fits your needs or your experience with Parallels Desktop. Regardless of what mode you select, you will be able to change the configuration of your virtual machine later using the **Virtual Machine Configuration** dialog (p. 168).

To create a new virtual machine:

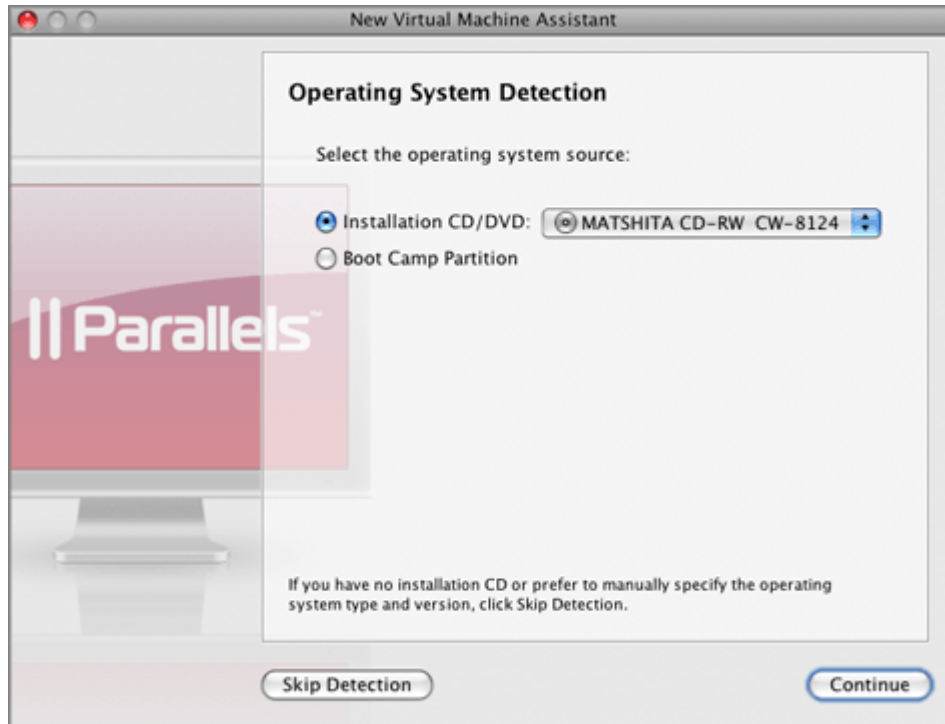
- 1 Start Parallels Desktop and launch New Virtual Machine Assistant by selecting **New Windows installation** in the **Welcome** window (p. 31) or clicking the  button at the bottom of the **Parallels Virtual Machines** list (p. 36).



Imp or



- 2 Insert the operating system installation disc or connect the installation source to your Mac. In the **Operating System Detection** window, specify the source of installation files, and click **Continue**. The operating system will be automatically detected and you will be asked to provide a user name and a Windows product key (if you are installing Windows) or password (if you are installing Linux).

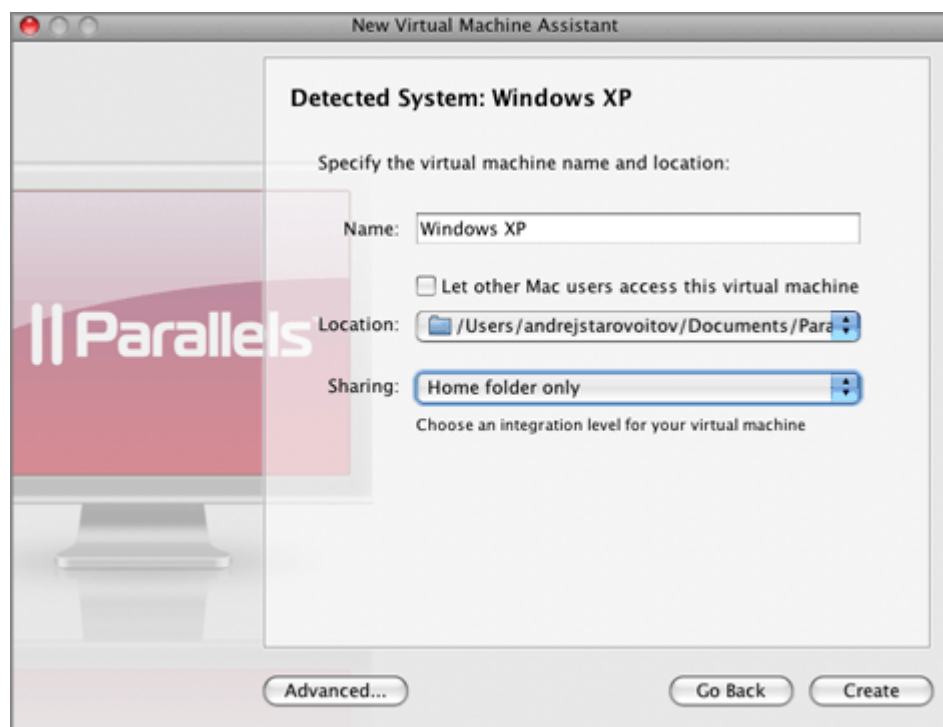


If you have the Boot Camp partition in your Mac and select the **Boot Camp Partition** option in this window, the assistant will proceed with the Boot Camp virtual machine creation. For detailed information, see **Creating a Virtual Machine for the Boot Camp Partition** (p. 258) in *Parallels Desktop User's Guide*.

If you don't want the operating system to be detected automatically, click **Skip Detection**. In this case, you will have to choose the operating system manually and specify the type of installation. You can choose between the Express, Typical, and Custom installation modes.

- 3 After you specified the user name and other details necessary for the installation, click **Continue**.
- 4 Before the creation starts, you can specify additional options for your virtual machine like the virtual machine name and folders sharing. When finished, click **Create**.

Note: To specify additional settings, click **Advanced**.



- 5 The assistant will create a virtual machine based on your settings and install the operating system and Parallels Tools in it.

Note: Parallels Tools are installed automatically in the following systems: Windows 7, Windows Vista, Windows XP, Windows 2000, Windows Server 2008, Windows Server 2003, Fedora 11, Fedora 9, Red Hat Enterprise Linux 5, Ubuntu 9, and Ubuntu 8. In other operating systems they should be installed manually (p. 97).

Interface Basics

This chapter provides a basic description of the Parallels Desktop interface elements and their functions.

Parallels Virtual Machines List

The **Parallels Virtual Machines** list shows the virtual machines and virtual machines templates that are already registered in Parallels Desktop.

Note: If you have no virtual machines registered in Parallels Desktop, the **Parallels Virtual Machines** list doesn't open.

To open the **Parallels Virtual Machines** list:

- Choose **Virtual Machine List** from the **Window** menu.
- Right-click the Parallels Desktop icon in the Dock, and choose **Virtual Machine List** from the shortcut menu.
- Click **Use your virtual machines** option on the **Welcome** window (p. 31). However, if you have no virtual machines, the **New Virtual Machine Assistant** (p. 76, p. 33) will appear.
- Provided that you already have at least one virtual machine registered in Parallels Desktop, if you disable the **Welcome** window, the **Parallels Virtual Machines** list will appear every time you start Parallels Desktop.

Note: To disable the **Welcome** window (p. 31), just clear the **Show at startup** option in this window.



The List

The **Parallels Virtual Machines** list contains the registered virtual machines, virtual machine templates, third-party virtual machines stored on your Mac, and the menu for managing this list.

The **Parallels Virtual Machines** list allows you to manage the registered Parallels virtual machines as follows:

- **Open virtual machines:** Click the virtual machine name in the list to open the virtual machine window.
- **Start virtual machines:** Click the **Start** button  or right-click a virtual machine and choose **Start** from the shortcut menu.
- **Edit the virtual machine configuration** (p. 168): Right-click a virtual machine and select **Configure** from the shortcut menu.
- **Locate the virtual machine files on your Mac:** Right-click a virtual machine and choose **Show in Finder** from the shortcut menu.
- **Rearrange the virtual machines:** Drag a virtual machine to the desired position.
- **Remove any virtual machine:** (p. 236) Drag a virtual machine from the list or right-click it and select **Remove** from the context menu. You can add it back to the list later.
- **Assign colors to your virtual machines:** Right-click a virtual machine and select the desired color from the shortcut menu. In Finder, the virtual machine `.pvm` bundle will be marked with the same color.

If the virtual machine files are stored on a remote USB device or network server, you will see the corresponding icon to the right of the virtual machine name.

If you right-click a virtual machine template (p. 237), the set of commands will slightly differ.

The **Start** button  is not available because you cannot start a template, but you can choose the **Convert to Virtual Machine** or **Deploy to Virtual Machine** options.

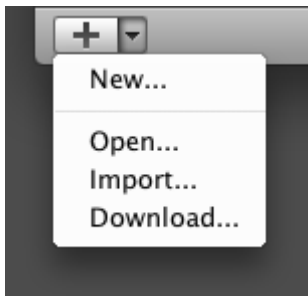
Third-party Virtual Machines

When you start Parallels Desktop, it finds all third-party virtual machines (VMware, Microsoft Virtual PC, Virtual Box) stored on your Mac using the Spotlight search and adds them to the **Parallels Virtual Machine** list. Before using these machines, you need to convert them into the Parallels Desktop format. Open a third-party virtual machine, and Parallels Transporter (p. 263) will start and guide you through the process of converting.

If you do not want to convert a third-party virtual machine into the Parallels Desktop format, simply remove it from the **Parallels Virtual Machines** list (p. 236). Parallels Desktop will not add it to the list any more.

The Menu

This menu is situated in the lower left corner of the **Parallels Virtual Machines** list.

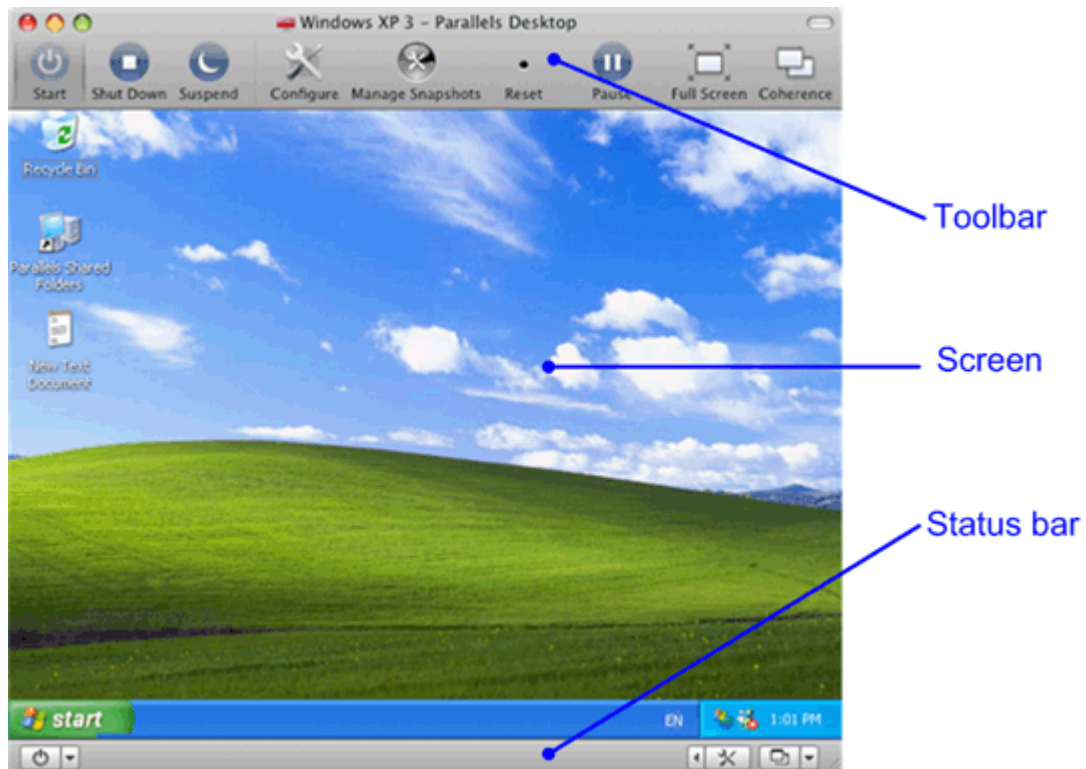


With the help of this menu, you can:

- **Create a new virtual machine:** Click the  button to start New Virtual Machine Assistant (p. 76, p. 33). You can also click the  button and select **New** from the menu.
- **Add an existing virtual machine to the list:** Click the  button and select **Open** from the menu to add an existing virtual machine stored on your Mac, on an external USB storage, or on the network.
- **Import a physical computer or virtual machine:** Click the  button and select **Import** from the menu to migrate a physical or virtual computer (VMware, Microsoft Virtual PC, or VirtualBox) to a Parallels virtual machine on your Mac with the help of Parallels Transporter (p. 263).
- **Download a virtual appliance:** Click the  button and select **Download** from the menu. The Parallels Virtual Appliances Directory (<http://ptn.parallels.com/en/ptn/dir>) page will open. Choose a virtual appliance and download it.

Virtual Machine Window

When you choose a virtual machine from the **Parallels Virtual Machines** list (p. 36), the virtual machine window appears. If you start this virtual machine, the virtual machine window changes to the guest OS window that acts as the virtual machine's display. You can resize the virtual machine window by dragging its right corner. Its resolution changes automatically in Windows (starting from Windows 2000) and in most Linux operating systems if Parallels Tools are installed (p. 97).



The virtual machine window consists of three parts:

- **Toolbar** - comprises buttons that can be used to manage the virtual machine and its appearance.
- **Screen** - acts as the virtual machine's screen.
- **Status bar** - contains items for managing the virtual machine's devices and changing the view mode and state. For more information, see **Status Bar** (p. 44).

When a guest operating system is running, you can switch between several display modes of the guest OS window. For detailed information on the view modes, see **Changing the View Mode** (p. 122).

Toolbar

The Parallels Desktop toolbar has buttons for the most frequent commands used to start, stop, and otherwise manage the virtual machine and its window appearance.

To show the toolbar, click the button  in the upper right corner of the virtual machine window.

Most of the toolbar buttons become enabled only when you start the virtual machine. If you click a toolbar button, it becomes visibly pressed.



The default toolbar buttons:



Start. Use this button to start the virtual machine if it is stopped, paused or suspended.



Shut Down. Use this button to shut down your guest OS correctly.



Suspend. Use this button to put your virtual machine into the sleep mode for a certain period of time. If you need to restart the host computer, you may temporarily suspend your virtual machines and easily resume them after the restart.



Configure. Use this button to open the Virtual Machine Configuration dialog.



Full Screen. Use this button to switch the virtual machine to the Full Screen mode. To return back to the Window mode, press Alt+Enter. The key combination for switching to the Full Screen mode and back can be changed in the **Preferences** dialog available from the **Parallels Desktop** menu.



Coherence. Use this button to switch the virtual machine to the Coherence mode.



Crystal. Use this button to switch the virtual machine to the Crystal mode.

You can easily add other buttons to the toolbar: just right-click the toolbar, choose **Customize Toolbar** (p. 47) from the shortcut menu, and drag the items you need to the toolbar.



Pause. Use this button to pause the virtual machine. Use this button when you need to instantly release the primary OS resources used by this virtual machine.



Restart. Use this button to restart the fully loaded guest operating system. This button is available only for Windows virtual machines if Parallels Tools are installed. To view the list of Windows guest operating systems supporting Parallels Tools, refer to the **Parallels Tools Overview** subsection (p. 98).



Stop. Use this button to stop the virtual machine in cases when the machine does not run properly and prevents you from shutting it down.

Note: If you click this button when the virtual machine is running, you may lose all the unsaved data. To turn off the virtual machine, use the shutdown procedure specified for the guest OS

installed in it or the **Shut Down** button





Safe Mode. Use this button to run the virtual machine in Safe Mode (p. 126).

If you often work with snapshots, you can drag any of the three snapshot buttons to the toolbar as well:



Take Snapshot. Use this button to create a snapshot (p. 250) for the virtual machine.



Revert to Snapshot. Use this button to roll back the changes made to the virtual machine since the moment the last snapshot was made.



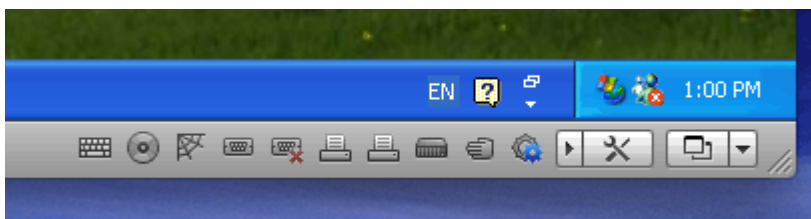
Manage Snapshots. Use this button to open Virtual Machine Snapshots. For more information, refer to the **Working with Snapshots** section (p. 249).

To hide the toolbar, click the button  in the upper right corner of the virtual machine window.

You can also manage a virtual machine by using the Parallels Desktop menus. For more information about the menu options, see the **Menus** section (p. 43).

Status Bar

The status bar displays the virtual machine devices icons and the menus for managing the virtual machine view mode and state. You can easily connect or disconnect the devices using the devices icons on this bar: right-click the device icon and choose the necessary option from the shortcut menu. To change the virtual machine view mode and state, you can use the view mode menu  and the virtual machine state menu  correspondingly.



For more information on the status bar functions, refer to the **Status Bar** section (p. 44).

Menus

The Parallels Desktop menus contain all the controls available for Parallels Desktop and its virtual machines. The menus are displayed on the Mac OS X menu bar.

There are the following menus:

- The **Parallels Desktop** menu displays the **About Parallels Desktop** dialog and lets you set Preferences (p. 47).
- The **File** menu lets you create a new virtual machine or remove one of the already existing virtual machines from the virtual machines list. The **Import** command allows you to open virtual machines that are not registered in Parallels Desktop (p. 112). The **Download** command allows you to download virtual appliances (p. 115) from the Internet. You can also clone the virtual machine or convert it to a template (p. 237).
- The **View** menu includes commands for switching between different view modes: the Full Screen, Coherence, Crystal, Modality, or Window mode. You also can customize how you view the toolbar and the Windows guest OS desktop, enable the MacLook theme (p. 154), make clips and screen shots of the virtual machine screen.
- The **Virtual Machine** menu allows to manage the virtual machine, edit the virtual machine configuration, create snapshots, install Parallels Tools and Parallels Internet Security in the virtual machine, and compress the virtual machine.
- The **Devices** menu is available only when the virtual machine is running. It allows you to configure certain devices and shared folders at runtime. Using the **Shared Folders** menu, you can share folders (p. 155) between Mac OS X and your guest operating system. Using the **Keyboard** menu, you can emulate keyboard shortcuts in the guest operating system.
- The **Window** menu allows you to choose the application window you want to appear on top. This menu simplifies the navigation between the virtual machines.
- The **Help** menu opens Parallels Desktop Help Center, lets you activate and register the product, open the welcome screen (p. 31), check for updates, and report problems.

Dock icon shortcut menu

Parallels Desktop Dock icon has a shortcut menu with a number of useful commands. Just right-click the Parallels Desktop icon to open this menu.

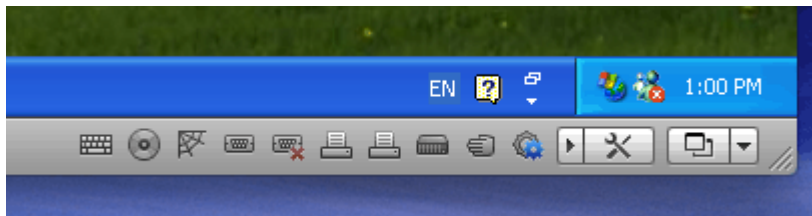
Status Bar

The status bar consists of three parts:

- the virtual machine devices
- the view mode menu 
- the virtual machine state menu 

The Virtual Machine Devices

In the virtual machine status bar, you can find the list of devices connected to the virtual machine. This list is available only when the virtual machine is running. By default, the virtual machine devices list is hidden. To see the list, click the left arrow button  near the Configure button .

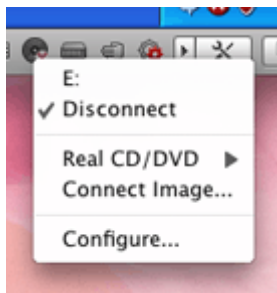


The following devices have the icons on the status bar:

- keyboard 
- floppy disk drive 
- CD/DVD drive 
- hard disk 
- network adapter 
- sound card 
- USB controller 
- shared folders 
- serial port 
- parallel port 

If you see the  icon in the status bar, it means that Parallels Tools are installed in your virtual machine.

If a device can be connected or disconnected at runtime (actually, most of the devices can be), this can be done using the device's shortcut menu. Click the device icon to display its shortcut menu and select the command. The picture below shows the shortcut menu for the CD/DVD drive.



You can also connect CD/DVD discs or images of discs to the virtual machine's CD/DVD drive or connect a floppy image to its floppy drive in the following way: drag the required image file over the CD/DVD drive icon on the Parallels Desktop status bar. For more information, please refer to the [Changing Configuration at Runtime](#) section (p. 145).

To add devices to the virtual machine configuration or remove them from the configuration, click the Configure button . For detailed information, see [Adding and Removing Devices](#).

The View Mode Menu

To change the virtual machine view mode, you can use the View Mode menu  in the status bar. This menu is available only when the virtual machine is running. To switch to the Coherence mode, click the Coherence button . To switch to any other view mode, click the down arrow button  near the coherence button, and select the desired view mode from the menu. For detailed information on the view modes, see [Changing the View Mode](#) (p. 122).

The Virtual Machine State Menu

You can start, shut down, suspend, or otherwise manage the virtual machine state using the Virtual Machine State menu  in the status bar. Click the Virtual Machine State button  and select the desired command from the menu.

Customizing Toolbar

To change the appearance of the toolbar items, right-click the toolbar and use the shortcut menu commands:

- **Icon & Text.** Use this command if you want the toolbar to display both the button icons and their names.
- **Icon only.** Use this command if you want the toolbar to display only the button icons.
- **Text only.** Use this command if you want the toolbar to display only the button names.
- **Use Small Size.** Use this command if you want the toolbar buttons to appear in a smaller size.
- **Remove Item.** Point to a toolbar item and use this command if you want to remove this item from the toolbar.
- **Customize Toolbar.** This command opens the toolbar settings pane. See the description below.

To customize the set of toolbar buttons and their appearance, right-click the toolbar and choose **Customize Toolbar** from the shortcut menu. This will open the toolbar settings pane. You can use this pane to:

- add new buttons to the toolbar by dragging them from the settings pane to the toolbar
- remove buttons from the toolbar by dragging them from the toolbar to the settings pane
- add separators to the toolbar by dragging them from the settings pane to the toolbar
- add spaces to the toolbar by dragging them from the settings pane to the toolbar
- change the current toolbar buttons set to the default one by dragging it to the toolbar
- select the toolbar buttons view mode in the **Show** list

To apply the changes you have made to the toolbar settings pane, click **Done**.

Editing Parallels Desktop Preferences

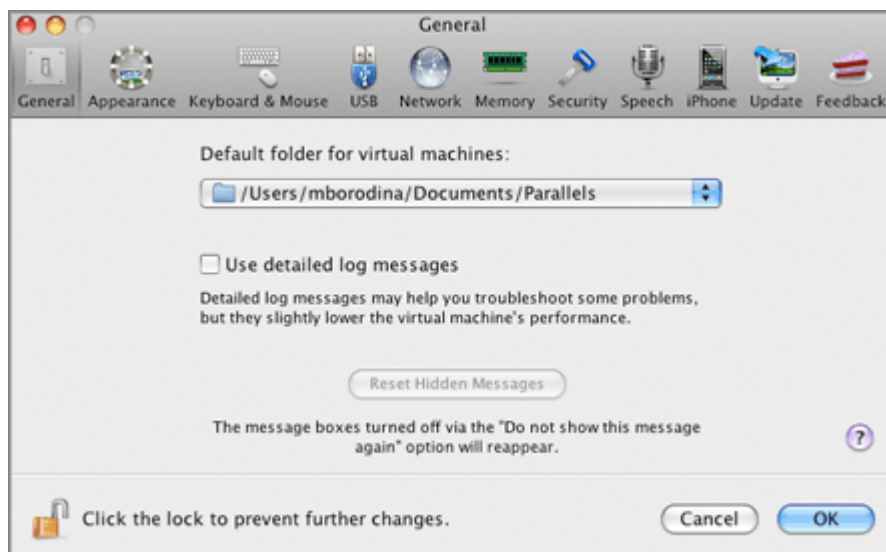
This section provides the information on how to configure the Parallels Desktop settings using the Preferences dialog. You can open this dialog by choosing **Preferences** from the **Parallels Desktop** menu.

General Preferences

In the **General** pane of Parallels Desktop Preferences, you can:

- change the default location for storing the folders with the virtual machine files
- enable verbose logging
- restore hidden messages

Note: The settings available in this pane can be configured individually for each user of the physical computer.



Changing the Default Folder for Virtual Machines

The **Default folder for virtual machines** field displays the default location where Parallels Desktop stores the files and folders of all virtual machines you create on your Mac. You can change the default location by typing the path to another folder in this field or clicking the **Choose** button and navigating to the necessary folder. After changing the default location, all newly created virtual machines will be saved in the folder specified in the **Default folder for virtual machines** field. However, this does not affect the files of virtual machines that already exist: their files will remain in the original default folder.

Enabling Verbose Logging

While functioning, Parallels Desktop automatically creates a log file that can be used by the Parallels support team for solving problems and improving the product. If you select the **Use detailed log messages** option, Parallels Desktop starts creating a more detailed log file. It can be helpful for the Parallels support team, but use more hard disk space and may slightly lower the system performance.

Resetting Hidden Messages

A number of Parallels Desktop dialogs and assistant windows are provided with the **Do not show this message again** option. If you select this option, the corresponding dialog will not appear next time you perform the same operation. Using the **Reset Hidden Messages** button, you can reset all dialogs and assistant windows with this option selected so that they would be displayed again each time you initiate the corresponding operation.

Locking Parallels Desktop Preferences

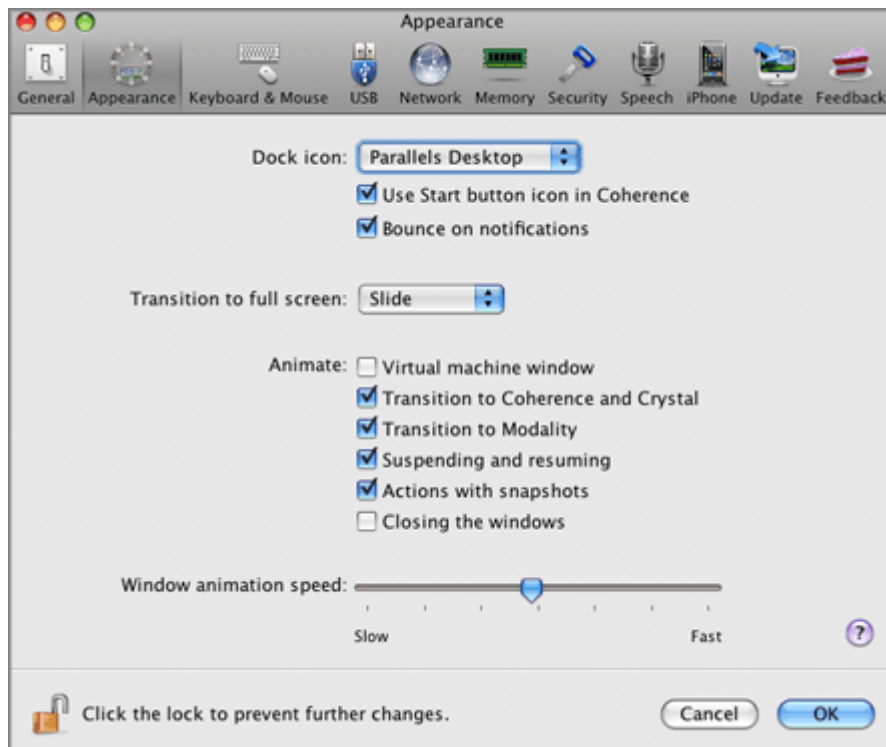
If you want to prevent Parallels Desktop Preferences from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time anybody wants to change the settings in any pane of Parallels Desktop Preferences, an administrator's password will be required.

Appearance Preferences

In the **Appearance** pane of Parallels Desktop Preferences, you can choose the appearance of the Parallels Desktop icon and define the animation for actions you perform in Parallels Desktop.

Note: The options on this tab can be configured individually for each user of your Mac.



Dock icon

This option defines what type of icon will appear in the Dock when Parallels Desktop is open. The following types of icons are available:

- **Parallels Desktop.** The standard Parallels Desktop icon appears in the Dock
- **Live Screenshot.** If you choose this type, the Dock icon will appear as a live screenshot of the virtual machine window.

Note: Irrespective of the Dock icon appearance, clicking this icon in the Coherence mode invokes the Windows **Start** menu.

If you select the **Use Start button icon in Coherence** option, Parallels Desktop will display the Start button icon in the Dock in the Coherence (p. 148) mode. If you click this icon, the Windows **Start** menu appears.

Note: In the Crystal view mode (p. 152), the Start button icon is not displayed.



Select the **Bounce on notifications** option if you want the Parallels Desktop icon to bounce in the Dock each time a notification appears in the virtual machine.

Transition to full screen

This option allows you to set the desired type of animation effect (or none) on switching a Parallels virtual machine to full screen and back. You can choose one of the following effects: Disabled, Fade, Zoom, Reveal, Slide, Warp, Cube, Switch, or Flip.

Animate

This group of options defines the animation behavior when you perform certain actions in Parallels Desktop:

- **Virtual machine window.** Select this option to animate the virtual machine window when it is open and the virtual machine is stopped or suspended. This animation may considerably decrease your computer performance.
- **Transition to Coherence and Crystal.** Select this option to animate the transition to the Coherence or Crystal view mode and back to the Window mode. Clear this check box if you do not want any animation on switching to the Coherence and Crystal modes.
- **Transition to Modality.** Select this option to animate the transition to the Modality mode and back to the Window mode. Clear this check box if you do not want any animation on switching to the Modality mode.
- **Suspending and resuming.** Select this option to animate the operations of suspending and resuming virtual machines. Clear the check box if you do not want any animation when performing these operations.
- **Actions with snapshots.** Select this option to animate the actions you perform with snapshots. Clear the check box if you do not want any animation when performing these operations.
- **Closing the windows.** Select this option to animate the operation of closing the virtual machine window. Clear the check box if you do not want any animation when performing this operation.

Window animation speed

Set the speed of the animation using the slider. All animations set on the tab will be affected.

Locking Parallels Desktop Preferences

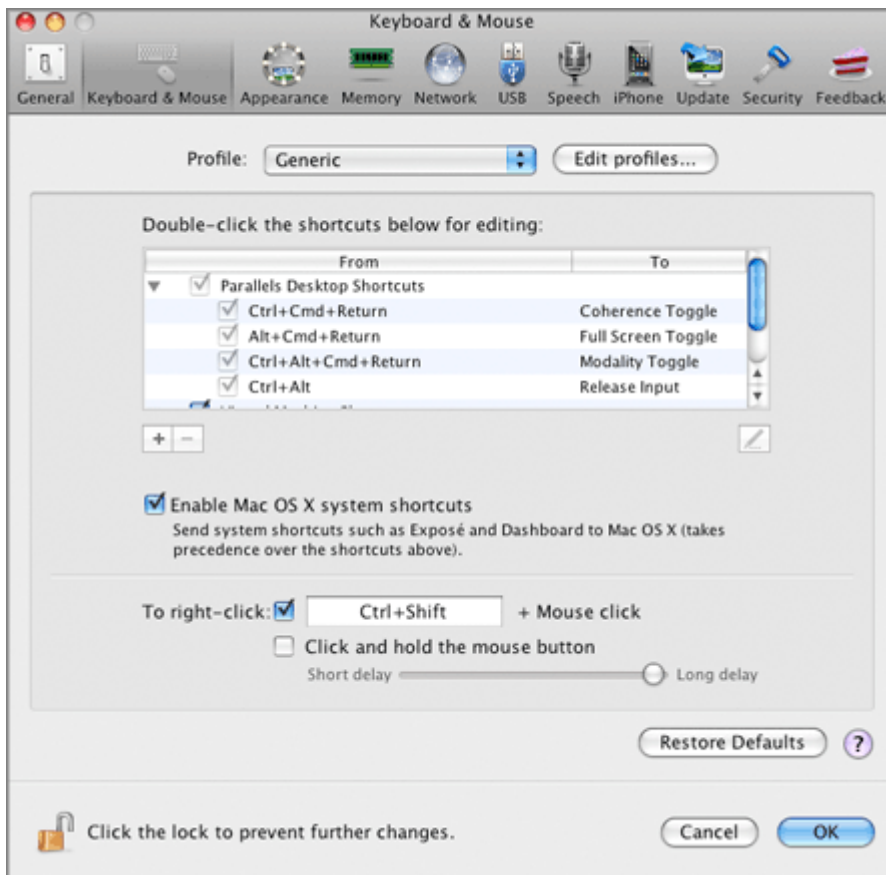
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Keyboard and Mouse Preferences

In the Keyboard & Mouse pane of Parallels Desktop Preferences, you can set keyboard shortcuts for certain commands.

Note: The keyboard shortcuts can be configured individually for each user of your Mac.



The **Switch Language** option enabled by default allows you to use one and the same shortcut to change the keyboard layout in your Mac and Windows-based virtual machines. For example, if you use Cmd+Space to change the keyboard layout in your Mac, you will be able to use the same key combination in Windows-based virtual machines.

Note: This unified keyboard layout switch is available only for Windows-based virtual machines with Parallels Tools (p. 97) installed.

Configuring Keyboard Shortcuts

To configure the shortcuts used to perform certain actions, use the **Double-click the shortcuts below for editing** list. Using this list, you can remap the Mac OS X shortcuts to Windows shortcuts that perform similar actions in Parallels Desktop virtual machines.

The shortcuts are divided into two groups: shortcuts for managing the Parallels Desktop software and shortcuts for working in virtual machines. Shortcuts for Parallels Desktop cannot be added or removed, while the shortcuts for virtual machines can be added using the **Add** button  and removed using the **Remove** button .

To add a shortcut, click the **Add** button  and specify the rule for translating the key combination.

- In the **From** field, use the buttons to add modifier keys to the Mac keyboard shortcut and enter the required key into the empty field.
- In the **To** field, specify the PC keyboard shortcut to translate the Mac shortcut to. You can use the buttons for modifier keys, and type the key into the empty field or select the necessary PC keyboard key using the arrow button.



The screenshot shows a dialog box for configuring keyboard shortcuts. It has two main sections: 'From' and 'To'. The 'From' section is for the Mac keyboard shortcut, with buttons for Shift, Ctrl, Alt, and Cmd, followed by an empty text input field. The 'To' section is for the PC keyboard shortcut, with buttons for Shift, Ctrl, Win, and Alt, followed by a text input field containing a vertical bar and a dropdown arrow. At the bottom of the dialog are three buttons: 'Clear', 'Cancel', and 'OK'.

To configure a shortcut remapping rule, double-click it and edit by entering the new key combination.

Important: There are Mac shortcuts that do not have similar shortcuts in Windows, for example, you can use the F11 key or Fn+F11 combination to see your Mac OS desktop with Expose, but in Windows there's no keys or key combinations that enable you to perform the same action, because there is no Expose in Windows.

The **Enable Mac OS X system shortcuts** checkbox, which is selected by default, allows you to use the default (F9/F10/F11/F12) and custom shortcuts for Mac OS X during your work with virtual machines in Parallels Desktop.

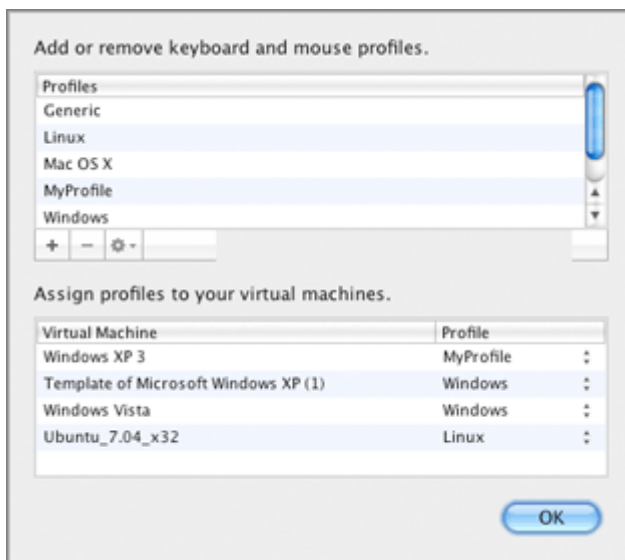
Using profiles

By default, Parallels Desktop contains four profiles that represent sets of key combinations typical for the following OSs:

- Windows
- Linux
- Mac OS X
- Generic (for other guest OSs)

When you create or register a virtual machine, one of these profiles, depending on the guest operating system, will be assigned to the machine by default.

You can create your own profile and assign it to your virtual machines. To create your custom keyboard profile or edit the existing profiles, click the **Edit profiles** button. The dialog for editing profiles will appear.



To add a new profile, click the **Add** button . In the **Choose base profile** window, specify the new profile name and select the base profile from the list. After the profile is created, you can submit the changes by clicking **OK**, return to the **Keyboard and Mouse** pane of Parallels Desktop Preferences, select this new profile in the **Profile** list, and configure its shortcuts.

To remove one of the existing custom profiles, select this profile and click the **Remove** button .

To duplicate or rename one of the existing profiles, select this profile, click the button , and select the corresponding action from the menu.

Note: You can rename or remove your custom profiles only.

In this window, you can also assign profiles to your virtual machines.

To change a profile assigned to a virtual machine:

- 1 In the **Assign profiles to your virtual machines** table, select the virtual machine.
- 2 In the **Profile** column, click the corresponding profile field to open the list of available profiles and choose the profile you want to assign to this virtual machine.
- 3 Click **OK** to submit the changes.

Emulating a mouse right-click

To emulate a mouse right-click for a mouse that does not have the right key, choose one of the following:

- Select the **To right-click** check box and specify the key combination that will be used to emulate a mouse right-click in the virtual machine.
- Select the **Click and hold the mouse button** check box and configure the time interval when this option will come into effect by moving the slider in the necessary direction between **Short Delay** and **Long Delay**.

To submit the changes, click **OK**, otherwise, click **Cancel**.

Restoring default settings

The **Restore Defaults** button enables you to restore the default settings for all options available in this pane.

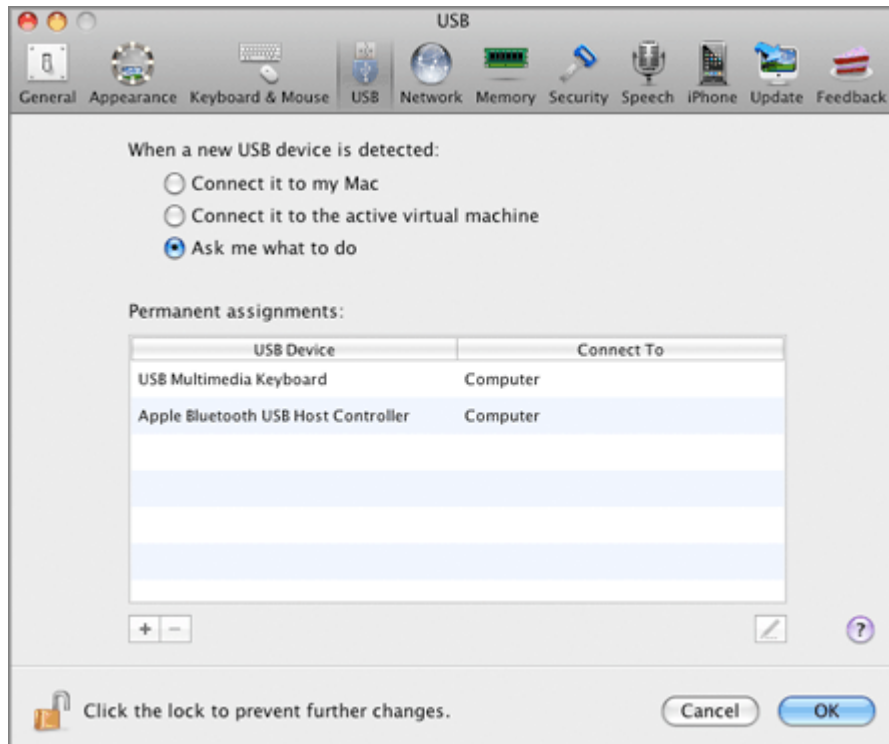
Locking Parallels Desktop Preferences

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the **Lock** icon  at the bottom of the window. The next time anybody wants to change the settings in any pane of Parallels Desktop Preferences, an administrator's password will be required.

USB Preferences

In the USB pane of Parallels Desktop Preferences, you can specify how to handle USB devices that are plugged into your Mac.



General Behavior

You can choose a general action to perform when a new USB device is plugged into your Mac by choosing one of these options:

- **Connect it to your Mac.** If you select this option, the USB device plugged into your Mac will be connected to your Mac.
- **Connect it to the active virtual machine.** If you select this option, the USB device plugged into your Mac will be automatically connected to the virtual machine that is currently running on your Mac. When no virtual machine is running, the USB device will be connected to the primary OS.
- **Ask me what to do.** If you select this option, you will be prompted to choose how to connect the USB device each time a new USB device is plugged into your Mac.

Permanent Assignments

You can also set permanent assignments for certain USB devices. These assignments are displayed in the **Permanent assignments** list.

To add a new assignment:

- 1 Click the **Add** button  below the **Permanent assignments** list.
- 2 Click the device field in the **USB Device** column to choose a USB device from the list.
- 3 In the **Connect To** column, double-click the destination field to open the list of available destinations and choose the virtual machine you want to connect this device to. If you want to connect this USB device to your Mac, choose **Computer**.

Note: To be able to use the USB device in a virtual machine, you may need to install the necessary drivers in its guest OS. By default, such drivers can be obtained from the manufacturers of this device.

- 4 Click **OK** to apply the changes.

Note: You can connect up to eight USB 2.0 devices and up to eight USB 1.1 devices to each virtual machine.

You can change an assignment by editing the device and destination in the **USB Device** and **Connect To** fields.

To remove an existing assignment, select it in the **Permanent assignments** list and click the **Remove** button .

For more information about using USB devices in a virtual machine, refer to **Connecting USB Devices to a Virtual Machine** (p. 141).

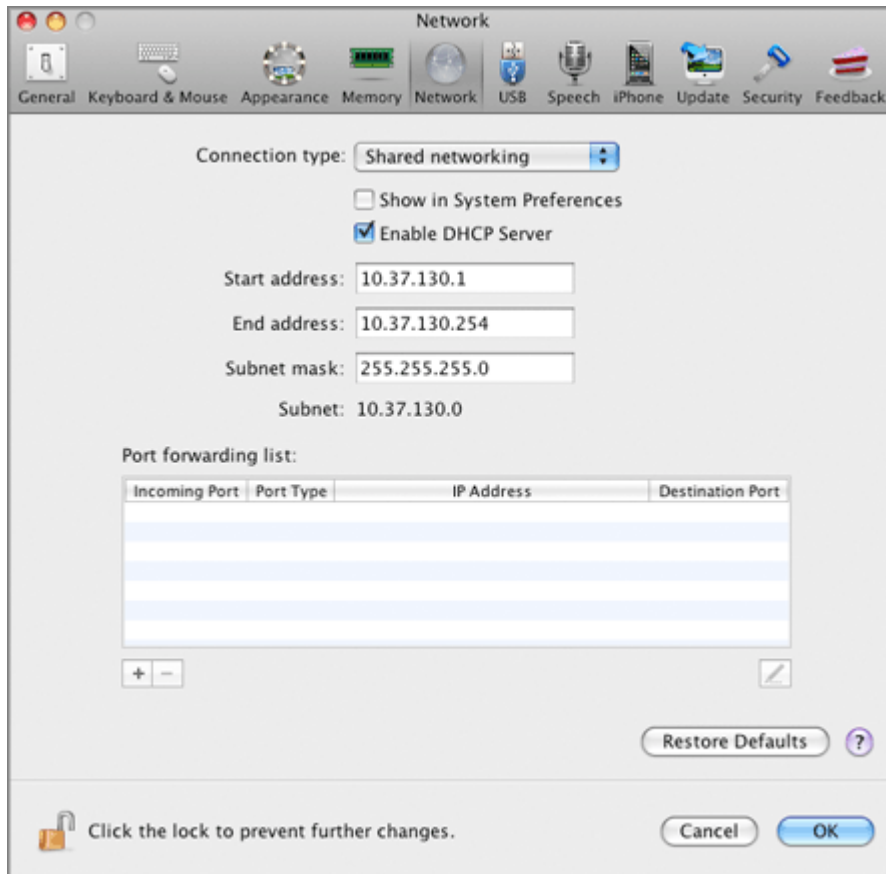
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Network Preferences

The **Network** pane of Parallels Desktop Preferences allows you to configure a number of network-related settings for Parallels Desktop and your virtual machines.



You can configure the range of IP addresses to be assigned to your virtual machines when they are operating in the *shared* (p. 228) and *host-only* (p. 231) networking modes.

To edit the host-only networking settings:

- 1 Select **Host-only networking** in the **Connection type** list.
- 2 Select **Show in System Preferences** if you want the Parallels host-only networking adapter to appear in the network preferences of your Mac.
- 3 Select the **Enable DHCP Server** option to enable the Parallels DHCP server. This server will automatically assign IP addresses to your virtual machines operating in the host-only networking mode from the IP addresses range defined in the appropriate fields below this option.
- 4 If necessary, configure the start and end IP addresses in the **Start address** and **End address** fields and specify the network mask in the **Subnet mask** field.

For more information on configuring the host-only networking parameters, refer to **Host-Only Networking** (p. 231).

To edit the shared networking settings:

- 1 Select **Shared networking** in the **Connection type** list.

- 2 Select **Show in System Preferences** if you want the Parallels shared networking adapter to appear in the network preferences of your Mac.
- 3 Select the **Enable DHCP Server** option to enable the Parallels DHCP server. This server will automatically assign IP addresses to your virtual machines operating in the shared networking mode from the IP addresses range defined in the appropriate fields below this option.
- 4 If necessary, configure the start and end IP addresses in the **Start address** and **End address** fields and specify the network mask in the **Subnet mask** field.

For more information about configuring shared networking, refer to **Shared Networking** (p. 228).

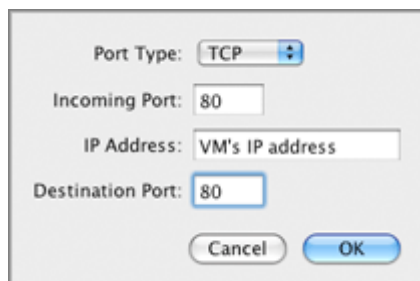
The **Start address** and **End address** values determine the first and the last IP addresses with the first address usually assigned to the DHCP server itself. The second address is usually given to the host OS. Other addresses are assigned to virtual machines. The scope of IP addresses defined should belong to the same subnet.

Port Forwarding in Shared Networking

Normally, virtual machines set to operate in the shared networking mode cannot be accessed from external computers. The port forwarding functionality allows computers on your local and other networks to transfer data to any of your virtual machines that use the shared networking mode. The data sent to a specific port on your Mac will be redirected to a specific port of your virtual machine according to a port-forwarding rule.

To add a new port forwarding rule:

- 1 Click the **Add** button  below **Port forwarding** list.
- 2 In the displayed window, do the following:
 - In the **Port Type** field, specify the port type you want to use for establishing network connections. You can choose between the **TCP** or **UDP** port types.
 - In the **Incoming Port** field, provide the port number on your Mac you want to use for data transfer.
 - In the **IP Address** field, indicate your virtual machine's IP address.
 - In the **Destination Port** field, type the virtual machine's port the data will be transferred to.



Port Type: TCP

Incoming Port: 80

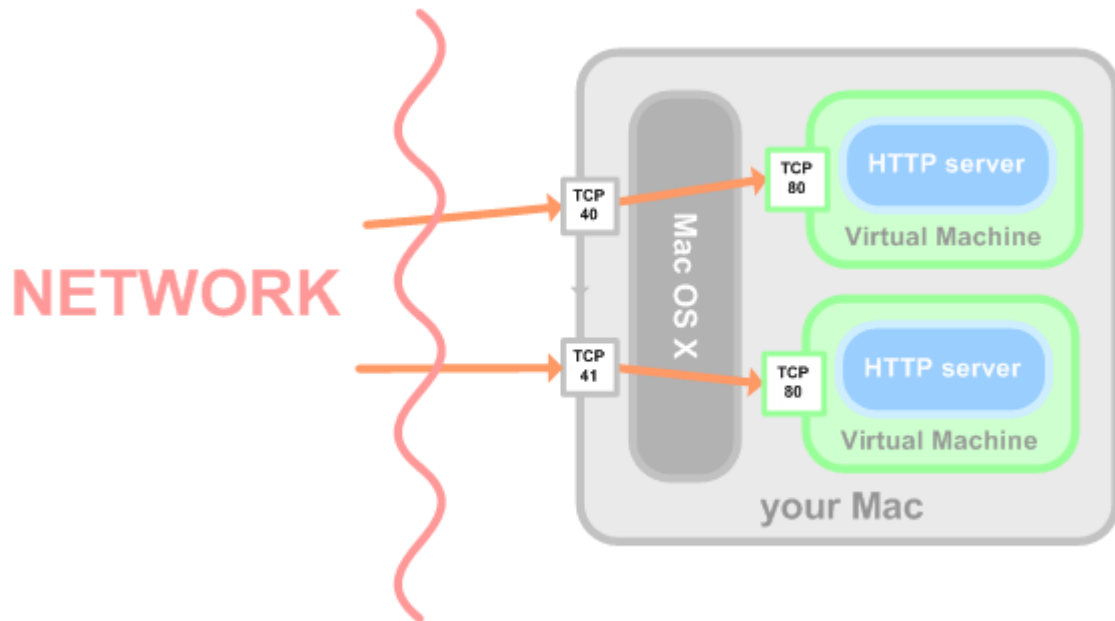
IP Address: VM's IP address

Destination Port: 80

Cancel OK

3 Click OK to add the rule.

When the rule is added, use the following IP address combination for external connections to your virtual machine: <you Mac's IP address>:<Source port>.



To edit an existing port forwarding rule, select it in the **Port forwarding** list table, click the **Edit** button , and modify the necessary parameters in the displayed window.

To remove a port forwarding rule, select it in the **Port forwarding** list table and click the **Remove** button .

Restoring default settings

The **Restore Defaults** button enables you to restore the default settings for all options available in this pane.

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Memory Preferences

The **Memory** pane of Parallels Desktop Preferences allows you to adjust the maximum amount of physical memory (RAM) that the system will reserve for all virtual machines running on your Mac.



By default, the **Automatically** option is selected. In this case, the total amount of RAM to be allocated to all running virtual machines is automatically calculated by the system based on the following main factors:

- the total amount of memory installed on your Macintosh computer and
- the amount of memory required by Mac OS X for its operation.

The allocated amount of memory is shared among all running virtual machines. You can configure the amount of physical memory for a particular virtual machine on the **General** tab of Virtual Machine Configuration (p. 169).

You can redefine the default behaviour and manually set the amount of memory to be reserved for all active virtual machines. To this effect, select the **Manually** option and specify the needed value by:

- dragging the slider, or
- using the spin box arrows, or
- typing the value directly into the field

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Security Preferences

In the **Security** pane of Parallels Desktop Preferences, you can set restrictions on some Parallels Desktop operations for non-administrator users.



You can set restrictions on the following operations:

- **Create a new virtual machine.** You will have to provide your administrator password to create a new virtual machine (p. 76).
- **Add an existing virtual machine.** You will have to provide your administrator password to add an existing virtual machine to the **Parallels Virtual Machines** list (p. 112).
- **Remove a virtual machine.** You will have to provide your administrator password to remove your virtual machines from the **Parallels Virtual Machines** list (p. 236).
- **Clone or convert a virtual machine or template.** You will have to provide your administrator password to clone a virtual machine (p. 234), to create a template, to convert a template into a virtual machine, and to deploy a template into a new virtual machine (p. 237).

Locking Parallels Desktop Preferences

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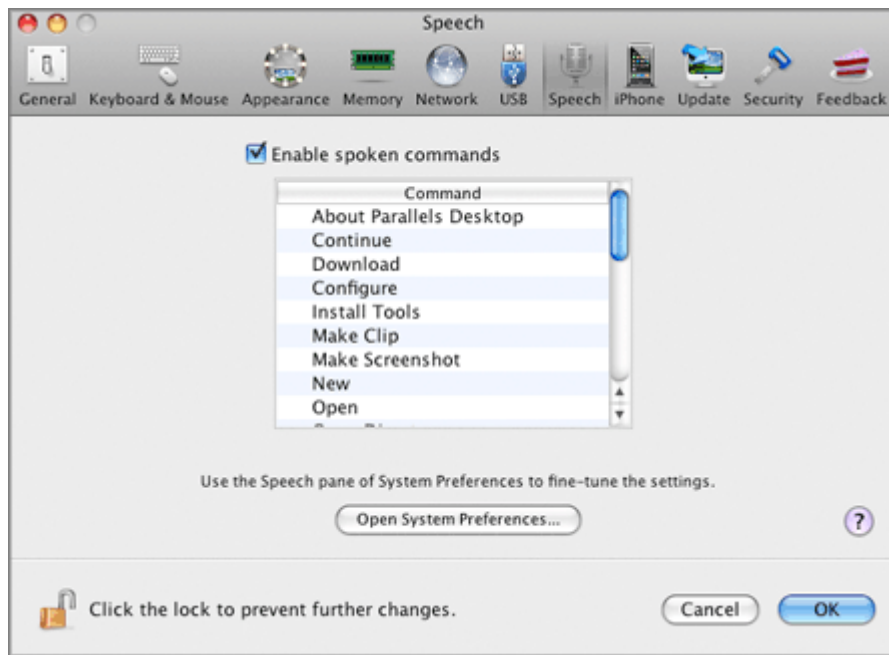
the Lock icon  at the bottom of the window. The next time anybody wants to change the settings in any pane of Parallels Desktop Preferences, an administrator's password will be required.

Speech Preferences

The **Speech** pane allows you to use spoken commands for managing the virtual machine behavior. The following spoken commands are available:

Commands	Description
Start	Starts a virtual machine.
Suspend	Suspends a virtual machine.
Shut Down	Shuts down a virtual machine.
Pause	Pauses a virtual machine.
Stop	Stops a virtual machine.
Reset	Resets a virtual machine.
Snapshot	Opens the Snapshot Manager window.
Make Screenshot	Makes a screenshot of the Guest OS window and stores it on the Mac OS X Desktop.
Make Clip	Makes a clip.
Switch to Coherence	Switches to the Coherence view mode.
Switch to Full Screen	Switches to the Full Screen view mode.
Switch to Window	Switches to the Window view mode.
Edit Configuration	Opens the Virtual Machine Configuration dialog.
New	Creates a new virtual machine.
Open	Opens a virtual machine.
Download	Allows you to download a virtual machine appliance available at http://www.parallels.com/en/ptn/dir .
About Parallels Desktop	Opens the About Parallels Desktop menu.
Install Parallels Tools	Launches the installation of Parallels Tools in the running virtual machine.
Report a Problem	Opens the Parallels Problem Report window.
Open	Opens an existing virtual machine and registers it in Parallels Desktop.
Open Directory	Opens the Parallels Virtual Machines window.

To enable the speech commands, select **Enable spoken commands**:



To successfully operate your virtual machine by using the speech commands, please make sure that:

- the virtual machine window is active, and
- the speech settings are properly tuned on the corresponding tab of the Mac OS X System Preferences

If the speech settings are not tuned, you will see the 'To enable this option, you should turn on speakable items in System Preferences' warning message.

To tune the speech settings, click **Open System Preferences**.

To submit the changes, click **OK**, otherwise, click **Cancel**.

Locking Parallels Desktop Preferences

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iPhone Preferences

In the iPhone pane of Parallels Desktop Preferences, you can allow external connections to Parallels Desktop and its virtual machines from iPhone.



If you want the Parallels Mobile application to display a list of accounts available on your Mac, select **Send a list of your Mac's accounts to Parallels Mobile**.

For more information about Parallels Mobile and using iPhone to manage your virtual machines, see *Managing Virtual Machines From iPhone* (p. 244).

Locking Parallels Desktop Preferences

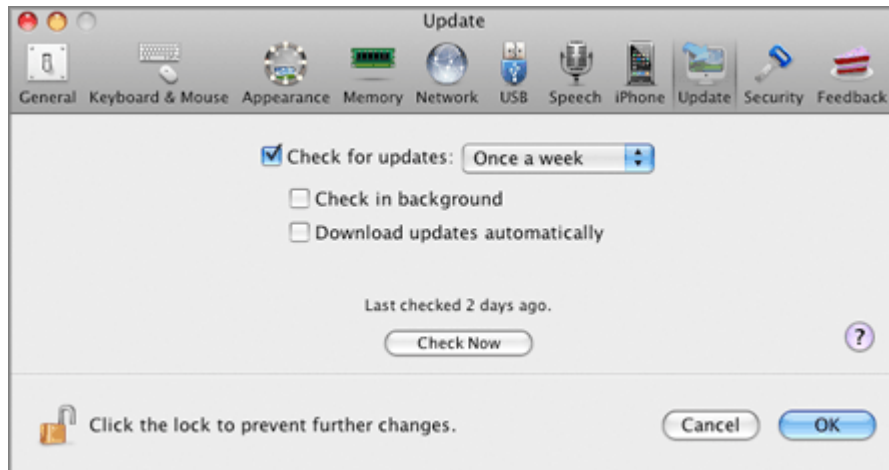
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Update Preferences

In the **Update** pane of Parallels Desktop Preferences, you can set preferences for the frequency of the update checks.

Note: The settings available in this pane can be configured individually for each user of the physical computer.



The **Check for updates** section defines the policy for updating the Parallels Desktop software. By default, Parallels Desktop is set to automatically check for available updates once a week, provided that the Parallels Desktop application is launched and your physical computer is connected to the Internet. You can specify another interval for updates checking by selecting the necessary value in the **Check for updates** list. The following options are available:

- **Once a day.** Select this option if you want Parallels Desktop to perform the update check every day.
- **Once a week.** Select this option if you want Parallels Desktop to perform the update check every week.
- **Once a month.** Select this option if you want Parallels Desktop to perform the update check every month.

Checking for new updates may take some time and, if you do not want to have the process window on the top of your Desktop, you can hide it to the background. To do that, enable the **Check in background** option.

Select the **Download updates automatically** option if you want all new available updates to be downloaded at once without showing you the **Download** dialog.

You can also check for available updates manually at any time you want by clicking the **Check Now** button:

- If any updates are available for your version of Parallels Desktop, you will see them in the **Download** dialog. Choose the updates you want to install and click the **Download** button.
- If your version of Parallels Desktop is up to date, you will see the corresponding message.

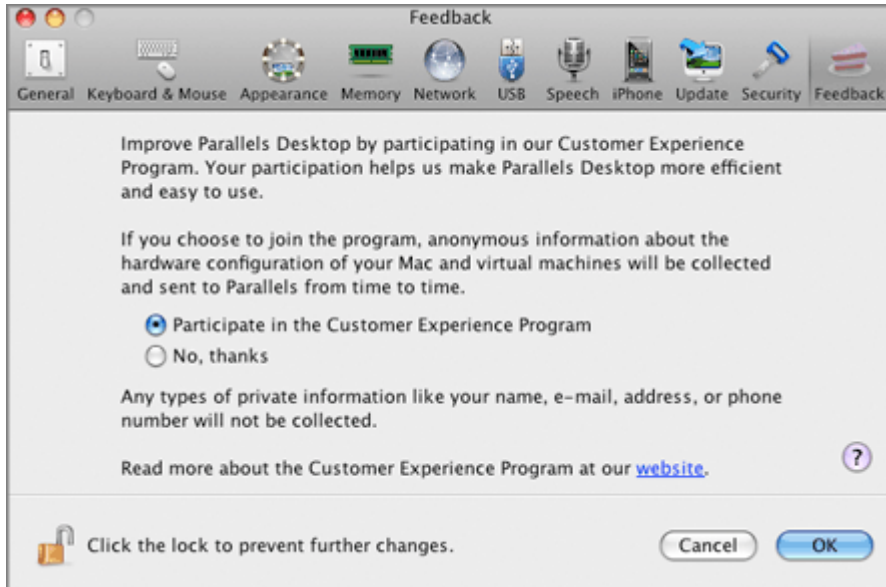
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Feedback Preferences

Using the Feedback pane, you can join the Parallels Customer Experience Program.



If you choose to participate in the program, Parallels will collect information about your host computer and virtual machines configuration. The collected information will help us to make the product better fit your needs.

If you join, only the following types of data will be collected:

- hardware configuration of your Mac;
- software configuration of your Mac and virtual machines (the names and versions of the operating systems and software installed in them);
- configuration files of virtual machines;

Any types of private information like your name, e-mail, address, phone number, and keyboard input will not be collected.

For more details, visit the Customer Experience Program page at the Parallels website (follow the link in the pane).

Locking Parallels Desktop Preferences

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CHAPTER 5

Setting Up a Virtual Machine

This chapter describes how to create a new virtual machine and install a guest operating system in it. The chapter includes an overview of the process and complete how-to instructions.

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Overview

Generally, the process of creating a virtual machine includes the following steps:

- 1 **Creating a virtual machine configuration.** It's like building a real computer from different hardware components. This step is performed with the help of New Virtual Machine Assistant (p. 77). In the *Express*, *Typical*, or *Custom* mode, New Virtual Machine Assistant creates a virtual machine with the configuration typical for the selected guest OS. For more details about the installation modes, see *Express Windows Installation Mode* (p. 79), *Express Linux Installation Mode* (p. 84), *Typical Installation Mode* (p. 88), and *Custom Installation Mode* (p. 90).
- 2 **Installing a guest operating system.** When you have configured the virtual machine's hardware, you need an operating system to control it. To install an operating system in your virtual machine, you should connect the installation CD/DVD disc or its image to the virtual machine's CD/DVD drive, as you do to install an operating system in a physical computer. For a list of the supported guest operating systems, see *Supported Guest Operating Systems* (p. 73).

For Windows 2003, Windows XP, Windows Vista, Windows 7, Ubuntu Linux, Fedora Linux, Fedora Core 5 Linux, and Red Hat Enterprise Linux virtual machines, New Virtual Machine Assistant provides a special Express mode that automatically installs the selected guest OS in a newly created virtual machine.
- 3 **Installing Parallels Tools in the guest OS.** Parallels Tools are available for most of the Windows and Linux operating systems and can be easily installed in your virtual machine. For more information, refer to *Installing Parallels Tools* (p. 97).

After completing these steps, you may proceed with fine tuning of the virtual machine, such as setting up shared folders, adjusting its screen resolution, or installing applications in it.

Typical Configuration

A typical virtual machine has the following *basic* virtual hardware:

- CPU
- memory
- hard disk drive
- floppy disk drive
- sound device (except FreeBSD and MS-DOS virtual machines)
- CD/DVD drive
- network adapter
- USB controller
- serial port
- printer port connected to the printer set as default in Mac OS.

Note: When the virtual machine is created, you can add new virtual devices to it, using the *Virtual Machine Configuration* dialog (p. 168).

Supported Guest Operating Systems

Parallels Desktop officially supports the following 32-bit guest operating systems:

Mac OS X

- Mac OS X Snow Leopard Server 10.6
- Mac OS X Leopard Server 10.5.x

Windows

- Windows 7
- Windows Server 2008
- Windows Vista® Home, Business, Ultimate, Enterprise SP0, SP1
- Windows Server® 2003 SP2, R2
- Windows XP Professional SP2, SP3, Home Edition SP2, SP3
- Windows 2000 Server SP4, Advanced Server SP4
- Windows NT 4.0 Server SP6, Workstation SP6
- Windows ME
- Windows 98 SE
- Windows 95
- Windows 3.11
- MS-DOS 6.22

Linux

- Red Hat® Enterprise Linux 5.x, 4.x
- CentOS Linux 5.x, 4.x
- Red Hat Linux 9
- Fedora™ Linux 10, 9, 8, 7
- Fedora Core 5
- SUSE® Linux Enterprise Server 10 SP2, 9 SP3
- OpenSUSE Linux 11.x, 10.x
- Mandriva™ Linux 2009, 2008, 2007
- Debian® Linux 5.0, 4.0
- Ubuntu® Linux 9.x, 8.x, 7.x
- Xandros Business 4.0

Solaris

- Solaris® 10, 9

BSD

- FreeBSD® 7.x, 6.x

OS/2

- OS/2® Warp 4.5
- eComStation™ 1.2

This version of Parallels Desktop also supports the following 64-bit guest operating systems:

Windows

- Windows 7
- Windows Server 2008
- Windows Vista Home, Business, Ultimate, Enterprise SP0, SP1
- Windows Server 2003 SP2, R2
- Windows XP Professional SP2

Linux

- Red Hat Enterprise Linux 5.x
- CentOS Linux 5.0
- Fedora Linux 10, 9, 8
- SUSE Linux Enterprise Server 10 SP2, 9 SP3
- OpenSUSE Linux 11.x, 10.x
- Ubuntu Linux 8.x, 7.x
- Mandriva Linux 2009, 2008, 2007

Solaris

- Solaris 10

BSD

- FreeBSD 7.0

Note: Parallels Desktop does not provide users with OS ISO images or OS installation discs. You should purchase an OS installation disc or an OS ISO image if you do not have any.

Typical Configurations

The amount of memory and the size of hard disks vary for different guest OSs. Refer to the table below to learn the memory and hard disk values that are allocated to a virtual machine depending on the guest operating system that will be installed in it. Virtual hard disks for typical virtual machines are always created in the expanding format (p. 218).

Guest systems	Operating	RAM, MB	Video Memory, MB	Hard Disk, MB	Floppy Drive	CD/DVD drive	Network Adapter	Sound Device
Mac OS X		1024	16	64,000		*	*	*
Windows 7		512	16	64,000	*	*	*	*
Windows Server 2008		512	16	64,000	*	*	*	*
Windows Vista		512	16	64,000	*	*	*	*
Windows XP		512	16	64,000	*	*	*	*
Windows 2003		512	16	64,000	*	*	*	*
Windows 2000		256	16	64,000	*	*	*	*
Other Windows		256	16	64,000	*	*	*	*
Red Hat Linux		512	3	64,000	*	*	*	*
SUSE Linux		512	3	64,000	*	*	*	*
Debian GNU/Linux		512	3	64,000	*	*	*	*
Ubuntu Linux		512	3	64,000	*	*	*	*
Other Linux		512	3	64,000	*	*	*	*
FreeBSD 6.x		256	16	32,000	*	*	*	*
FreeBSD 7.x		256	16	32,000	*	*	*	*
Other FreeBSD		256	16	32,000	*	*	*	*
Other Guest OSs		256	16	8,000	*	*	*	*

Creating a Virtual Machine

Virtual machines are created with the help of New Virtual Machine Assistant.

To start New Virtual Machine Assistant, do one of the following:

- Choose **New Virtual Machine** from the **File** menu.
- Choose **Virtual Machines List** from the **Window** menu and, in the displayed window, click the **New** button .

New Virtual Machine Assistant

The assistant offers several installation modes. You can choose the mode that better fits your needs or your experience with Parallels Desktop. Regardless of what method you select, you will be able to change the virtual machine configuration later using the **Virtual Machine Configuration** dialog (p. 168).

Express Windows or Linux Installation

New Virtual Machine Assistant not only creates a virtual machine configuration, but also automatically installs the corresponding guest OS in it. It is the easiest way to make a new virtual machine: you only need to insert the guest OS installation disc or specify the path to its image file, and New Virtual Machine Assistant will do the rest (including the installation of Parallels Tools). In this mode, virtual machines are created with typical configurations (see **Typical Configurations** (p. 75) for details) and placed to the default folder (see below).

For more information on this installation mode, see **Express Windows Installation Mode** (p. 79) and **Express Linux Installation Mode** (p. 84).

Typical Installation

This installation mode is designed for new users and for fast virtual machine creation. You only have to specify the type and version of the guest operating system that you wish to install and where you wish to store the virtual machine files. New Virtual Machine Assistant creates a typical (for the selected guest OS) virtual machine configuration and starts the installation of the guest OS as interactive installation.

For more information on this installation mode, see **Typical Installation Mode** (p. 88).

Custom Installation

This installation mode is intended for experienced users only. It allows the user to create configurations other than the typical ones. In this mode, the user is prompted to specify such options for the basic hardware as the amount of RAM, number of CPUs, the size and format of a virtual hard disk, and networking parameters. Additional devices can be added later, using the **Virtual Machine Configuration** dialog (p. 168). After New Virtual Machine Assistant creates a virtual machine configuration, it starts installing the guest OS if the corresponding option was selected.

For more information on this installation mode, see **Custom Installation Mode** (p. 90).

Default Folders for Virtual Machines

By default, Parallels Desktop is configured to create a new virtual machine folder in the home folder of the user who created it:

```
/Users/<User_Name>/Documents/Parallels/
```

where **<User_Name>** stands for the user's home folder.

However, you can select another folder that will be used as the default folder for your virtual machines.

To specify another default destination for saving virtual machines, do the following:

- 1** Choose **Preferences** from the **Parallels Desktop** menu.
- 2** In the **Preferences** window, open the **General** pane (p. 48) and specify the default destination for new virtual machines in the **Default folder for virtual machines** field.

Note: You can also specify a folder for a virtual machine during its creation. An existing virtual machine can also be moved to a different folder after it is created.

Express Windows Mode

Before creating a virtual machine in the *Express Windows* mode, make sure that you have an operating system installation disc or its image.

Note: Parallels Desktop doesn't provide you with the operating system installation discs and their images. You should purchase the installation disc or its image if you do not have any.

To start New Virtual Machine Assistant, click the New button  in the Parallels Virtual Machines list.

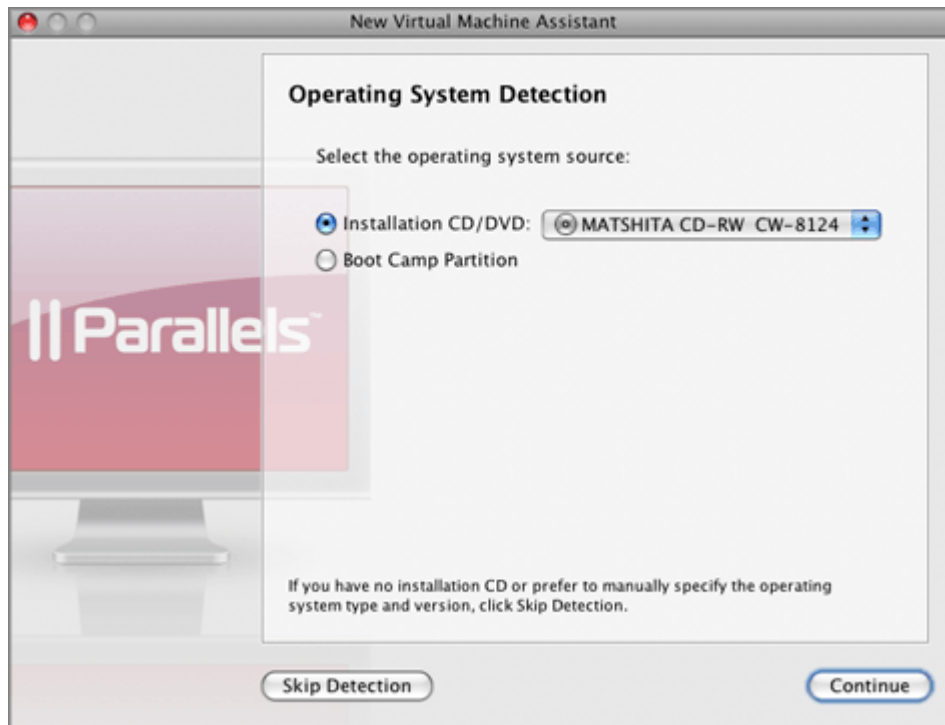
To create a new virtual machine:

- 1 Parallels Desktop will try to automatically determine the type and version of your operating system. In the **Operating System Detection** window, select the **Installation CD/DVD** option, specify the source of installation files, and click **Continue**. You can specify the following types of installation media:
 - A real CD/DVD drive. Click the **Installation CD/DVD** field, and select the real CD/DVD drive name from the list if you inserted the installation disc into the optical drive of your Mac. Click **Continue**, and go to Step 6.
 - A CD/DVD image file. Click the **Installation CD/DVD** field, and select the installation disc image from the list, or click **Choose an image file**, and locate the file on your Mac. Click **Continue**, and go to Step 6.

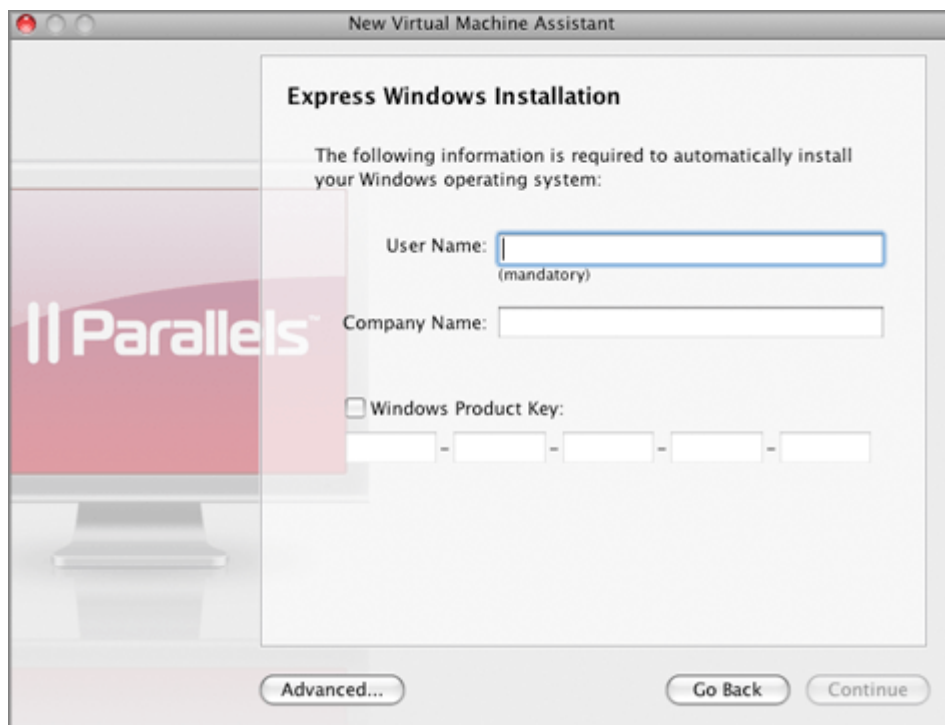
Note: Parallels Desktop supports the following types of image files: ISO, CUE, CCD, and DMG.

You can provide the OS installation disk later after the virtual machine creation. In this case, click **Skip Detection**, and go to the next step.

If you have the Boot Camp partition in your Mac and select the **Boot Camp Partition** option in this window, the assistant will proceed with the Boot Camp virtual machine creation. For detailed information, see [Creating a Virtual Machine for the Boot Camp Partition](#) (p. 258).



- 2 If you clicked **Skip Detection** on the previous step, select the type and version of the operating system you would like to install in the virtual machine in the **Select Operating System Type and Version** window. To proceed with the *Express Windows* mode, select the Windows type and one of the following versions: Windows 7, Windows Vista, Windows XP, Windows Server 2003. Click **Continue**.
- 3 In the **Virtual Machine Type** window, select the **Express Windows** mode.
- 4 In this window, specify the information necessary for the Windows guest OS installation.



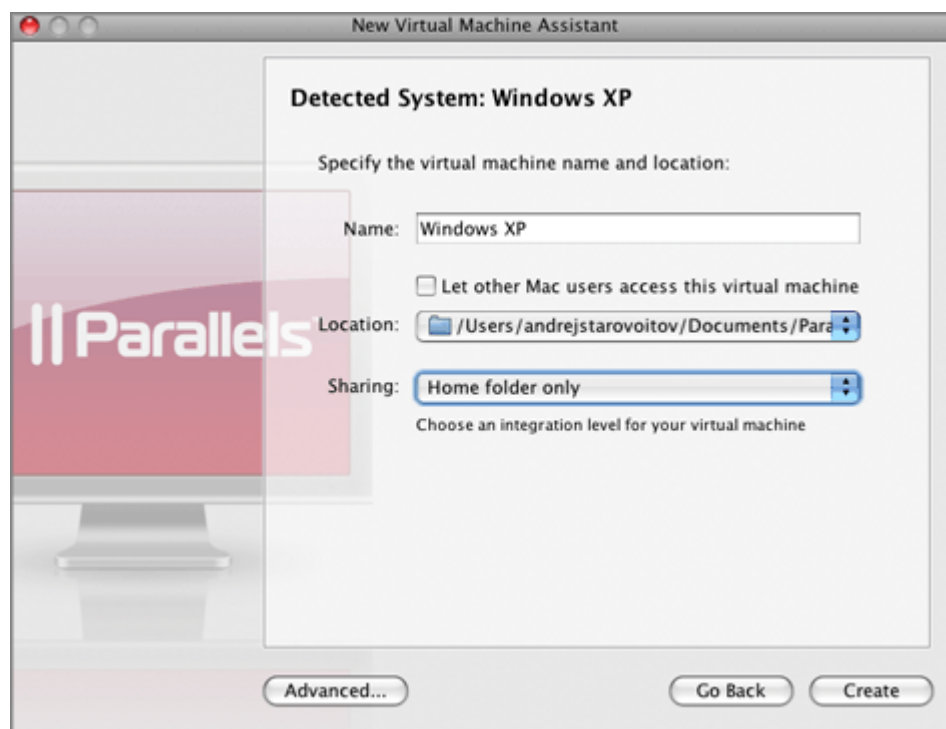
If you click the **Advanced** button, you can set the number of CPUs and the amount of RAM of your future virtual machine. Click **Continue**.

5 In this step, you should define the main parameters for your virtual machine:

6 In this step, define the main parameters for your virtual machine:

- **Name.** Indicate the name to be assigned to the virtual machine. By default, the virtual machine gets the name of the operating system that you selected to be installed in this virtual machine. If a virtual machine with this name already exists, you will be prompted to specify another name. The name must not exceed 50 characters.
- **Let other Mac users access this virtual machine.** Select this option if you want to share this virtual machine with other users of your Mac. In this case the virtual machine file (PVM file) will be saved in the `/Users/Shared` folder on your Mac.
- **Location.** In this field, specify the virtual machine files location.
- **Sharing.** Use this field to configure access to the disks and folders on the physical computer from inside the virtual machine. After the virtual machine creation, you can edit these settings in the **Shared Folders** pane (p. 180) of the Virtual Machine Configuration. If you click the **Advanced** button, you can set the number of CPUs and the amount of RAM of your future virtual machine.

If you click the **Advanced** button, you can set the number of CPUs and the amount of RAM of your future virtual machine.

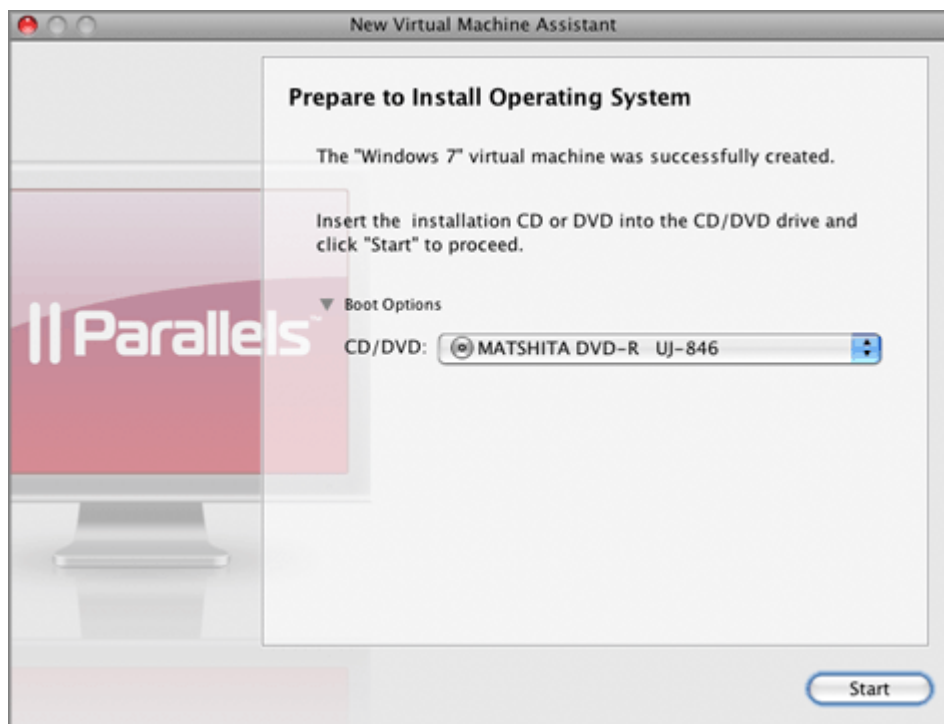


When finished, click **Create**. The assistant will create a blank virtual machine.

- 7 In the **Boot Options** section of the **Prepare to Install Operating System** window, provide the Windows installation disc or CD/DVD image if you have not done it yet. You can specify the following types of installation media:
- A real CD/DVD drive. Click the **CD/DVD** field and select the real CD/DVD drive name from the list if you inserted the installation disc into the optical drive of your Mac.
 - A CD/DVD image file. Click the **CD/DVD** field and select the installation disc image from the list, or click **Choose an image file** and locate the file on your Mac.

Click **Start** to start the guest operating system installation.

If you have already provided the Windows installation files, you can change the source of installation files in this window.



New Virtual Machine Assistant will install the guest operating system and Parallels Tools in your new virtual machine.

Note: If your copy of Parallels Desktop is not activated, you will be prompted to activate it when you click **Start**. For more information about the activation, see **Activating Parallels Desktop** (p. 20).

The newly created virtual machine will be accessible through the **Parallels Virtual Machines** list (p. 36) that allows you to easily manage your virtual machines.

During the unattended installation, Parallels Desktop creates an administrator account with a blank password. When the guest OS installation is complete, we recommend that you change the password in order to protect the safety of your data.

Changing the Administrator Password

To change the administrator password in Windows Vista, click the **Start** menu, then select **Control Panel > User Accounts and Family Safety > Change your Windows password**.

To change the administrator password in Windows XP (Professional Edition):

- 1 Click the **Start** menu, then select **Control Panel > Administrative Tools > Computer Management**.
- 2 In the **Computer Management** window, open **System Tools > Local Users and Groups > Users**. Right-click the **Administrator** account and choose **Set Password** from the context menu.

For changing the password in other versions of Windows, refer to the Microsoft Windows Help: **Start > Help and support**.

Express Linux Mode

Before creating a virtual machine in the *Express Linux* mode, make sure that you have an operating system installation disc or its image.

Note: Parallels Desktop doesn't provide you with the operating system installation discs and their images. You should purchase or get anyhow the Linux installation disc or its image if you do not have any.

To start New Virtual Machine Assistant, click the New button  in the Parallels Virtual Machines list.

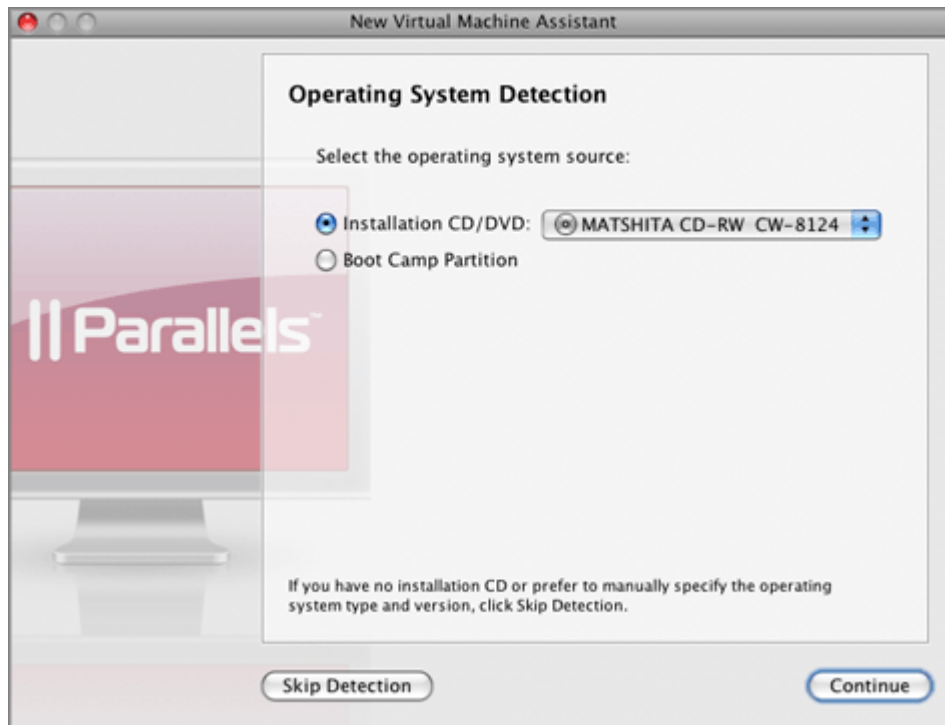
To create a new virtual machine:

- 1 Parallels Desktop will try to automatically determine the type and version of your operating system. In the **Operating System Detection** window, select the **Installation CD/DVD** option, specify the source of installation files, and click **Continue**. You can specify the following types of installation media:
 - A real CD/DVD drive. Click the **Installation CD/DVD** field, and select the real CD/DVD drive name from the list if you inserted the installation disc into the optical drive of your Mac. Click **Continue**, and go to Step 6.
 - A CD/DVD image file. Click the **Installation CD/DVD** field, and select the installation disc image from the list, or click **Choose an image file**, and locate the file on your Mac. Click **Continue**, and go to Step 6.

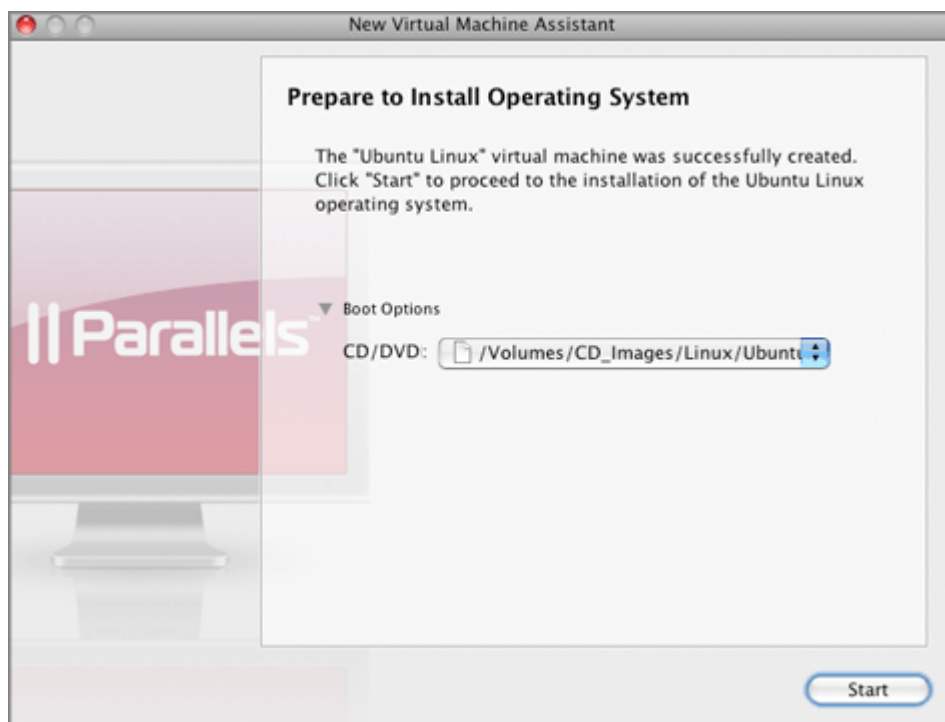
Note: Parallels Desktop supports the following types of image files: ISO, CUE, CCD, and DMG.

You can provide the OS installation disk later after the virtual machine creation. In this case, click **Skip Detection**, and go to the next step.

If you have the Boot Camp partition in your Mac and select the **Boot Camp Partition** option in this window, the assistant will proceed with the Boot Camp virtual machine creation. For detailed information, see **Creating a Virtual Machine for the Boot Camp Partition** (p. 258).



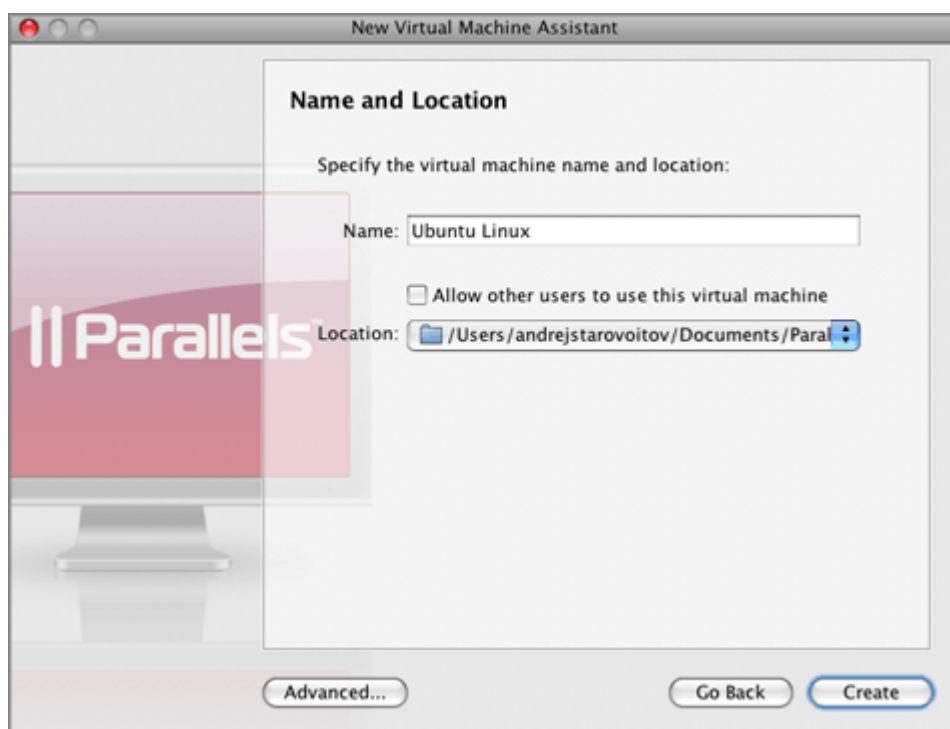
- 2 If you clicked **Skip Detection** on the previous step, select the type and version of the operating system you would like to install in the virtual machine in the **Select Operating System Type and Version** window. To proceed with the *Express Linux* mode, select the Linux type and version. In the *Express Linux* mode, the following versions are supported: Ubuntu Linux, Fedora Linux, Fedora Core 5 Linux, and Red Hat Enterprise Linux. When finished, click **Continue**.
- 3 In the **Virtual Machine Type** window, select the **Express Linux** mode.
- 4 In the **Express Linux Installation** window, specify the information necessary for the Linux guest OS installation.



If you click the **Advanced** button, you can set the number of CPUs and the amount of RAM of your future virtual machine. Click **Continue**.

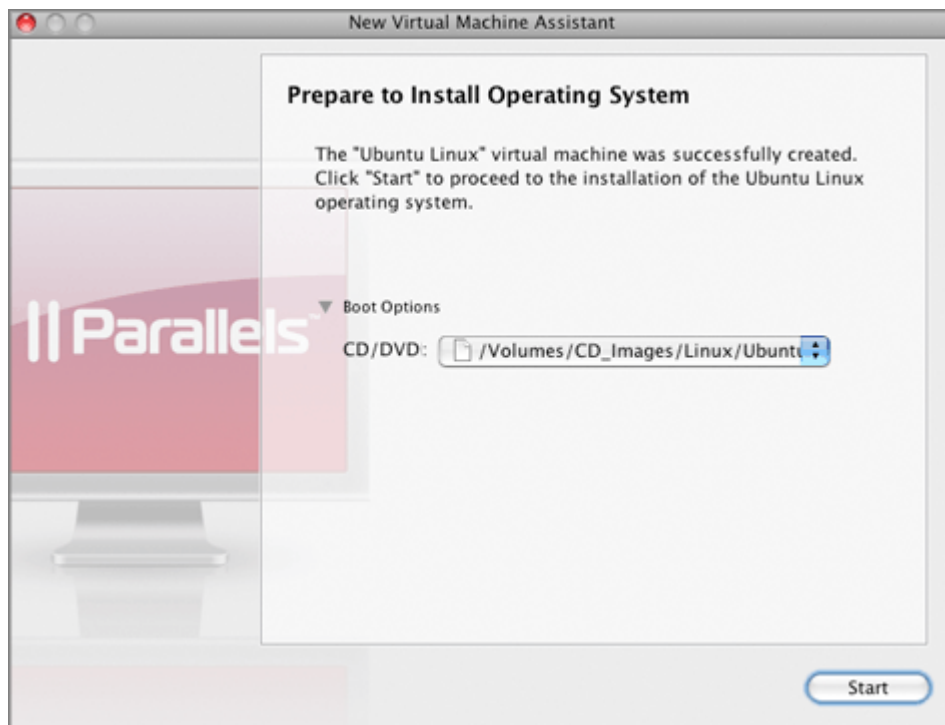
- 5 If you have not provided the guest operating system installation files on the second step of the assistant, the **Insert the installation CD ...** window will appear. In this window you should provide the guest operating system installation files. You can specify the following types of installation media:
 - A real CD/DVD drive. Click the **CD/DVD** field, and select the real CD/DVD drive name from the list if you inserted the installation disc into the optical drive of your Mac.
 - A CD/DVD image file. Click the **CD/DVD** field, and select the installation disc image from the list, or click **Choose an image file**, and locate the file on your Mac.
- 6 In the next step, you should define the main parameters for your virtual machine:
 - **Name.** Indicate the name to be assigned to the virtual machine. By default, the virtual machine gets the name of the operating system that you selected to be installed in this virtual machine. If a virtual machine with this name already exists, you will be prompted to specify another name. The name must not exceed 50 characters.
 - **Let other Mac users access this virtual machine.** Select this option if you want to share this virtual machine with other users of your Mac. In this case the virtual machine file (PVM file) will be saved in the `/Users/Shared` folder on your Mac.
 - **Location.** In this field, specify the virtual machine files location.

If you click the **Advanced** button, you can set the number of CPUs and the amount of RAM of your future virtual machine.



When finished, click **Create**. The assistant will create a blank virtual machine.

- 7 In the **Boot Options** section of the **Prepare to Install Operating System** window, you can change the OS installation files source if you want.



When finished, click **Start**. New Virtual Machine Assistant will install the guest operating system in your new virtual machine. When the installation is complete, install Parallels Tools if they are available for the guest OS you just installed.

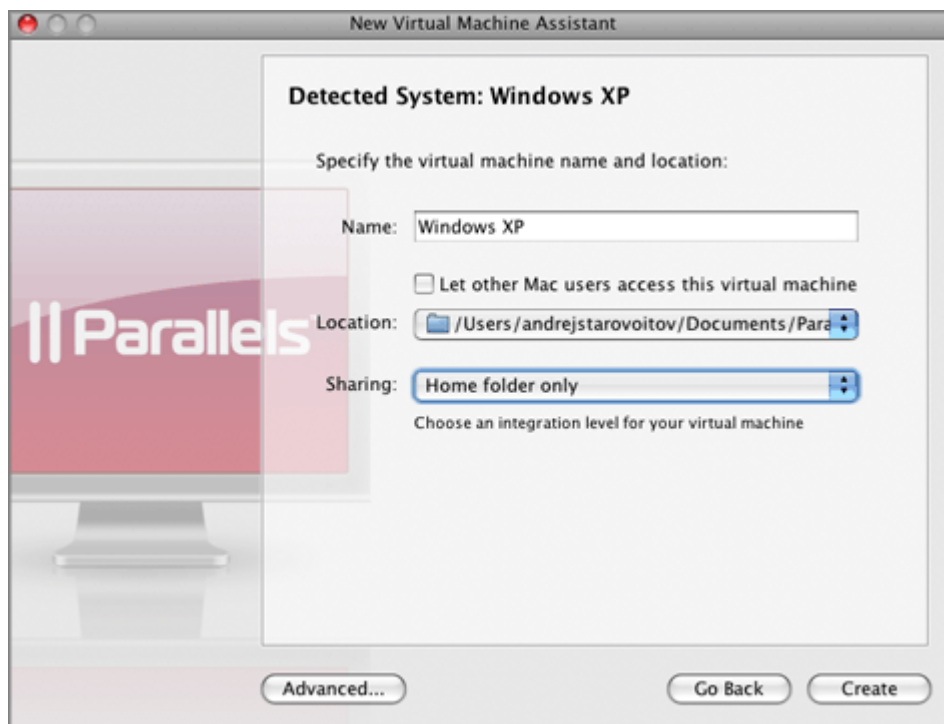
Note: If your copy of Parallels Desktop is not activated, you will be prompted to activate it when you click **Start**. For more information about the activation, see [Activating Parallels Desktop](#) (p. 20).

The newly created virtual machine will be accessible through Parallels Virtual Machine List (p. 36) that allows you to easily manage your virtual machines.

Typical Installation Mode

- 1 Start Parallels Desktop and launch New Virtual Machine Assistant by choosing **New Virtual Machine** from the **File** menu.
- 2 In the **Operating System Detection** window, click **Skip Detection**.
- 3 In the **Select Operating System Type and Version** window, select the guest OS you plan to install inside your virtual machine and click **Continue**.
- 4 In the **Virtual Machine Type** window, select **Typical** and click **Continue**.
- 5 In the **Name and Location** window, define the main parameters for your virtual machine:
 - **Name.** Indicate the name to be assigned to the virtual machine. By default, the virtual machine gets the name of the operating system that you selected to be installed in this virtual machine. If a virtual machine with this name already exists, you will be prompted to specify another name. The name must not exceed 50 characters.
 - **Let other Mac users access this virtual machine.** Select this option if you want to share this virtual machine with other users of your Mac. In this case, the virtual machine file (PVM file) will be saved in the `/Users/Shared` folder on your Mac.
 - **Location.** In this field, specify the virtual machine files location.
 - **Sharing** (for Windows virtual machines only). Use this field to configure access to the disks and folders on the physical computer from inside the virtual machine. After the virtual machine creation, you can edit these settings in the **Shared Folders** pane (p. 180) of the **Virtual Machine Configuration** dialog.

If you click the **Advanced...** button, you can set the number of CPUs and the amount of RAM of your future virtual machine.

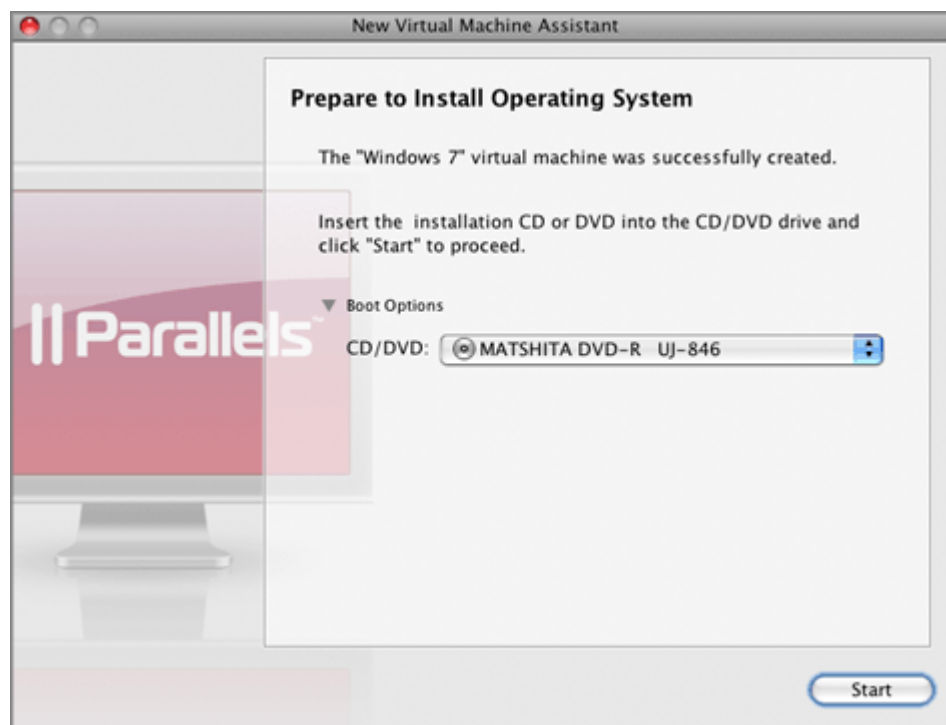


When finished, click **Create**. The assistant will create a blank virtual machine

- 6** After the virtual machine is created, in the **Prepare to Install Operating System** window, specify the source of installation files, and click **Start**. You can specify the following types of installation media:
- A real CD/DVD drive. Click the **CD/DVD** field, and select the real CD/DVD drive name from the list if you inserted the installation disc into the optical drive of your Mac.
 - A CD/DVD image file. Click the **CD/DVD** field, and select the installation disc image from the list, or click **Choose an image file**, and locate the file on your Mac.

Click **Start** to start the guest operating system installation. If you want to install the guest operating system later, click **Done**.

Note: Parallels Desktop does not provide users with OS ISO images or OS installation discs. You should purchase an OS installation disc or an OS ISO image if you do not have any.



Note: If your Mac OS version is Mac OS Leopard, and you want to use the F8 key when installing the Windows guest OS, refer to *Using F8 Key in Windows Virtual Machine on Mac OS X* (p. 276).

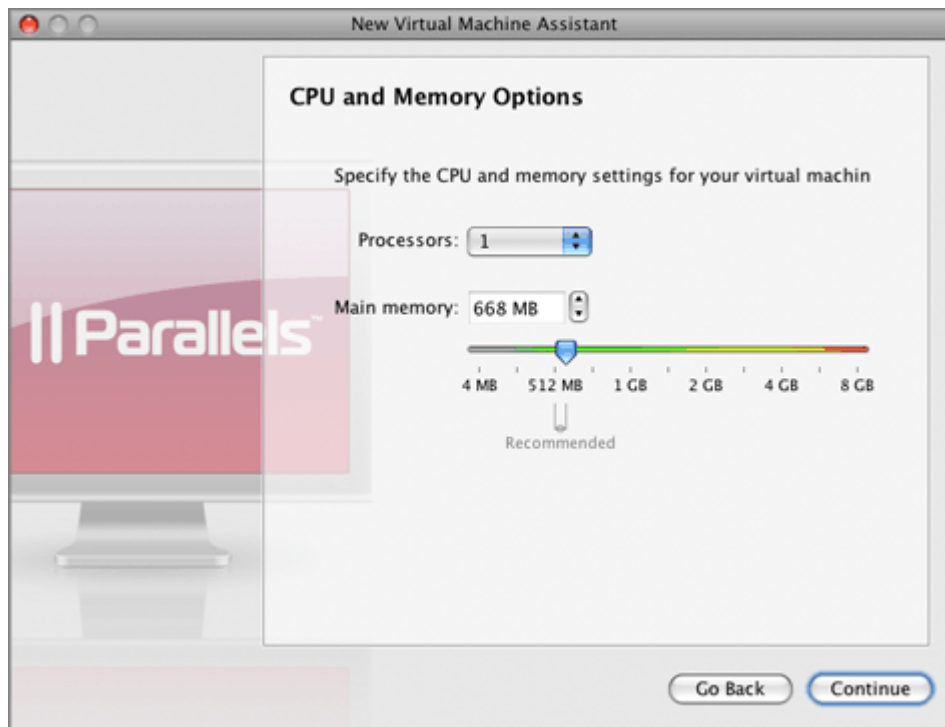
When the installation is complete, install Parallels Tools if they are available for the guest OS you just installed. Refer to the *Installing Parallels Tools* section (p. 97).

Custom Installation Mode

- 1 Start Parallels Desktop and launch New Virtual Machine Assistant by clicking **New Virtual Machine** from the **File** menu.
- 2 In the **Operating System Detection** window, click **Skip Detection**.
- 3 In the **Select Operating System Type and Version** window, select the type and version of the guest OS you want to install in this virtual machine and click **Continue**.

You can either select an operating system from the list or select **Other** in case you cannot find the required one there.

- 4 In the **Virtual Machine Type** window, select **Custom** and click **Continue**.
- 5 In the **CPU and Memory Options** window, specify the number of CPU(s) and amount of RAM for the virtual machine, and click **Continue**. You may use the slider or arrow buttons to set the value or simply type it into the corresponding field.



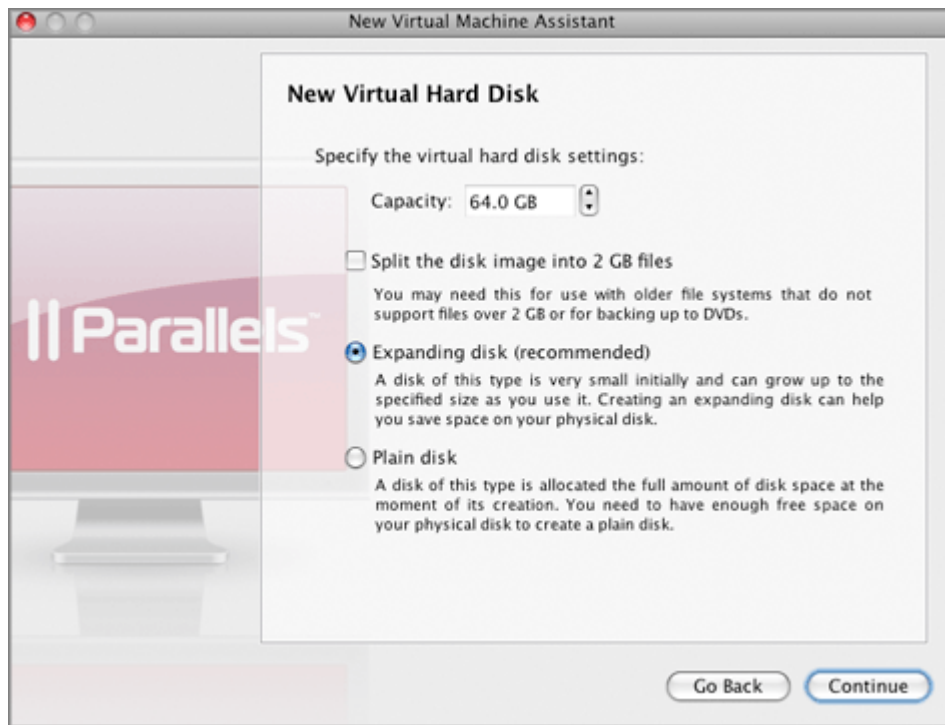
- 6 In the Hard Disk Options window, select the type of virtual hard disk you want to use and click **Continue**. You can create a new hard disk image, use an existing one or a Boot Camp partition, or create a virtual machine without any hard disk at all.

In the current version of Parallels Desktop, you can use your Boot Camp Windows Vista (SP1) or Windows XP (SP2 or SP3) partition as a bootable disk or as a data disk in virtual machines. For more information about using Boot Camp partition as a virtual hard disk for a virtual machine, see the *Using Boot Camp Partition in a Virtual Machine* chapter (p. 255).

- 7 If you have selected the No hard disk option, go to Step 9.

If you chose to create a new virtual hard disk in the previous step, in the **New Virtual Hard Disk** window, specify the size and type for the disk, and click **Continue**. For detailed information on virtual hard disks types, see *Support for Virtual and Real Disks* (p. 218).

If you have chosen to use an existing image file or a Boot Camp partition, in the next window, specify the hard disk image or Boot Camp partition to be connected correspondingly. Click **Continue**.



- 8** In the **Networking Type** window, select the type of networking you want to use in the virtual machine and click **Continue**.
- **Shared Networking.** If you select this option, the virtual machine will use the host computer's network connections and will be visible only for the host computer and other virtual machines registered on this server.
 - **Bridged Networking.** If you select this option, the virtual machine will be visible on the network as a separate computer.
 - **Host-Only Networking.** If you select this option, the virtual machine will access only the host computer and the virtual machines running on it.
 - **No Networking.** If you select this option, the virtual machine will have no network adapter.

Note: You may reconfigure the networking settings after the virtual machine is created, using the **Virtual Machine Configuration** dialog (p. 168).

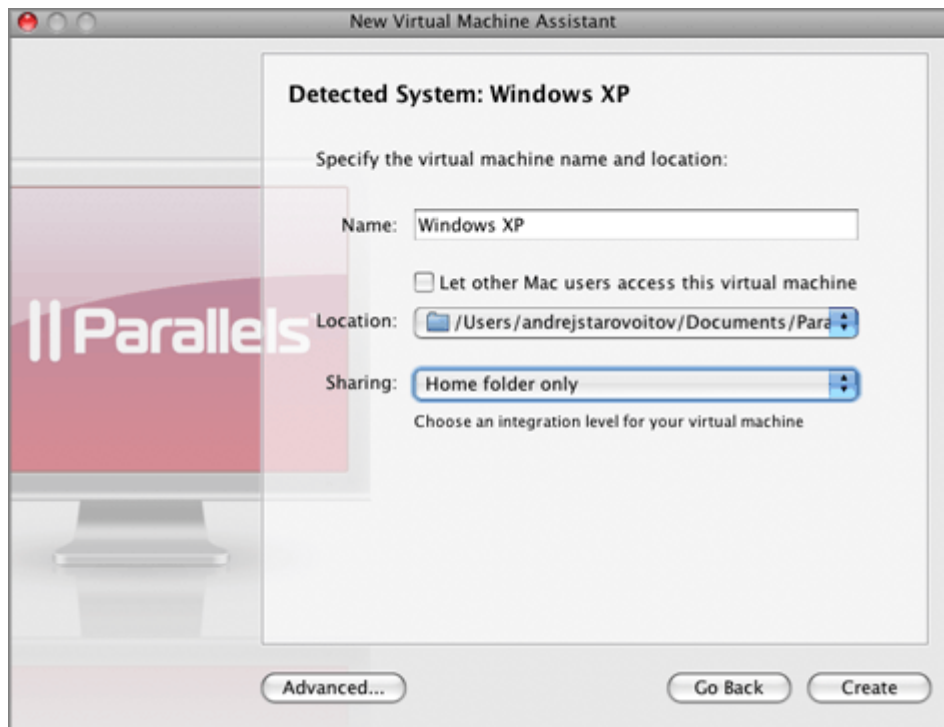
If you selected **Bridged Networking**, on the next step you will need to select the network adapter to be used by the virtual machine:

- **Default Adapter.** Select this option to use the adapter specified as default in the primary OS.
- **Ethernet.** Select this option to use the Ethernet adapter of your Mac.
- **AirPort.** Select this option to use the AirPort adapter of your Mac and be able to connect to wireless networks from your virtual machine.
- **Vnic0.** Select this option to use the virtual shared networking adapter installed together with Parallels Desktop.
- **Vnic1.** Select this option to use the virtual host-only networking adapter installed together with Parallels Desktop.

The host computer network adapters included in this list are also available for selecting. Select the **Connected** option if you want the virtual machine to start up with this network adapter connected.

- 9** In the **Optimization Options** window, select the optimization mode you prefer and click **Continue**. The available options are:
- **Virtual machine (Recommended).** Select this option to allocate more host computer resources to the virtual machine and its applications.
 - **Mac.** Select this option to allocate more resources to the host computer and its applications.
- 10** In the **Name and Location** window, define the main parameters for your virtual machine:
- **Name.** Indicate the name to be assigned to the virtual machine. By default, the virtual machine gets the name of the operating system that you selected to be installed in this virtual machine. If a virtual machine with this name already exists, you will be prompted to specify another name. The name must not exceed 50 characters.
 - **Let other Mac users access this virtual machine.** Select this option if you want to share this virtual machine with other users of your Mac. In this case the virtual machine file (PVM file) will be saved in the **/Users/Shared** folder on your Mac.
 - **Location.** In this field, specify the virtual machine files location.

- **Sharing** (for Windows virtual machines only). Use this field to configure access to the disks and folders on the physical computer from inside the virtual machine. After the virtual machine creation, you can edit these settings in the **Shared Folders** pane (p. 180) of the Virtual Machine Configuration.



When finished, click **Create**. The assistant will create a blank virtual machine.

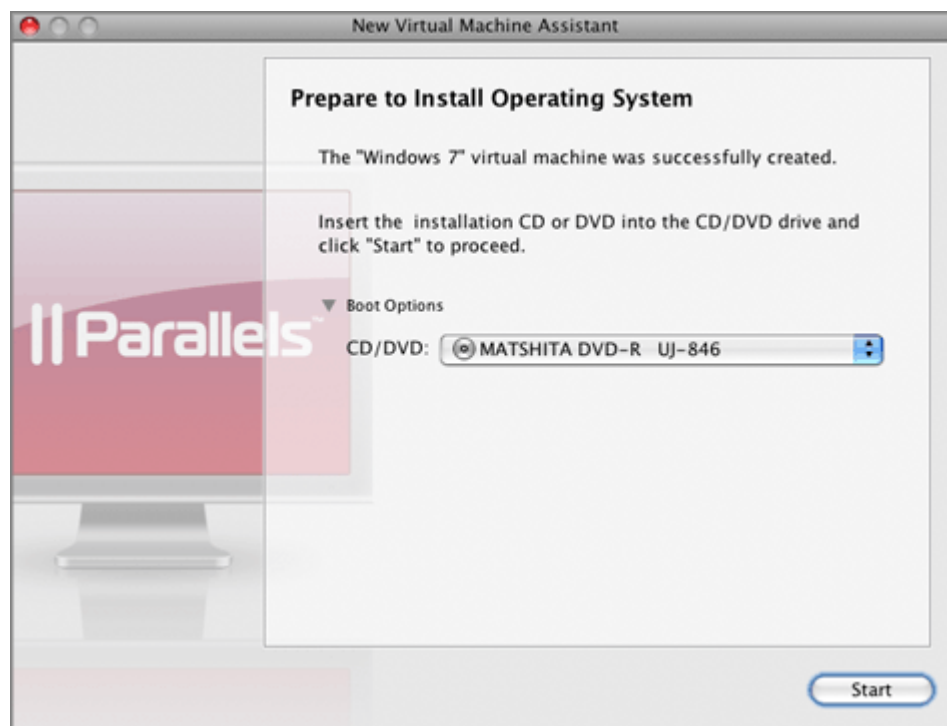
11 In the **Boot Options** section of the **Prepare to Install Operating System** window, provide the Windows installation disc or CD/DVD image. You can specify the following types of installation media:

- A real CD/DVD drive. Click the **CD/DVD** field, and select the real CD/DVD drive name from the list if you inserted the installation disc into the optical drive of your Mac.
- A CD/DVD image file. Click the **CD/DVD** field, and select the installation disc image from the list, or click **Choose an image file**, and locate the file on your Mac.

Click **Start** to start the guest operating system installation. If you want to install the guest operating system later, click **Done**.

If you have already provided the Windows installation files, you can change the source of installation files in this window.

Note: Parallels Desktop does not provide users with OS ISO images or OS installation discs. You should purchase an OS installation disc or an OS ISO image if you do not have any.



Note: If your Mac OS X version is Mac OS X Leopard, and you want to use the F8 key when installing the Windows guest OS, refer to [Using F8 Key in Windows Virtual Machine on Mac OS X](#) (p. 276).

When the installation is complete, install Parallels Tools if they are available for the guest OS you just installed. Refer to the [Installing Parallels Tools](#) section (p. 97).

Installing a Guest Operating System

You can install a guest operating system in a virtual machine from a CD or DVD disc, or from an image file of such a disc. Some operating systems are available on CD/DVD disc images only.

In some cases, the installation cannot be performed from a real CD/DVD disc because of disc reading problems. In such cases, it is recommended that you try to install the operating system from a CD/DVD disc image of this disc. ISO images of CD/DVD discs can be created using a third party imaging utility.

Note: MacBook Air users can install guest operating systems from CD/DVD disc images only.

Additionally, you can also install a guest operating system using a PXE server via network.

If you need to install an operating system from floppy disks, you can use images of installation diskettes or real diskettes inserted into an external USB floppy disk drive. Floppy disk images can be created using third-party applications.

Installing from a CD/DVD disc or its image

- 1 Open Parallels Desktop and select the virtual machine in the **Parallels Virtual Machines** list.
- 2 To connect the installation medium, open Virtual Machine Configuration by:
 - right-clicking the machine and choosing **Configure** from the shortcut menu, or
 - choosing **Configure** from the **Virtual Machine** menu.
- 3 Open the CD/DVD-ROM settings and configure the virtual CD/DVD-ROM drive settings.
 - If you are installing from a real CD/DVD:

Select the **Real Device** option and specify the real drive to connect in the **CD/DVD-ROM** list.

Insert the CD/DVD disc with the operating system files into the appropriate drive of the computer.
 - If you are installing from an image file:

Select the **Image file** option and specify the path to the image file in the **File** field.

Note: You can use ISO and DMG images for installing the guest operating system. CUE and CCD images may be also supported.

- 4 Click **OK** in Virtual Machine Configuration to save the changes.
- 5 Start your virtual machine by clicking **Start** .

The installation will launch soon after the virtual machine is started.

Note: When installing a Windows guest OS, you may need to press F8 or other function keys in a virtual machine. If you use MacBook or MacBook Pro keyboard, click inside the virtual machine window to capture the keyboard and mouse input and press Fn+F8 combination instead. You can configure Parallels Desktop to use any other key for performing the same action as F8 does. To release the keyboard and mouse input back to Mac OS X, press Ctrl+Alt. For more information, refer to [Keyboard and Mouse Preferences](#) (p. 53) and [Capturing and Releasing the Keyboard and the Mouse](#) (p. 121).

Installing from the network

- 1 Choose **Configure** from the **Virtual Machine** menu to open Virtual Machine Configuration.
- 2 Click the **Add** button  in the bottom part of the Virtual Machine Configuration dialog to launch Add Hardware Assistant.

Note: The **Add** button is disabled when the virtual machine is running. You need to shut down the virtual machine before you can use this button.

- 3 Add a network adapter to your virtual machine configuration.
- 4 Open the **Boot Order** pane in Virtual Machine Configuration and change the boot sequence to make the virtual network adapter the first device in the sequence. To this effect, select **Network Adapter** in the list and use the arrow buttons to move it to the top of the list.
- 5 Click OK to apply the changes.
- 6 Start the virtual machine by clicking **Start** .

Soon after your virtual machine is started, a list of available PXE servers appears.

During the installation, when the guest OS reboots for the first time, or after the installation, return the boot sequence to booting from the hard disk.

Installing from a floppy disk image

- 1 Select the virtual machine and make sure that it is stopped.
- 2 To connect the installation medium, open Virtual Machine Configuration by:
 - right-clicking the machine and choosing **Configure** from the shortcut menu, or
 - choosing **Configure** from the **Virtual Machine** menu.
- 3 Open the **Floppy Disk** pane and specify the path to the floppy image disk file in the **Image File** field.
- 4 Click OK to apply the changes
- 5 Start the virtual machine by clicking **Start** .

The installation will launch soon after the virtual machine is started.

Reinstalling the guest OS

The procedure of reinstalling the guest OS is the same as the procedure of installing the guest OS: provide the installation media or its image, connect it to the virtual machine, and start the virtual machine. The reinstallation will launch soon after the virtual machine is started.

Note: You can reinstall the guest OS of the same type only. However, you are free to choose the guest OS version.

Keep in mind that in some cases, it is easier just to create a new virtual machine, install the guest OS, and delete the old machine after moving all the necessary data to the new one.

Installing Parallels Tools

Parallels Desktop includes a set of specially developed utilities that help you use your virtual machines in the most comfortable and efficient way.

Parallels Tools are located on the disc images that are installed along with Parallels Desktop. There is a separate Parallels Tools disc image for each type of the supported guest operating systems.

- `prl-tools-win.iso` - disc image with Parallels Tools for Windows guest operating systems.
- `prl-tools-lin.iso` - disc image with Parallels Tools for Linux guest operating systems.
- `prl-tools-mac.iso` - disc image with Parallels Tools for Mac OS X Server Leopard.

These disc images can be found in the following location on your Mac: `/Library/Parallels/Tools/`.

Parallels Tools Overview

Parallels Tools are a suite of special utilities that help you use your virtual machines in the most comfortable and efficient way. With Parallels Tools, you can move the mouse seamlessly outside the guest OS window without pressing any key, change the virtual machine's screen resolution by simply resizing its window, synchronize your virtual machine's time and date settings with the time settings of the host computer, and share the host computer disks and folders with its virtual machines.

Parallels Tools include the utilities listed below. Many of these utilities are available for the most popular Windows, Linux, and Mac OS X operating systems, but some of them are available for the supported Windows and Linux operating systems only. All utilities supported by your guest OS are installed in your virtual machine as a single package when you install Parallels Tools.

Mouse Synchronization Tool	Windows, Linux, OS/2, Mac OS X	Mouse Synchronization Tool captures the mouse input in the virtual machine each time the pointer moves over to the guest OS window and automatically releases the input when the pointer moves out of the guest OS window.
Time Synchronization Tool	Windows, Linux, Mac OS X	Time Synchronization Tool enables you to customize your virtual machine and the host computer time settings. With this tool, you can: - Automatically synchronize the time settings of your virtual machine with the host computer time settings. - Set up and maintain the time difference between your host computer and the guest OS installed in your virtual machine.
Drag-and-Drop Tool	Windows	Drag-and-Drop Tool supports copying files between the guest operating systems and Mac OS X by the drag-and-drop method.
Clipboard Synchronization Tool	Windows, Linux, OS/2	Clipboard Synchronization Tool enables you to easily exchange texts between: - different virtual machines irrespective of the guest operating systems installed in them. - a virtual machine and your Mac. To copy and paste, you should use the standard procedure for the current operating system. For example, to copy some text in the Windows guest OS, select the text, and press Ctrl+C. To paste this text in Mac OS X, press Cmd+V, or select Paste from the shortcut menu.
Dynamic Resolution Tool	Windows, Linux, Mac OS X	Dynamic Resolution Tool enables you to work with dynamic resolution. When you resize the guest OS window by dragging its lower right corner, the guest OS window resolution changes automatically.
Shared Folders Tool	Windows, Linux, Mac OS X	Shared Folders Tool enables you to share the primary OS folders to access them from the guest OS. With this tool, you can access the host computer shared folders from the virtual machine.

Coherence Tool	Windows	The Coherence tool hides your Windows virtual machine's window leaving only the virtual machine's applications windows visible side-by-side with your Mac OS X applications. This tool enables you to work in Windows applications coherently with your Mac OS X applications.
Shared Profile Tool	Windows	Shared Profile Tool enables you to map some of the folders in your Mac home folder to your user folders in the virtual machine, which allows you to access your Mac home folders right from your virtual machine.
Shared Applications Tool	Windows	Shared Applications Tool enables you to specify default applications, including those installed in the virtual machine, for different types of files. With this tool, you can make some types of files open in the Mac OS X applications by default, and others in the Windows applications by default.
Shared Internet Applications Tool	Windows	Shared Internet Applications Tool enables you to specify default Internet browsers, including those installed in the virtual machine, for different types of Internet pages. For example, you may set the <code>http</code> pages to open in your default Mac OS X Internet browser, and <code>ftp</code> pages to open in the Internet browser installed in your virtual machine.

After the Parallels Tools installation, the following features are available for settings up in Parallels Desktop.

SmartMount	Windows, Linux, Mac OS X	SmartMount enables the automatic detection and mounting of removable devices in your virtual machines.
------------	--------------------------------	--

Parallels Tools can be installed in the following Windows guest operating systems:

- Windows Server 2008
- Windows Vista
- Windows XP
- Windows Server 2003
- Windows 2000

Note: If Parallels Tools are not installed in the aforementioned Windows guest operating systems, the virtual machines with these guest OSs will not get connected to the network.

Parallels Tools can be installed in Linux guest operating systems that comply with the following requirements:

- glibc 2.3.4 and later
- libstdc++ 3.4.6 and later (libstdc++.so.6)
- gcc 3.4.6 and later (including C++ support)
- make 3.80
- X Window System X11R6.7, X11R6.8, X11R6.8.99, X11R7.0, X11R7.1, X11R7.2 (1.3), X11R7.3 (1.4)

- kernel sources or development package

Note: Some of Parallels Tools, like Shared Folders Tool and Time Synchronization Tool, may also work in those of the Linux operating systems that do not comply with the requirements listed above.

Parallels Tools can be installed in the following Mac OS X guest operating systems:

- Mac OS X Leopard Server 10.5.x

In a Windows guest OS

If you created your virtual machine using the *Express Windows* mode, Parallels Tools were installed automatically after the installation of the Windows guest operating system.

If your virtual machine was created in the *Typical* or *Custom* mode, do the following to install Parallels Tools in it:

- 1 Start the virtual machine and log in to the guest operating system.
- 2 When the guest OS boots up, connect the Parallels Tools ISO image by choosing the **Install Parallels Tools** option from the **Virtual Machine** menu.

Note: If the **Install Parallels Tools** option is grayed out, make sure that Parallels Tools can be installed in your guest operating system. To see the list of guest OSs supported by Parallels Tools, refer to the **Parallels Tools Overview** section in **Parallels Desktop Help** available through the **Help** menu.

- 3 In the **Welcome** window, click **Install**. The wizard will start the automatic installation.
- 4 When the installation is complete, click **Reboot** to exit the wizard and restart the virtual machine.

You can also install Parallels Tools manually:

- 1 Start the virtual machine and log in to the guest OS.
- 2 Connect the Parallels Tools ISO image by right-clicking the CD/DVD drive icon in the virtual machine's window status bar and choosing **Connect Image**.
- 3 In the **Finder** window, go to the hard disk folder (normally named "Macintosh HD"), select the `/Library/Parallels/Tools/` folder, select the `prl-tools-win.iso` file, and click **Open** to connect it to the virtual machine.

Note: If you cannot find the `/Library/Parallels/Tools/` folder, make sure that you selected the **Library** folder at the highest level of Macintosh HD, not in your user home folder.

- 4 In the virtual machine, open **My Computer** and double-click the **Parallels Tools** disc icon to start the installation. If the installation wizard does not launch automatically, right-click the disc, choose **Open** from the shortcut menu, and double-click `Setup.exe` to launch the installer.
- 5 Follow the wizard's instructions to complete the installation.

To edit the settings of Parallels Tools installed in your virtual machine, use the **Services** pane of the **Virtual Machine Configuration** dialog.

Reinstalling Parallels Tools

To reinstall Parallels Tools, start your virtual machine, and select **Reinstall Parallels Tools** from the **Virtual Machine** menu. This option is available only if Parallels Tools are up-to-date. If Parallels Tools are outdated, you will see the **Update Parallels Tools** option instead.

How to check if Parallels Tools are installed

If you are not sure whether Parallels Tools are installed, you can easily check this. Start your virtual machine and look at the status bar of its window: if the tip **"Press Ctrl + Alt to release the mouse and keyboard"** appears in the status bar of the virtual machine's window, this means that Parallels Tools are not installed. When Parallels Tools are installed, you do not need to press any key to release the mouse and keyboard - they are released automatically.

In a Linux guest OS

Before installing Parallels Tools in a Linux guest OS, perform the following actions:

- Close all applications in the guest operating system.
- Disable the 3D accelerated window manager if you use any.
- Make sure that you have the gcc package and kernel sources installed. If these packages are not installed, the Parallels Tools installer will inform you about this. The kernel sources package name depends on the type of Linux operating system you use: it can be `kernel-devel`, or `kernel-headers`, or something else. For more information about the kernel sources, refer to the Installing the GCC package and Kernel Sources in Linux (p. 278) section.

Note: To install Parallels Tools in your virtual machine, you must have the `root` privileges.

Installing Parallels Tools in the most recent versions of Linux guest OSs

If you have one of the most recent versions of Linux OSs (Ubuntu, Fedora) in your virtual machine, the `prl-tools-lin.iso` image file will be mounted automatically after you connect it to the CD/DVD drive. To install Parallels Tools, do the following:

- 1 Start the virtual machine.
- 2 When the guest OS boots up, click the **Virtual Machine** menu and choose **Install Parallels Tools**.

Note: If the **Install Parallels Tools** option is grayed out, make sure that Parallels Tools can be installed in your guest operating system. To see the list of guest OSs supported by Parallels Tools, refer to the **Parallels Tools Overview** section in *Parallels Desktop User's Guide*.

The `prl-tools-lin.iso` image file will be connected to the virtual machine's CD/DVD drive and mounted.

You can connect and mount the Parallels Tools ISO image file manually. Right-click the CD/DVD drive icon in the virtual machine's window status bar and choose **Connect Image**. In the Finder window, go to the hard disk folder (normally named "Macintosh HD"), select the `/Library/Parallels/Tools/` folder, select the `prl-tools-lin.iso` file, and click **Open** to connect it to the virtual machine.

- 3 Start a terminal in your Linux guest OS. Type the following command to gain the `root` privileges:

```
su
```

- 4 Change the directory to the CD/DVD drive directory using

```
cd /media/cdrom/
```

Note: In some of the Linux operating systems, the mount point for the virtual CD/DVD drive may appear as `/media/Parallels\ Tools/`.

- 5 In the CD/DVD drive directory, enter the following command to launch Parallels Tools installation:

```
./install
```

- 6 Follow the Parallels Tools Installer instructions to complete the installation.
- 7 When the installation of Parallels Tools is complete, restart your virtual machine.

Installing Parallels Tools in other versions of Linux guest OSs

To install Parallels Tools in the older versions of Linux OSs, you have to mount the `prl-tools-lin.iso` image file manually. Do the following:

- 1 Start the virtual machine.
- 2 When the guest OS boots up, click the **Virtual Machine** menu and choose **Install Parallels Tools**.

Note: If the **Install Parallels Tools** option is grayed out, make sure that Parallels Tools can be installed in your guest operating system. To see the list of guest OSs supported by Parallels Tools, refer to the **Parallels Tools Overview** section in *Parallels Desktop User's Guide*.

The `prl-tools-lin.iso` image file will be connected to the virtual machine's CD/DVD drive.

- 3 Start a terminal in your Linux guest OS. Type the following command to gain the `root` privileges:

```
su
```

- 4 Check if the Parallels Tools CD image is mounted by entering

```
mount | grep iso9660
```

If this command does not return anything, proceed to the next step.

If this command returns anything like

```
/dev/cdrom on /media/cdrom type iso9660 (ro,exec,nosuid,nodev,uid=0),
```

skip the next step and proceed to the following one.

If this command returns anything like

```
/dev/cdrom on /media/cdrom type iso9660 (ro,noexec,nosuid,nodev,uid=0)
```

with the `noexec` option present in parentheses, you need to unmount the disc using the following command and then proceed to the next step:

```
umount /dev/cdrom
```

- 5 To mount the Parallels Tools installation disc image, enter the following:

```
mount -o exec /dev/cdrom /media/cdrom
```

Note: `/dev/cdrom` is the virtual machine's CD/DVD drive and `/media/cdrom` is the mount point for this device. In some of the Linux operating systems the virtual CD/DVD drive may appear as `/dev/hdb` and the mount point `/mnt/cdrom`. Some Linux OSs do not have the CD/DVD drive mount point. In this case, you should create the mount point directory manually.

- 6 When the installation disc image is mounted, change the directory to the CD/DVD drive directory using

```
cd /media/cdrom/
```

- 7 In the CD/DVD drive directory, enter the following to launch Parallels Tools installation:

```
./install
```

Note: You must have the `root` privileges to run this command.

- 8 Follow the Parallels Tools Installer instructions to complete the installation.
- 9 When the installation of Parallels Tools is complete, restart your virtual machine.

Note: If X Server fails to start in your virtual machine, you can install Parallels Tools manually in text mode (p. 277).

To edit the settings of Parallels Tools installed in your virtual machine, use the **Services** pane of the Virtual Machine Configuration dialog.

Reinstalling Parallels Tools

To reinstall Parallels Tools, remove them (p. 111) first, and then install them again using the above procedure.

How to check if Parallels Tools are installed

If you are not sure whether Parallels Tools are installed, you can easily check this. Start your virtual machine and look at the status bar of its window: if the tip "Press Ctrl + Alt to release the mouse and keyboard" appears in the status bar of the virtual machine's window, this means that Parallels Tools are not installed. When Parallels Tools are installed, you do not need to press any key to release the mouse and keyboard - they are released automatically.

Troubleshooting

Parallels Tools installer can be blocked by SELinux. To solve this problem:

- 1 Start a terminal and determine your version of kernel by entering

```
uname -r
2.6.18-8.el5
```

2.6.18-8.el5 is the version of your kernel.

- 2 Open the `/boot/grub/grub.conf` file or `/boot/grub/menu.lst` (depends on the version of your Linux operating system) and find the entry that corresponds to your version of kernel.

```
title Red Hat Enterprise Linux Server (2.6.18-8.el5)
    root (hd0,0)
    kernel /vmlinuz-2.6.18-8.el5 ro root=/dev/VolGroup00/LogVol00 rhgb quiet
    initrd /initrd-2.6.18-8.el5.img
```

- 3 Type the following text at the end of the entry:

```
selinux=0
```

and the whole entry will be:

```
kernel /vmlinuz-2.6.18-8.el5 ro root=/dev/VolGroup00/LogVol00 rhgb quiet
selinux=0
```

- 4 Save the file and restart the virtual machine.

After the restart, mount the Parallels Tools disc image and try to install Parallels Tools.

In Mac OS X

To install Parallels Tools in Mac OS X Server Leopard:

- 1 Start the virtual machine, and log in to the guest OS.
- 2 When the guest OS boots up, connect and mount the Parallels Tools ISO image file by choosing the **Install Parallels Tools** option from the **Virtual Machine** menu.

Note: If the **Install Parallels Tools** option is greyed out, make sure that Parallels Tools support your guest operating system. To view the list of guest OSs which are supported by Parallels Tools, refer to the **Parallels Tools Overview** subsection of *Parallels Desktop User's Guide*.

You can connect and mount the Parallels Tools ISO image file manually. Right-click the CD/DVD-ROM icon in the virtual machine's window status bar and choose **Connect Image**. In the Finder window, go to the hard disk folder (normally named "Macintosh HD"), select the `/Library/Parallels/Tools/` folder, select the `prl-tools-mac.iso` file, and click **Open** to connect it to the virtual machine.

- 3 Open the mounted image of the disk and double-click the **Guest OS Tools For Mac OS X** icon to start the installation.
- 4 In the **Welcome** window, click **Continue**.
- 5 In the **Select a Destination** window, specify the location for Parallels Tools. Click **Continue**.
- 6 In the **Standard Install on "Macintosh HD"** window, if you need to set a different location for Parallels Tools, you can do it by clicking **Change Install Location**. Click **Install** to continue the installation. Type the password when prompted.

In the **Installation** window, you can see the process of Parallels Tools being installed in your virtual machine.

- 7 When the installation is complete, click **Restart** to exit the assistant and restart your virtual machine.

To edit the settings of Parallels Tools installed in your virtual machine, use the **Services** pane of the **Virtual Machine Configuration** dialog.

Reinstalling Parallels Tools

To reinstall Parallels Tools, remove them (p. 111) first, and then install them again using the above procedure.

How to check if Parallels Tools are installed

If you are not sure whether Parallels Tools are installed, you can easily check this. Start your virtual machine and look at the status bar of its window: if the tip **"Press Ctrl + Alt to release the mouse and keyboard"** appears in the status bar of the virtual machine's window, this means that Parallels Tools are not installed. When Parallels Tools are installed, you do not need to press any key to release the mouse and keyboard - they are released automatically.

In OS/2 and eComStation Guest OSs

All of the OS/2 and eComStation tools can be installed from the `prl-tools-other.iso` CD image. Network drivers can also be installed from the `prl-tools-os2.fdd` floppy disk image file during the operating system installation. The latter is easier in most cases.

Before starting the installation you should connect the CD image with Parallels Tools to your virtual machine's CD/DVD drive. Choose **Install Parallels Tools** from the **Virtual Machine** menu.

Mouse Synchronization Tool Installation

Mouse Synchronization Tool consists of the mouse driver and video filter.

Note: To install Mouse Synchronization Tool, you should have a VESA video driver installed (e.g. SDD or GENGRADD). For instructions on how to install this video driver, refer to the OS/2 documentation.

To install Mouse Synchronization Tool:

- 1 Click the **Drives** icon on the system panel. Select the CD/DVD drive and locate the `<CD-ROM drive>\Drivers\Mouse\OS2` directory.

Note: When installing the driver on eComStation 1.2, go to the `<CD-ROM drive>\Drivers\Mouse\ECS12` directory.

- 2 Launch the `INSTALL.CMD` batch file. `INSTALL.CMD` copies files and makes necessary modifications to the `CONFIG.SYS` file.
- 3 Restart the guest OS/2 operating system.

Clipboard Synchronization Tool Installation

In OS/2 and eComStation you have to launch Clipboard Synchronization Tool manually. This tool is an ordinary application and should be treated as such. If you want Clipboard Synchronization Tool to start automatically when your guest operating system is started, copy the `PrlClip.exe` tool file to the virtual machine's hard disk and include it into the autostart group (`startup.cmd` file or another file used in the guest operating system for similar purposes).

Clipboard Synchronization Tool is located in the `<CD-ROM drive>\ClipBrd\OS2` directory on the CD image containing Parallels Tools.

Sound Driver Installation

Before installing Sound Driver, make sure you have the multimedia support installed in the OS/2 guest OS.

To install Sound Driver:

- 1 Click the **System Setup** icon on the system panel.
- 2 Select **Install/Remove** line and then select **Multimedia Application Install**.

- 3** In the IBM Multimedia Presentation Manager/2 - Installation window choose the CD/DVD drive, then the <CD-ROM drive>\Drivers\Sound\OS2 directory. Select the ALC Codec feature and click the Install button.
- 4** Restart the OS/2 guest operating system.

Network Driver Installation

To install Realtek RTL8029 driver inside the OS/2 Warp version 4.5:

- 1** Click the System Setup icon on the system panel.
- 2** Click the MPTS Network Adapters and Protocol Services icon to open the Multi-Protocol Transport Services window.
- 3** Click Configure.
- 4** In the window that appears, click Configure again.
- 5** In the Adapter and Protocol Configuration window, click the Other adapters button below the Network Adapters section.
- 6** In the Copy Additional Network Adapter Drivers window specify the path to the Parallels driver on the CD disc image. The path will be like the one below:
`<CD-ROM drive>\Drivers\Network\RTL8029\NDIS20S2`
- 7** Click OK. The Parallels network adapter driver will be copied. After this you can see the name RTL8029 PCI Ethernet Adapter included in the Network Adapters list. Select this name.
- 8** Click Change in the Network Adapters section of the window to replace the current network adapter by the selected one.
- 9** Click OK when the message "Are you sure you want to change this network adapter?" is displayed. After you click OK, the RTL8029 PCI Ethernet Adapter appears in the appropriate field of the Current Configuration section of the window. Now if you click Edit in the Current Configuration section of the window, you will see that you do not need to configure any properties for this driver, because it is self-configurable.
- 10** Click OK when finished.
- 11** Close both the Configure and Multi-Protocol Transport Services windows.
- 12** Click Exit in the Update CONFIG.SYS window.
- 13** Exit the configuration program and restart the guest OS.

Updating Parallels Tools

The procedure of updating Parallels Tools depends on the guest operating system they are installed in.

In a Windows guest OS

Parallels Desktop automatically checks for new Parallels Tools updates when you start your virtual machine.

If a newer version of Parallels Tools is available, you will see the corresponding message offering you to download and update the tools. Click **Yes** to download Parallels Tools from the Parallels Update server and install them into your virtual machine. Updating will start right after the download finishes and will prompt you to restart the virtual machine when it is complete.

If you do not want to update Parallels Tools or want to do it later, click **No**. You will be able to update them later by using the **Update Parallels Tools** option from the **Virtual Machine** menu.

Note: If you revert to a snapshot that was made when you had an earlier version of Parallels Tools in your virtual machine, you will also be offered to update them.

If Parallels Tools are up-to-date but you want to reinstall them, select the **Reinstall Parallels Tools** option from the **Virtual Machine** menu.

In a Linux guest OS

Before updating Parallels Tools, you should perform the following actions:

- Close all applications in the guest operating system.
- Disable the 3D accelerated window manager if you use any.

In Linux guest operating systems, you should manually check for Parallels Tools updates from time to time.

To update Parallels Tools:

- 1** Start the virtual machine.
- 2** To update Parallels Tools, you should mount the `prl-tools-lin.iso` image and launch Parallels Tools Installer. See **Installing Parallels Tools in a Linux Guest OS** (p. 103) for detailed information how you can do it.
- 3** Follow the Parallels Tools Installer instructions. When prompted to choose the action to perform, select **Update** and press Enter.
- 4** When the updating is complete, restart your virtual machine.

In Mac OS X Server Leopard

In Mac OS X guest operating systems, you should manually check for Parallels Tools updates from time to time.

To install Parallels Tools

- 1** Start the virtual machine.
- 2** When the guest OS boots up, choose **Install Parallels Tools** from the **Virtual Machine** menu of **Parallels Desktop**.
- 3** This will connect the `prl-tools-mac.iso` image to your virtual machine's CD/DVD-ROM.
- 4** Open the **Parallels Tools CD-ROM** mounted on the virtual machine's desktop and double-click the **Install** icon.
- 5** In the **Welcome** window, click **Continue**.
- 6** In the **Select a Destination** window, specify the disk for Parallels Tools to be installed to and click **Continue**.
- 7** In the **Standard Install on "Macintosh HD"** window, click **Install**. Specify your name and password when prompted.

When the updating is complete, click **Restart** to quit the installer and restart your virtual machine.

Removing Parallels Tools

Parallels Tools can be removed through a general procedure of removing applications from the operating system installed in your virtual machine.

Removing from a Windows guest OS

- 1 Start the virtual machine and log in to the guest OS.
- 2 From the Windows Start menu, choose Control Panel > Add or Remove Programs. In Windows Vista, choose Control Panel > Programs and Features.
- 3 Select Parallels Tools in the list and click Remove.
- 4 When Parallels Tools are removed, restart the guest operating system.

Removing from a Linux guest OS

Perform the following actions before removing Parallels Tools:

- Close all applications in the guest operating system.
- Disable the 3D accelerated window manager if you use any.

To remove Parallels Tools:

- 1 Start the virtual machine.
- 2 To remove Parallels Tools, you should connect and mount the `prl-tools-lin.iso` image and launch Parallels Tools Installer. See *Installing Parallels Tools in a Linux Guest OS* (p. 103) for detailed information how you can do it.
- 3 Follow the Parallels Tools Installer instructions. When prompted to choose the action to perform, select **Remove** and press Enter.
- 4 When Parallels Tools are successfully removed, press Enter to close the window.

Removing from Mac OS X Server Leopard

- 1 Start the virtual machine, and log in to the guest OS.
- 2 To remove Parallels Tools, you should connect and mount the `prl-tools-mac.iso` image and launch Parallels Tools Installer. See *Installing Parallels Tools in Mac OS X* (p. 106) for detailed information how you can do it.
- 3 Open the mounted image of the disc and double-click the Uninstall Parallels Tools icon to start the uninstallation.
- 4 In the Welcome window, click Uninstall. Enter the password when prompted.
- 5 In the Uninstallation window, you can see the process of Parallels Tools being removed from your virtual machine.
- 6 In the Uninstallation Completed window, click Restart to finish the uninstallation and quit the assistant.

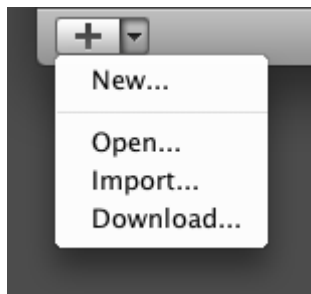
Adding an Existing Virtual Machine

If you already have a virtual machine stored on your Mac, but it is missing from the **Parallels Virtual Machines** list (p. 36), you can easily add it by opening its PVM file in Parallels Desktop.

Parallels Desktop 5 enables you to work with your virtual machines created in Parallels Desktop and other virtualization products, including VMware Fusion, Microsoft Virtual PC, and VirtualBox. All you need is to convert them to Parallels Desktop 5 format. The converting is performed when you add these virtual machines to Parallels Desktop.

To add a virtual machine that already exists on your Mac:

- 1 Click **Open** in the **File** menu, or click the down arrow button  at the lower left corner of the **Parallels Virtual Machines** list (p. 36), and choose **Open** from the menu.



- 2 In the Finder window, locate the virtual machine bundle or configuration file, select it, and click **Open**.
 - Parallels Desktop virtual machine bundle has the `.pvm` extension.
 - Parallels Desktop 3 and earlier configuration file has the `.pvs` extension.
 - VMware configuration file has the `.vmx` extension.
 - Virtual PC configuration file has the `.vmc` extension.
 - VirtualBox configuration file has the `.xml` extension.

Note: Parallels Desktop and VMware Fusion virtual machines may be stored in Mac OS X as bundles of files. The configuration file is stored inside the virtual machine bundle.

- 3 The next step depends on the virtual machine you selected:
 - If you selected a virtual machine created in Parallels Desktop 4 or 5, its window will open. When you start this virtual machine, Parallels Desktop will offer you to update Parallels Tools.
 - If you selected a virtual machine created in Parallels Desktop 3 or earlier, its window will open, and Parallels Desktop will offer you to convert it to the new format. This process may require significant time.
 - If you selected a third-party virtual machine, Parallels Transporter will launch to guide you through the steps of converting this virtual machine to the Parallels Desktop 5 format. For detailed information, see *Parallels Transporter User's Guide*.
- 4 If you added a virtual machine created in the previous version of Parallels Desktop or a third-party application (VMware Fusion, Microsoft Virtual PC, or VirtualBox), you need to install Parallels Tools in it (p. 97).

Additionally, to add a Parallels virtual machine to Parallels Desktop 5, you can simply locate its `.pvm` bundle or `.pvs` configuration file, and drag it to the **Parallels Virtual Machines** list (p. 36).

If your copy of Parallels Desktop is not activated, you will be prompted to activate it when the virtual machine is added to Parallels Desktop 5. For more information about the activation, see **Activating Parallels Desktop** (p. 20).

Importing Physical Computers and Virtual Machines

Apart from creating a new virtual machine from scratch with the help of New Virtual Machine Assistant (p. 77, p. 33), you can create it through migration using Parallels Transporter.

Parallels Transporter enables you to migrate selected volumes or the whole of a physical computer or a VMware, Microsoft Virtual PC, and VirtualBox virtual machine into a Parallels virtual machine or Parallels virtual disk. Depending on what kind of computer you want to migrate, you can choose among several migration scenarios. For the detailed description and functions of these scenarios, refer to *Using Parallels Transporter* (p. 263) or to *Parallels Transporter User's Guide*.

To create a new virtual machine through migration:

- 1 Launch Parallels Desktop.
- 2 From the **File** menu of Parallels Desktop, choose **Import**. Parallels Transporter opens.

Note: You can also open Parallels Transporter from the following location: `/Applications/Parallels`.

- 3 Follow the assistant's instructions. It will help you choose the migration scenario and will guide you through the migration process.

Downloading Virtual Appliances

If you do not have enough time to create a new virtual machine with the required configuration, you can download a ready-to-use virtual machine with a predefined configuration. Besides the basic configuration, pre-built virtual machines also may have a set of applications installed in the guest OS, so that you do not have to spend time on installing and setting up the required software.

Using Linux Virtual Appliances

Such pre-built Linux virtual machines with target services and applications installed in the guest OS are called Parallels Virtual Appliances. Linux Virtual appliances are built by the Parallels experts and are available for downloading at the Parallels Technology Network page. You can also access the virtual appliances online storage via the Parallels Desktop menu by choosing **Download** from the **File** menu. Parallels Desktop redirects you to the Parallels Technology Network page where you will be able to choose the virtual machines that suit you most.

To start using a Linux virtual appliance, do the following:

- 1 On the Parallels Technology Network page, click the virtual appliance's title to view configuration details and the guest OS administrative credentials.
- 2 Download the desired virtual appliance to your Mac by clicking the **GET APP** link and choosing the download link with the `.dmg` file format.
- 3 When the virtual appliance file is downloaded, double-click the `.dmg` file to start the installation.

Using Windows Virtual Appliances

You can also use Windows virtual appliances in Parallels Desktop. Microsoft provides Virtual PC virtual machines with preinstalled trial Windows XP or Windows Vista. Parallels Transporter enables you to migrate from a Microsoft Virtual PC to a Parallels virtual machine.

To start using a Windows virtual appliance, do the following:

- 1 Download the Virtual PC with preinstalled Windows self-extracting archive (`.exe`) from the Microsoft website. For Windows Vista, there may be additional `.rar` files. Download them to the same directory as the main `.exe` file.
- 2 Start Parallels Transporter and migrate from a Virtual PC virtual machine into a Parallels virtual machine. For detailed information on migrating from third-party virtual machines, see *Parallels Transporter User's Guide*.

Parallels Transporter extracts the Virtual PC configuration file and all hard disk files from the archive and converts them into the Parallels virtual machine configuration file (`.pvs`) and hard disk files (`.hdd`). All data and configuration settings are preserved.

Note: When the trial period for using Windows expires, you will have to activate it to proceed using it.

CHAPTER 6

Working in a Virtual Machine

This chapter provides the information on the main operations you can perform in a running virtual machine. These operations include:

- Starting, stopping, and resetting the virtual machine.
- Pausing or suspending the virtual machine.
- Using the mouse in the virtual machine (p. 121).
- Starting the virtual machine in Safe Mode.
- Switching between different view modes and working in Full Screen (p. 125).
- Installing applications in the virtual machine.
- Using Mac keyboard shortcuts in the virtual machine (p. 127).
- Setting Up Parallels Internet Security (p. 129).
- Making images of the whole Mac OS X desktop or any of its parts and have them displayed on top of all windows in the virtual machine.
- Enabling/disabling the 3D graphics support in the virtual machine.
- Connecting USB devices to and disconnecting them from the virtual machine.
- Setting up a printer and synchronizing a USB Palm OS device (p. 144).
- Using Touchpad and Gestures (p. 134).
- Changing the Configuration at Runtime (p. 145).

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Starting, Stopping, and Resetting a Virtual Machine

Starting a Virtual Machine

To start a virtual machine, do one of the following:

- Click the **Start** button  near the virtual machine name in the **Parallels Virtual Machines** dialog. For detailed information on this dialog, see **Parallels Virtual Machines Dialog** (p. 36).
- Right-click the virtual machine name in the **Parallels Virtual Machines** dialog, and choose the **Start** option.
- Double-click the virtual machine name in the **Parallels Virtual Machines** dialog, and click the **Start** button  in the **Parallels Desktop** toolbar.
- Click the virtual machine in the **Parallels Virtual Machines** dialog, and choose **Start** from the **Virtual Machine** menu.

After starting the virtual machine, it will boot into the guest operating system installed in this virtual machine. If no guest operating system is installed in the virtual machine, **Operating System Installation Assistant** will start.

Note: 1. You can start virtual machines only if your copy of **Parallels Desktop** is activated. See the **Activating Parallels Desktop** section (p. 20) for details.

2. You can manage the virtual machine content without starting the virtual machine with the help of **Parallels Mounter** (p. 267).

Stopping a Virtual Machine

To turn off the virtual machine, use the standard shutdown procedure of the guest operating system installed in it, or click the **Shut Down** button  in the **Parallels Desktop** toolbar. If the guest operating system cannot be shut down for some reason or other, you can forcibly stop the virtual machine by doing one of the following:

- clicking the **Stop** button  in the **Parallels Desktop** toolbar or
- choosing **Stop** from the **Virtual Machine** menu.

Warning: If you forcibly stop the virtual machine, you may lose all unsaved data.

Resetting a Virtual Machine

If some program error has caused your virtual machine to hang, you may wish to reset the virtual machine.

To reset the virtual machine, do one of the following:

- Choose **Reset** from the **Virtual Machine** menu.
- Click the **Reset** button  in the Parallels Desktop toolbar. If this button is absent from the toolbar, refer to the **Customizing Toolbar** subsection (p. 47).

Warning: If you reset the virtual machine, you may lose all unsaved data.

Setting a Restriction on Changing the Virtual Machine State

If you select the **Change virtual machine state** option in the **Security** pane (p. 179) of **Virtual Machine Configuration**, you will have to provide your administrator password each time you want to start, stop, suspend, or otherwise change the virtual machine state.

To edit the security settings of your virtual machine:

- 1 Select **Configure** from the **Virtual Machine** menu to open **Virtual Machine Configuration**.
- 2 Click **Options** at the top of the **Virtual Machine Configuration** window and select **Security** in the list of options.

Suspending and Pausing a Virtual Machine

Starting and shutting down virtual machines may take a considerable amount of time. Instead of performing these operations, you can suspend or pause a virtual machine for the required time and quickly resume it later.

Suspending a Virtual Machine

Suspending a virtual machine is similar to putting a real computer into the sleep mode. When you suspend a virtual machine, you save its current state (including the state of all applications and processes running in the virtual machine) to a special file on your Mac. When the suspended virtual machine is resumed, it continues operating at the same point the virtual machine was at the time of its suspending.

Suspending your virtual machine may prove efficient if you need to restart your Mac, but do not want to:

- quit the applications running in the virtual machine
- spend much time on shutting the guest operating system down and then starting it again

To suspend a virtual machine, do one of the following:

- choose **Suspend** from the **Virtual Machine** menu or
- click the **Suspend** button  in the Parallels Desktop toolbar.

You can see the progress of saving the virtual machine's state.

Warning: If you edit the configuration of a suspended virtual machine, you will not be able to resume this virtual machine.

To resume a suspended virtual machine, click the **Resume** button  in the Parallels Desktop toolbar or choose **Resume** from the **Virtual Machine** menu.

Pausing a Virtual Machine

Pausing a virtual machine releases the resources, such as RAM and CPU, currently used by this virtual machine. The released resources can then be used by the host computer and its applications or by other virtual machines running on the host computer.

Note: Only the amount of RAM used by the guest OS will be released. The memory used by the Parallels Desktop application will still be locked.

To pause a virtual machine, do one of the following:

- click the Pause button  in the Parallels Desktop toolbar or
- choose Pause from the Virtual Machine menu.

When a virtual machine is paused, its window is grayed out. To continue running the virtual machine, click the Start button  in the Parallels Desktop toolbar or choose Resume from the Virtual Machine menu.

Parallels Desktop is designed to operate like an ordinary computer application. This means that you do not have to change the virtual machine's state from running to paused, suspended, or stopped before putting your Mac to sleep. In sleep mode, your Mac does not allocate any resources to the running applications (including Parallels Desktop and all virtual machines) so that they are stopped automatically. As you start your Mac, all the applications are automatically up and running again.

Note: By default, you cannot suspend or pause your Boot Camp virtual machine because this may damage the Boot Camp partition. For detailed information on suspending your Boot Camp virtual machine, see [Suspending a Boot Camp Virtual Machine](#) (p. 281).

Setting a Restriction on Changing the Virtual Machine State

If you select the **Change virtual machine state** option in the **Security** pane (p. 179) of Virtual Machine Configuration, you will have to provide your administrator password each time you want to start, stop, suspend, or otherwise change the virtual machine state.

To edit the security settings of your virtual machine:

- 1 Select **Configure** from the Virtual Machine menu to open Virtual Machine Configuration.
- 2 Click **Options** at the top of the Virtual Machine Configuration window and select **Security** in the list of options.

Using Mouse in the Virtual Machine

To start working in a virtual machine, you need first to capture the keyboard and mouse input in the virtual machine. To this effect:

- 1 move the mouse pointer over the virtual machine window
- 2 click in the window

When the keyboard and mouse input is captured in the virtual machine, you cannot move the pointer out of the virtual machine window and all keystrokes and button clicks go to the virtual machine. To release the keyboard and mouse back, press Ctrl+Alt. The keyboard and mouse will be released immediately.

Note: The default hot key combinations can be configured on the **Keyboard and Mouse** pane (p. 53) of the **Preferences** dialog.

Using SmartMouse

If you want to automatically capture and release the keyboard and mouse input, you should install Parallels Tools (p. 97) in your virtual machine. The Parallels Tools installation enables the SmartMouse feature. You can configure or disable this feature in the **Services** pane (p. 177) of Virtual Machine Configuration:

- If you select **On**, the mouse input will be automatically captured in the virtual machine window when the mouse pointer hovers over it and then released when it moves back to Mac OS, which will make the mouse move seamlessly between your Mac and the virtual machine.
- If you select **Off**, you will need to click inside the virtual machine window to capture the mouse input, and press Ctrl+Alt to release it back to your Mac. It may be convenient if you want the mouse pointer to always stay inside the virtual machine window in the **Window** and **Modality** view modes (p. 122).

Note: Ctrl+Alt is the default key combination. You can define another key combination for releasing the mouse in the **Keyboard and Mouse** (p. 53) pane of **Parallels Desktop Preferences**.

- If you select **Auto**, the option will automatically become disabled (**Off**) each time you use a game, graphic application, or any other program that uses its own mouse pointer instead of using the operating system pointer. The option will be automatically enabled (**On**) after you quit the application.

Mouse Wheel Horizontal Scrolling

In this version of Parallels Desktop, you can use the mouse wheel horizontal scrolling when working with virtual machine applications windows. This feature is available only if Parallels Tools (p. 16) are installed in the virtual machine.

Changing View Modes

Parallels Desktop provides a number of view modes to make your work with virtual machines more comfortable and efficient:

- **Window mode.** In this mode the virtual machine screen is displayed as a separate window. This is the default view mode.
- **Full Screen mode.** In this mode the virtual machine screen is expanded to occupy the whole of your physical computer's screen.
- **Coherence mode.** In this mode the virtual machine's desktop is invisible so that you can see the virtual machine's application windows in Mac OS X and work with them side by side with your Mac OS X applications.
- **Crystal mode.** This mode is similar to the Coherence mode with a few additions -- all Parallels Desktop control elements, icons, and menus are hidden except for the Parallels Status icon in the Mac menu bar.
- **Modality mode.** In this mode you can view the virtual machine and the programs running inside it in a transparent scaled window while working in Mac OS X. By default, this window appears on top of all opened windows, so you can supervise your virtual machine during your work in Mac OS X.

For switching between these modes, you can use the **View** menu commands or toolbar buttons.

Note: You can change the virtual machine view mode only when the virtual machine is running.

Switching to the Full Screen Mode

You can run a guest operating system in the Full Screen mode when the guest operating system window occupies the whole screen and all Mac OS X and Parallels Desktop controls are hidden. To see the Mac OS X Dock and the Parallels Desktop menus while working in the Full Screen mode, press Ctrl+Alt.

To switch to the Full Screen mode, do one of the following:

- Click the **Full Screen** button  in the Parallels Desktop toolbar.
- Choose **Full Screen** from the **View** menu.
- Use the appropriate hot key combination (Alt+Cmd+Return by default).
- Click the down arrow button  near the **Coherence** button  in the virtual machine status bar (p. 44), and select **Full Screen** from the menu.

Note: The default hot key combinations can be configured on the **Keyboard and Mouse** pane (p. 53) of the **Preferences** dialog.

You may also choose the type of animation that will be displayed when switching to the Full Screen mode and back. For details, please refer to **Appearance Preferences** (p. 50).

To return to the Window mode:

- press the appropriate hot key combination (Alt+Cmd+Return by default) or

- press Ctrl+Alt to display the Parallels Desktop menus and choose **Window** from the **View** menu.

Switching to the Coherence Mode

The Coherence mode provides high level of integration between Mac OS X and your guest operating system. In this mode, you can have the Mac OS X Dock, Windows taskbar, and any applications running under these operating systems on one desktop. For more information on the Coherence mode, see **Working in the Coherence Mode** (p. 148).

To switch a running virtual machine to operate in the Coherence mode, do one of the following:

- Click the **Coherence** button  in the Parallels Desktop toolbar.
- Click the **Coherence** button  in the virtual machine status bar (p. 44).
- Choose **Coherence** from the **View** menu.
- Use the appropriate hot key combination (Ctrl+Cmd+Return by default).

Note: The default hot key combinations can be configured on the **Keyboard and Mouse** pane (p. 53) of the **Preferences** dialog.

To switch the virtual machine from Coherence to another mode:

- choose the **Window** or **Full Screen** option from the **View** menu or
- use the appropriate hot key combination (Ctrl+Cmd+Return by default).

Switching to the Crystal Mode

The Crystal mode is similar to Coherence but provides even higher level of integration between the host and the guest operating systems. In this mode all Parallels Desktop control elements, icons, and menus are hidden except for the Parallels Status icon in the Mac menu bar. For more information on the Crystal mode, see **Working in the Crystal View Mode** (p. 152).

To switch a running virtual machine to operate in the Crystal mode, do one of the following:

- Click the **Crystal** button  in the Parallels Desktop toolbar.
- Choose **Crystal** from the virtual machine **View** menu.
- Click the down arrow button  near the **Coherence** button  in the virtual machine status bar (p. 44), and select **Crystal**.

To switch the virtual machine from Crystal to the Window mode, click the Parallels Status icon in the Mac menu bar and choose **Exit Crystal** option.

Note: You can switch from Crystal to the Window mode only. You can then switch from Window to any other mode.

Switching to the Modality Mode

When you switch to Modality, you can resize the virtual machine windows and place them side by side with your Mac's applications. A Modality window can be scaled to any size, and its content will still be active, which allows you to monitor the tasks running inside the virtual machine while you are working on the Mac's side.

In the Modality mode, you can:

- Simply resize the virtual machine window by dragging its right corner.
- Resize the virtual machine window and change the ratio of its sides by pressing and holding **Alt** and dragging the window right corner.
- Resize the virtual machine window and dynamically adjust the screen resolution by pressing and holding **Shift** and dragging the window right corner.

To switch a running virtual machine to the Modality mode, do one of the following:

- Choose **Modality** from the **View** menu.
- Click the **Modality** button  in the Parallels Desktop toolbar.
- Use the appropriate hot key combination (Ctrl+Alt+Cmd+Return by default).
- Click the down arrow button  near the **Coherence** button  in the virtual machine status bar (p. 44), and select **Modality** from the menu.

Note: The default hot key combinations can be configured on the **Keyboard and Mouse** pane (p. 53) of the **Preferences** dialog.

To switch the virtual machine from Modality to another view mode:

- Choose **Window**, **Full Screen**, or **Coherence** from the **View** menu.
- Use the appropriate hot key combination (Ctrl+Alt+Cmd+Return by default).

When you switch back from Modality to the Window view mode, the toolbar is hidden. If you want to add it back to the virtual machine window, choose **Show Toolbar** from the **View** menu.

To customize the Modality settings, refer to the **Modality** pane (p. 198) of Virtual Machine Configuration.

Working in Full Screen

In the Full Screen mode, the guest operating system window occupies the whole screen, and all Mac OS X and Parallels Desktop controls are hidden.

Note: You can change the virtual machine view mode only when the virtual machine is running.

To switch to the Full Screen mode, do one of the following:

- Click the Full Screen button  in the Parallels Desktop toolbar.
- Choose Full Screen from the View menu.
- Use the appropriate hot key combination (Alt+Cmd+Return by default).
- Click the down arrow button  near the Coherence button  in the virtual machine status bar (p. 44), and select Full Screen from the menu.

Note: The default hot key combinations can be configured on the Keyboard and Mouse pane (p. 53) of the Preferences dialog.

You may also choose the type of animation that will be displayed when switching to the Full Screen mode and back. For details, please refer to Appearance Preferences (p. 50).

If you want your virtual machine to use all available displays in the Full Screen mode, select Use All Displays in Full Screen from the View menu.

To return to the Window mode:

- press the appropriate hot key combination (Alt+Cmd+Return by default), or
- press Ctrl+Alt to display the Parallels Desktop menus and choose Window from the View menu, or
- click the corresponding active screen corner if you set active screen corners for the Full Screen Mode.

To set active screen corners or change other Full Screen options, go to the Full Screen pane (p. 196) of Virtual Machine Configuration.

Setting a Restriction on Switching From Full Screen

In the Security pane (p. 179) of Virtual Machine Configuration, you can set a restriction on switching from the Full Screen mode. If you select the Exit full screen mode option in this pane, you will have to provide your administrator password each time you want to exit Full Screen.

To edit the security settings of your virtual machine:

- 1 Select Configure from the Virtual Machine menu to open Virtual Machine Configuration.
- 2 Click Options at the top of the Virtual Machine Configuration window and select Security in the list of options.

Using Safe Mode

If you do not want a virtual machine to store the changes you make to it during the working session, you can start this virtual machine in Safe Mode. To be able to start the virtual machine

in Safe Mode, you need to add the **Safe Mode** button  to the Parallels Desktop toolbar first. To this effect:

- 1 Right-click the toolbar in the virtual machine's window, and choose **Customize Toolbar** (p. 47).

- 2 Drag the **Safe Mode** button  to the toolbar and click **Done**.

When you have added the **Safe Mode** button  to the toolbar, you can use this button for starting the virtual machine in Safe Mode. When you shut down a virtual machine operating in Safe Mode, you will be asked whether you want to discard the changes made to the virtual machine's hard disk or to apply them:

- If you choose to discard the changes, the virtual machine's hard disk will be left intact and no changes made to it during your work in Safe Mode will be saved.
- If you choose to apply the changes, the virtual hard disk will keep all the changes made to it during your work in Safe Mode. After applying the changes, the virtual machine will not be able to return to the state it had before you started this virtual machine in Safe Mode.

If you want the virtual machine to permanently work in Safe Mode, you can enable the **Undo Disks** option in the **Undo Disks** pane (p. 192) of **Virtual Machine Configuration** (p. 168):

- 1 Choose **Configure** from the **Virtual Machine** menu to open the virtual machine configuration.
- 2 Click **Options** in **Virtual Machine Configuration**.
- 3 Select **Undo Disks**.
- 4 In the **Undo Disks** pane, select the **Enable Undo Disk** option, and click **OK**.

Usage Tip

Running the virtual machine in Safe Mode can be useful when testing the behavior of some applications to make sure that they cannot damage your computer.

Using Keyboard Shortcuts in a Virtual Machine

Parallels Desktop enables you to use Mac keyboard shortcuts in your virtual machine.

If you want to press Ctrl+Alt+Del key combination in a virtual machine, do one of the following:

- Choose **Keyboard > Ctrl+Alt+Del** from the **Devices** menu, or
- press Ctrl+Alt+Del while the keyboard input is captured inside the virtual machine window.

Using Keyboard shortcuts in MacBook and MacBook Pro

- To use the F1-F12 keys in your virtual machine, press the Fn+(F1-F12) key combination instead.

For additional information, see also **Keyboard and Mouse Preferences** (p. 53).

Installing Applications in a Virtual Machine

You can install software inside your virtual machine in the same way as you would do on any other real computer:

- using a CD or DVD disc or image file containing the application installation files
- using a USB drive containing the application installation files
- by downloading the necessary application from the network.

If you want to install an application from a real CD/DVD drive on your Mac, connect it first to the virtual machine, and then insert the disc into this drive. For detailed information on how to connect CD/DVD drives to your virtual machine, refer to **CD/DVD Settings** (p. 206).

If you want to install an application from an existing CD or DVD image file, specify the path to the image file in Virtual Machine Configuration. For detailed information on connecting image files to your virtual machine, refer to **CD/DVD Settings** (p. 206).

If you want to install an application from a USB device, you should first add a USB controller to the virtual machine using Virtual Machine Configuration. For detailed information on how you can do it, refer to **Adding and Removing Devices** (p. 220). Then connect the USB device to your virtual machine (p. 141).

If you want to install an application through the network, first make sure that your virtual machine is connected to it. By default, all virtual machines created in the *Express* or *Typical* modes are set to operate in the Shared Networking mode. In this mode, your virtual machine can access the Internet while being invisible to other computers on the network, except your Macintosh computer and the other virtual machines running on it. For more information on connecting virtual machines to the network and available network mode, refer to **Networking in a Virtual Machine** (p. 228).

Setting Up Parallels Internet Security

Parallels Desktop includes an antivirus application - Parallels Internet Security powered by Kaspersky®. It is available for Windows XP, Windows Vista, and Windows 7 virtual machines with Parallels Tools installed. Parallels Internet Security is provided with a one year free activation key. When the trial period expires, you can purchase a permanent activation key.

Note: You need the Internet connection to download the Parallels Internet Security package from the Parallels website.

You can install any other antivirus application you like in your virtual machine. Use the standard installation procedure for this application.

Setting up Parallels Internet Security

After Parallels Tools installation, you will be offered to install Parallels Internet Security. To install Parallels Internet Security, click **Install**, and follow the wizard's instructions.

To install Parallels Internet Security manually:

- 1 Launch Parallels Desktop, and start the virtual machine from the **Parallels Virtual Machines** list (p. 36).
- 2 When the virtual machine boots up, make sure that you have Parallels Tools (p. 97) installed. To install them, choose **Install Parallels Tools** from the **Virtual Machine** menu.

Note: If you created your virtual machine using the Express Windows mode, Parallels Tools should have been installed automatically after the installation of the Windows guest operating system.

The virtual machine will reboot when the installation of Parallels Tools is complete.

- 3 When you log in after rebooting, choose **Install Parallels Internet Security** from the **Virtual Machine** menu. Parallels Internet Security Installer will launch, offering you to protect your guest operating system by activating Parallels Internet Security. Please take into account that it may take some time the installer to start. After the installer has started, click **Install**, and Parallels Desktop will download the Parallels Internet Security package and start the installation. The installation is performed in the unattended mode and the software is activated automatically. You can view the operation progress in the progress bar.
- 4 When the installation is complete, click **Reboot** in the **Install Succeed** window to close the wizard and to restart the virtual machine.

Now you have a one year antivirus protection in your virtual machine.

Removing Parallels Internet Security

If you do not need Parallels Internet Security in your Windows virtual machine, you can quit the installer by clicking the **Cancel** button or, if it is already installed, remove it like any other Windows application using the **Add or Remove Programs** dialog. The free trial period starts from the moment of the first installation, and won't be restarted if you reinstall Parallels Internet Security later.

Getting Acronis Applications

As an additional benefit, Parallels provides you for free with two more products allowing you to keep your guest operating systems safe and to have full control over your virtual disk drives:

- Acronis True Image 11 Home. This application allows you to easily back up and recover your guest operating systems, applications, settings, and personal files.
- Acronis Disk Director Suite 10.0. This application allows you to perform all the necessary operations on your virtual disks using the easiest and most convenient partition manager and hard disk toolkit.

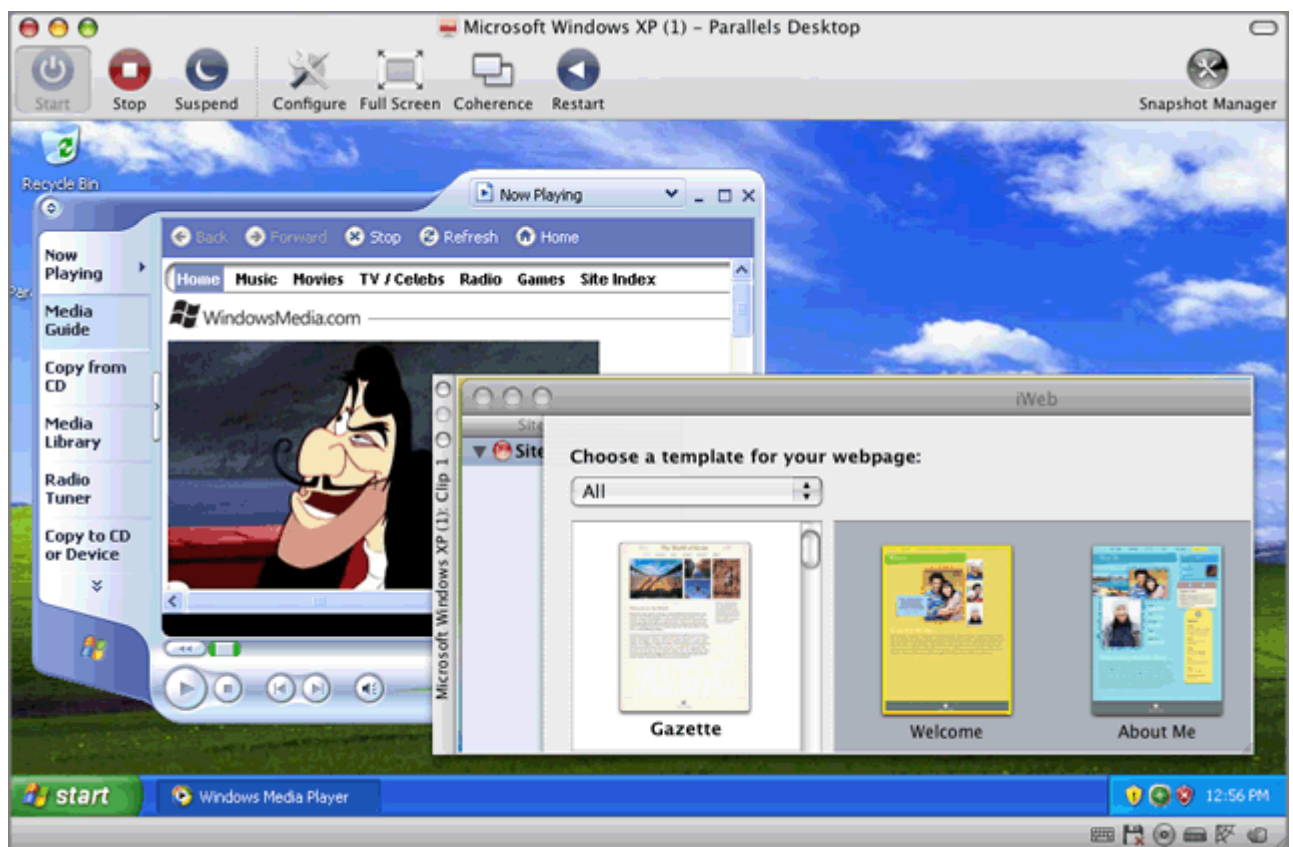
To download these applications, follow this link:
<http://www.parallels.com/download/desktop/>

Placing an Image on Top of the Virtual Machine Window

Parallels Desktop allows you to create images (also called *clips*) of the whole Mac OS X desktop or any of its parts. When taken, these images are automatically placed over your opened virtual machine window and remain visible irrespective of what applications you run or what window you open in your virtual machine. For example, you can create a clip containing some important information and always have this information right before your eyes when working in the virtual machine. You can also take a clip of some part of an application running on your Mac and have it displayed when working with another application in your virtual machine without need to switch between these applications. Using clips may prove especially efficient if you are running your virtual machine in the full screen mode.

To make a clip:

- 1 Open the virtual machine.
- 2 Choose Make Clip from the View menu.
- 3 Using the left mouse button, select the area you want to capture.
- 4 When you release the mouse button, the resulting clip will appear on top of all open window. It will remain visible even if you switch your virtual machine to Full Screen.



After the clip has been successfully created, you can manage it as follows:

- Save the clip to your Mac OS X desktop by right-clicking it and choosing **Save on Desktop**.
- Close the clip by clicking the close button in the clip window. If the clip was not saved before, it will be irrevocably removed from your Mac.
- Copy the clip to the clipboard by right-clicking it and choosing **Copy to Clipboard**.
- Change the clip size by dragging the lower right corner of the clip window.
- Allow the clip to be overlaid by applications and windows that you open in your virtual machine by right-clicking it and disabling the **Always on Top** option.

Using 3D Graphics Applications

With Parallels Desktop, you can run games and applications that require video cards with DirectX or OpenGL support in your virtual machines.

The DirectX9.0 and OpenGL2.1 support can be enabled for Windows-based virtual machines with Parallels Tools installed. The OpenGL2.1 support can be enabled for Linux-based virtual machines with Parallels Tools installed.

Note: In Linux-based virtual machines, Xorg should be of version 7.1 or later.

Enabling DirectX and OpenGL support in a virtual machine

If your virtual machine does not have Parallels Tools installed:

- 1** Start the virtual machine, and choose **Install Parallels Tools** from the **Virtual Machine** menu to launch the installation.
- 2** When Parallels Tools are installed, shut down the virtual machine.

To enable DirectX and OpenGL support in the virtual machine configuration:

- 1** Open the virtual machine and choose **Configure** from the **Virtual Machine** menu to open the **Virtual Machine Configuration** dialog.
- 2** In the **Video** pane (the **Hardware** group of settings), select the **Enable 3D acceleration** option.
- 3** Click **OK** to apply the changes.

Note: If the virtual machine is running, the new settings will come into effect after you restart the virtual machine.

Optimizing 3D Graphics Performance in MacBook Pro

Some new MacBook Pro computers have two video adapters. By default, the slower video adapter that saves energy is used. If you want to use the faster video adapter for better 3D graphics performance, select **System Preferences > Energy Saver > Graphics > Higher performance** in the Mac OS X menu.

Making Screenshots

If you want to make a screenshot of the guest operating system running in your virtual machine, choose **Make Screenshot** from the **View** menu. The first screenshot file will be named **Parallels Picture.png** and placed on the Mac OS X desktop. The next screenshots will have the same name with an appropriate number added.

Note: This option is not available in the Full Screen (p. 125) and Crystal (p. 152) view modes.

Using Touchpad Gestures and Apple Remote

You can use the touchpad or Apple Remote to control some Windows applications. To use this functionality, enable the corresponding options in the **Gestures and Apple Remote** pane (p. 200) of the Virtual Machine Configuration.

Note: This feature is available for the following guest operating systems: Windows XP, Windows 2000, Windows Server 2003, Windows Vista, Windows 7, and Windows Server 2008.

In the following table, you can see the list of commands for some popular Windows applications.

Action	Keyboard and Mouse Combination	Apple Remote Key	Touchpad Gesture
Microsoft Power Point			
Start a slide show	F5		n/a
End a slide show	Esc		n/a
Perform the next animation or advance to the next slide	N, Enter, Page Down, Right Arrow, Down Arrow, Space (or click the mouse)		Swipe right
Perform the previous animation or return to the previous slide	P, Page Up, Left Arrow, Up Arrow, Backspace		Swipe left
Zoom in/zoom out	Ctrl+wheel up /Ctrl+wheel down	n/a	Pinch open/pinch close
Microsoft Word/Excel			
Zoom in/zoom out	Ctrl+wheel up /Ctrl+wheel down	n/a	Pinch open/pinch close
Windows Media Player			
Start playback/pause	Space		n/a
Skip to the next song	Ctrl+F		Swipe right
Play the previous song	Ctrl+B		Swipe left
Volume up	F8, Up Arrow, wheel up		n/a
Volume down	F9, Down Arrow, wheel down		n/a

Media Player Classic (k-lite)

Start playback/pause	Space		n/a
Volume up	F8, Up Arrow, wheel up		n/a
Volume down	F9, Down Arrow, wheel down		n/a
Winamp			
Start playback/pause	X to start, C to pause		n/a
Volume up	Up Arrow, wheel up		n/a
Volume down	Down Arrow, wheel down		n/a
Microsoft Internet Explorer			
Page back	Backspace, Alt+Left Arrow	n/a or 	Swipe right
Page forward	Alt+Right Arrow	n/a or 	Swipe left
Zoom in/zoom out	Ctrl+wheel up/Ctrl+wheel down	n/a	Pinch open/pinch close
Mozilla Firefox			
Page back	Backspace, Alt+Left Arrow	n/a or 	Swipe right
Page forward	Alt+Right Arrow	n/a or 	Swipe left
Zoom in/zoom out	Ctrl+wheel up/Ctrl+wheel down or Ctrl+"+"/Ctrl+"-"	n/a	Pinch open/pinch close
Windows Picture and Fax Viewer			
Next image	Right Arrow		Swipe right
Previous image	Left Arrow		Swipe left
Zoom in/zoom out	"+"/"-"	 or 	Pinch open/pinch close
Rotate clockwise	Ctrl+K	n/a	Rotate right
Rotate counterclockwise	Ctrl+L	n/a	Rotate left

Setting Up a Printer in a Virtual Machine

There are three basic ways to set up printing in a virtual machine. You can:

- Share any of the printers connected to your Mac computer via a printer port of your virtual machine.
- Set up a printer via Apple's Bonjour Printer wizard.

Note: Apple's Bonjour printer is available in Windows guest OSs only.

- Use a network printer.

You can also connect a USB printer directly to your virtual machine. In this case, the printer will not be available to Mac OS X. For detailed information see [Connecting USB Devices to a Virtual Machine](#) (p. 141).

Sharing a Mac Printer

You can share any printer connected to your Mac with your Windows or Linux virtual machine. The printer will be available through the virtual machine's printer port.

To share your Mac's printer:

- 1 Launch Parallels Desktop, and open the virtual machine window.
- 2 Open the Virtual Machine Configuration dialog by choosing **Configure** from the **Virtual Machine** menu. Make sure that the configuration includes a printer port. If necessary, add it. See *Adding and Removing Devices* (p. 220).
- 3 In the **Printer Port** pane (p. 212), select **Connected** if you want the printer to be automatically connected on the virtual machine startup. Click the **Source** field, and select the appropriate printer from the list. You can use the **Default printer** option if you want to use the default printer set in the primary OS.

Click **OK** to close Virtual Machine Configuration.

- 4 Start the virtual machine.
- 5 In a Windows guest OS, if you have Parallels Tools installed, the HP Color LaserJet 8500 PS or Apple Color LW 12/660 PS printer is automatically connected to your virtual machine and you can use it at once. In a Linux guest OS or if you do not have Parallels Tools installed in your Windows guest OS, no matter what type of printer you have, install either the HP Color LaserJet 8500 PS, or Apple Color LW 12/660 PS printer driver and then follow the procedure of adding a printer in a guest OS described below.

Warning: Do not install the driver from the installation CD, supplied with your printer, in the virtual machine.

Adding a printer in a Windows guest operating system

To add a printer in a Windows guest OS:

- 1 Start the Windows virtual machine and log in as administrator.
- 2 Open the Windows **Start** menu, select **Control Panel**.
- 3 In the **Control Panel** window, select the **Printers and Faxes** (or **Printers**, or **Printers and Other Hardware**) item.
- 4 Open the **Add Printer** wizard:
 - In Windows XP click the **Add a printer** link.
 - In Windows 95 /98 /NT /ME /2000 /2003 double-click the **Add printer** icon.
- 5 In the **Add Printer** wizard:
 - In Windows Vista:
 - click **Add a local printer**,
 - select **Use an existing port** and click **Next**.
 - In Windows 2000 /XP /2003:
 - click **Next** in the wizard's first dialog,

- in the Local or Network Printer dialog, click Local printer attached to this computer.
 - In Windows 98/ME:
 - click Next in the wizard's first dialog,
 - for the How is this printer attached to your computer? select the Local printer option.
 - In Windows 95/NT:
 - click Local printer.
- 6** Continue with the general installation procedure and install either HP Color LaserJet 8500 PS or Apple Color LW 12/660 PS driver.

Adding a printer in a Linux guest operating system

To add a printer in a Linux guest OS:

- 1** Start the Linux virtual machine and log in as administrator.
- 2** Open the `/etc/printcap/` configuration file and click the Add option.
- 3** Select the type of printer to add: Local printer. Click Ok.
- 4** `Printtool` will attempt to detect any printers which are attached to your parallel port and will show you the results. Click Ok.
- 5** Specify the details about your printer, such as a name of the printer and its related spool directory, the location of the printer device and other options.
- 6** The Input Filter contains information about your specific printer and its formatting requirements. To add your printer's information, click Select. The Configure Filter dialog will open.
- 7** Choose the printer type: choose either HP Color LaserJet 8500 PS or Apple Color LW 12/660 PS driver. You can also set here other printing parameters. Click Ok.

Setting Up a Printer via Bonjour

You can set up a network printer via Bonjour only in Windows guest OSs.

To set up a printer using the Bonjour Printer wizard:

- 1** Launch Parallels Desktop.
- 2** Start your Windows virtual machine, and log in.
- 3** In the virtual machine, download the Bonjour for Windows installation package from the Apple site.
- 4** Install Bonjour for Windows by launching the `BonjourSetup.exe` file from the folder to which it was downloaded.
- 5** Start the Bonjour Printer wizard either by clicking its icon on the desktop or by selecting Start -> Programs -> Bonjour -> Bonjour Printer wizard.
- 6** Follow the installation steps until the Install Bonjour Printer window appears.
- 7** In the Install Bonjour Printer window, select Generic in the Manufacturer list, and then Generic / Postscript in the Model list for any printer model you are going to use.
- 8** Follow the rest of the installation steps.

Setting Up a Network Printer

You can install a network printer directly into a guest OS.

Before installing a network printer in a guest OS, make sure that:

- Networking in the primary and guest OSs is configured.
- The virtual machine network adapter is connected to the corresponding virtual machine and enabled. To do this:
 - Select **Configure** from the **Virtual Machine** menu.
 - Click **Hardware** to see the virtual machine devices.
 - Click the **Network Adapter** item in the left pane.
 - Make sure that the **Connected** option is selected.
- The user account in the guest OS from which you will setup the printer has permissions to access the network printer.
- You know the printer's IP address.

After that, you can log into your guest OS and install a network printer.

In a Windows Guest Operating System

Before adding a network printer to Windows, download and install an appropriate printer driver. For detailed information on installing the printer driver, refer to the printer's manufacturer documentation.

The procedure of adding a network printer is almost the same for all Windows guest OSs. To add a network printer in Windows XP or Windows Vista:

- 1** Choose **Control Panel** from the **Start** menu in your guest OS.
- 2** Click **Printers and Faxes** in Windows XP or **Printers** in Windows Vista.
- 3** Click the **Add printer** icon.
- 4** In the **Add Printer** wizard introduction window, click **Next**.
- 5** In Windows XP, select the **Local printer attached to this computer** option and disable **Automatically detect and install my Plug and Play printer**.
In Windows Vista, choose the **Add a Local Printer** option.
- 6** Select **Create a new port** and specify **Standard TCP/IP port** as the port type.
Click **Next**.
- 7** In the next window, specify the network printer's IP address and click **Next**.
- 8** If prompted to specify additional port information, choose **Standard** and select **Generic Network Card** from the list.
- 9** In the next window, click **Finish**.
- 10** In the **Install Printer Software** window, specify the manufacturer of the driver and select the model of the network printer.

If the required printer model is not listed, click the **Have Disk** button and specify the path to the `.inf` file in the folder where you installed the printer driver.

When finished, click Next.

- 11 Follow the wizard's instructions to complete the installation.

In a Linux or FreeBSD Guest Operating System

Make sure that the following components are installed in your guest Linux or FreeBSD system:

- Common UNIX Printing System (CUPS). Installation instructions can be found at CUPS site;
- Samba service. Installation instructions can be found at Samba site;
- A Web browser, since we consider controlling CUPS via web interface;

Note: To set up a network printer, you should have the `root` privileges.

Before adding a network printer to Linux, download and install an appropriate printer driver. For detailed information on installing the printer driver, refer to the printer's manufacturer documentation.

To add a network printer in a Linux or FreeBSD guest OS:

- 1 Start your Linux or FreeBSD virtual machine.
- 2 Start Common UNIX Printing System.

In a terminal, type the command:

```
/etc/init.d/cups start
```

- 3 Start a web browser and type either the IP address of your virtual machine or `http://127.0.0.1:631`.
- 4 Click the Add Printer button.
- 5 In the Add New Printer window, enter a printer name, location, and description.
- 6 In the Device for <Printer Name> window, select the *Windows Printer via Samba*.
- 7 In the Device URI for <Printer Name> window, specify the path to the network printer in the following format:
`smb://<computer name>/<printer name>`
- 8 In the Make/Manufacturer for <Printer Name> window, select the model of your printer.
- 9 Enter the `root` password when prompted.
- 10 CUPS performs installation. If the installation is successful, the "Printer <name> has been added successfully" message is displayed.

Connecting USB Devices to a Virtual Machine

Parallels Desktop provides you with the possibility to connect up to eight USB 2.0 and eight USB 1.1 devices to a single virtual machine. This means that you can plug up to eight USB 2.0 devices and eight USB 1.1 devices into your Mac and use them from the virtual machine. To use this feature, you should add a USB controller to the virtual machine configuration (p. 168). If the USB controller is already present in the virtual machine configuration, make sure it is enabled.

By default, when you plug a USB device into your Mac, the New USB Device dialog asks if you want to connect this device to your Mac or to the virtual machine you are currently working with.

- Click **Mac OS** if you want to use this USB device in Mac OS X.
- Click **Virtual Machine** if you want to use this USB device in the virtual machine you are currently working with.

Note: If you select to connect the detected USB device to the virtual machine and then reboot this virtual machine, the New USB Device dialog will not appear again after the reboot. The USB device will still be connected to this virtual machine.

If you want Parallels Desktop to remember your choice, select **Remember this association**. The next time you plug this USB device into your Mac, it will be automatically connected to the destination you specified in this dialog. To change the destination, use **USB Preferences** in the **Preferences** dialog (p. 47).



If you do not want Parallels Desktop to display this dialog each time a USB device is plugged into your Mac, configure **USB Preferences** in the **Preferences** dialog (p. 47).

To be able to use the USB device in the virtual machine, you may need to install the necessary drivers in the guest OS. By default, such drivers can be obtained from the manufacturers of this device.

Note: If you plug a USB 1.1 device into the USB 2.0 port, the port will be identified as USB 1.1.

Connecting iSight camera to a Windows virtual machine

If you have a built-in iSight camera, you can use it in your Windows XP or Windows Vista virtual machine. Before connecting the camera, you should install the iSight driver for Windows in your virtual machine. There are several ways to install the driver. For example, you can install the iSight driver together with the Boot Camp drivers in your virtual machine:

- 1 Insert the Mac OS X Leopard disc or "Mac OS X Install Disc 1" into your computer.
- 2 Start your Windows virtual machine.
- 3 Click the CD/DVD icon  in the virtual machine status bar, select **Real CD/DVD**, and connect the Mac OS X installation disc.
- 4 The Boot Camp drivers installer starts. If the installer does not start automatically, browse the Mac OS X disc using Windows Explorer and double-click the `setup.exe` file in the **Boot Camp** folder.
- 5 Follow the installer instructions. When the installation is finished, restart your virtual machine.

Note: The iSight driver for Windows is suitable for built-in cameras only. External cameras are not supported.

To connect the iSight camera, click the USB controller icon  in the virtual machine status bar and select the iSight camera in the list.

Connecting a USB printer to a virtual machine

You can connect a USB printer directly to your virtual machine. In this case, the printer will not be available to Mac OS X.

Note: If you want the USB printer to be available both to your Mac and the virtual machine, you should connect the printer to the virtual machine using a printer port. For detailed information, see **Sharing a Mac Printer** (p. 137).

To connect a USB printer directly to a virtual machine:

- 1 Launch Parallels Desktop and choose the virtual machine.
- 2 Choose **Configure** from the **Virtual Machine** menu to open the Virtual Machine Configuration dialog. Make sure that the configuration includes a USB controller and it is enabled. If necessary, add it. See the **Adding a USB Controller** section (p. 220).

- 3 Start the virtual machine, and install the native driver for the printer in the guest operating system. For detailed information on installing the printer driver, refer to the printer's manufacturer documentation.
- 4 Then perform one of the following:
 - If the USB printer is already connected to your Mac, click the USB controller icon  in the virtual machine status bar (p. 44) and select this printer in the list.
 - If the USB printer is not connected to your computer, connect it to your Mac. The **New USB Device** dialog will appear in the guest OS window. Choose to connect it to the virtual machine.
- 5 In the Windows guest operating system, follow the **Add New Hardware** wizard instructions. In the Linux guest operating system, follow the procedure for adding a USB printer specific for this Linux distribution.

Connecting Common Access Card reader

The Common Access Card (CAC) reader can work simultaneously in Mac OS X and in one virtual machine.

Connect the CAC reader to your Mac.

In the **New USB device** window, click **Virtual Machine**. Parallels Desktop will create a virtual copy of the CAC reader device in the virtual machine, which will make the CAC reader work in both Mac OS and the virtual machine.

Synchronizing a USB Palm OS Device With the Guest OS

The process of connecting a USB Palm device to the virtual machine is similar to the process of connecting other USB devices, but for some minor details.

- 1 When you plug a USB Palm OS device into your Mac, you should click the **Synchronize** button on the Palm device's screen to make it visible to your Mac.
- 2 Your Mac will recognize the Palm device and displays a message asking whether you want to connect it directly to the active virtual machine or to use this device with your Mac. To be able to work with the Palm device in the virtual machine, click **Virtual Machine**.

If you want Parallels Desktop to remember your choice, select **Remember this association**. The next time you plug this USB device into your Mac, it will be automatically connected to the destination you specified in this dialog. To change the destination, use **USB Preferences** (p. 57) in the **Preferences** dialog available from the **Parallels Desktop** menu.

Note: Before starting the connection, make sure that you have a synchronization software installed in your virtual machine.

- 3 The Palm device appears in the list of USB devices available for usage in the virtual machine, and the data synchronization process starts.

If you encounter problems when synchronizing the Palm OS device with your virtual machine, click **Cancel** on the screen of the Palm device to terminate the process and try to start the synchronization again.

Note: It is not recommended to change the USB port for the Palm device or connect other USB devices to your Mac during the synchronization session.

Changing the Configuration at Runtime

Parallels Desktop allows you to connect or disconnect certain devices at runtime or switch some of them for using other media.

Generally, the following virtual devices can be connected or disconnected at runtime:

- Floppy disk drive
- CD/DVD-ROM drives
- Network adapter
- Sound device
- USB device
- Shared folders

If printer and serial ports are present in the virtual machine configuration, you can also manage them at runtime.

Note: Only devices *enabled* in the virtual machine configuration can be connected or disconnected at runtime.

You can configure any of these devices in one of the following ways:

- Use the necessary command from the **Devices** menu in the menu bar. This menu is available only when the virtual machine is running.
- Click a device icon on the status bar (p. 44) and choose the command from a device shortcut menu.

The status bar displays the devices information when the virtual machine is running.

- Drag an image file (*.iso or *.fdd) or a shared folder on the appropriate device icon in the status bar. This option is available only for CD/DVD-ROM drives, floppy drives and shared folders.

Connecting a CD/DVD-ROM or a Floppy Drive

If you have several CD/DVD-ROM drives connected to your virtual machine, in the **Devices** menu they are listed in the same order as they were connected. The first CD/DVD-ROM drive will be CD/DVD-ROM 1, the second will be CD/DVD-ROM 2, and so on.

Connecting a Network Adapter

You can set up any of the three network modes: Shared Networking, Bridged Networking, or Host-Only Networking.

Connecting a Sound Device

To connect or disconnect a sound device, choose the **Activate** or **Mute** options respectively. You can also choose the type of output and input devices.

Connecting a USB Device

Parallels Desktop automatically detects all USB devices plugged into your Mac computer. The devices that are currently connected to the virtual machine appear in the list from the **Device** menu. You cannot use a USB device in Mac OS X while it is being used by the virtual machine.

Connecting a Shared Folder

The Shared Folders options available at runtime are similar to the settings in the Virtual Machine Configuration (p. 168) dialog.

You can

- share all Mac disks or Home Folder only with the virtual machine
- share Windows guest operating system disks with Mac OS X
- add a new shared folder

Connecting a Serial Port

To connect or disconnect a serial port, do the following:

- Click the **Devices** menu, select the corresponding serial port, and choose the appropriate command in the displayed menu.
- Right-click the serial port icon  in the status bar (p. 44) to display the shortcut menu, and choose the appropriate command.

Connecting a Printer Port

To connect or disconnect a printer port or to connect a printer or an output file to a printer port, do the following:

- Click the **Devices** menu, select the corresponding printer port, and choose the appropriate command in the displayed menu.
- Right-click the printer port icon  in the status bar (p. 44) to display the shortcut menu, and choose the appropriate command.

CHAPTER 7

Integrating Mac OS X and Your Virtual Machine

Parallels Desktop provides a number of features that ensure better integration between Mac OS X and your virtual machine.

The first step in integrating your virtual machine with Mac OS X is the installation of Parallels Tools in your virtual machine. Parallels Tools (p. 97) are a set of utilities that provide basic integration of Mac OS X and the virtual machines. Parallels Tools are available for Windows, Linux, and Mac OS X guest operating systems.

For Windows virtual machines, Parallels Tools also provide a set of advanced integration features that make your work with Mac OS and Windows even more coherent. These include SmartSelect, Coherence, Shared Applications, and others.

In this version of Parallels Desktop, you can use the mouse wheel horizontal scrolling when working with virtual machine applications windows.

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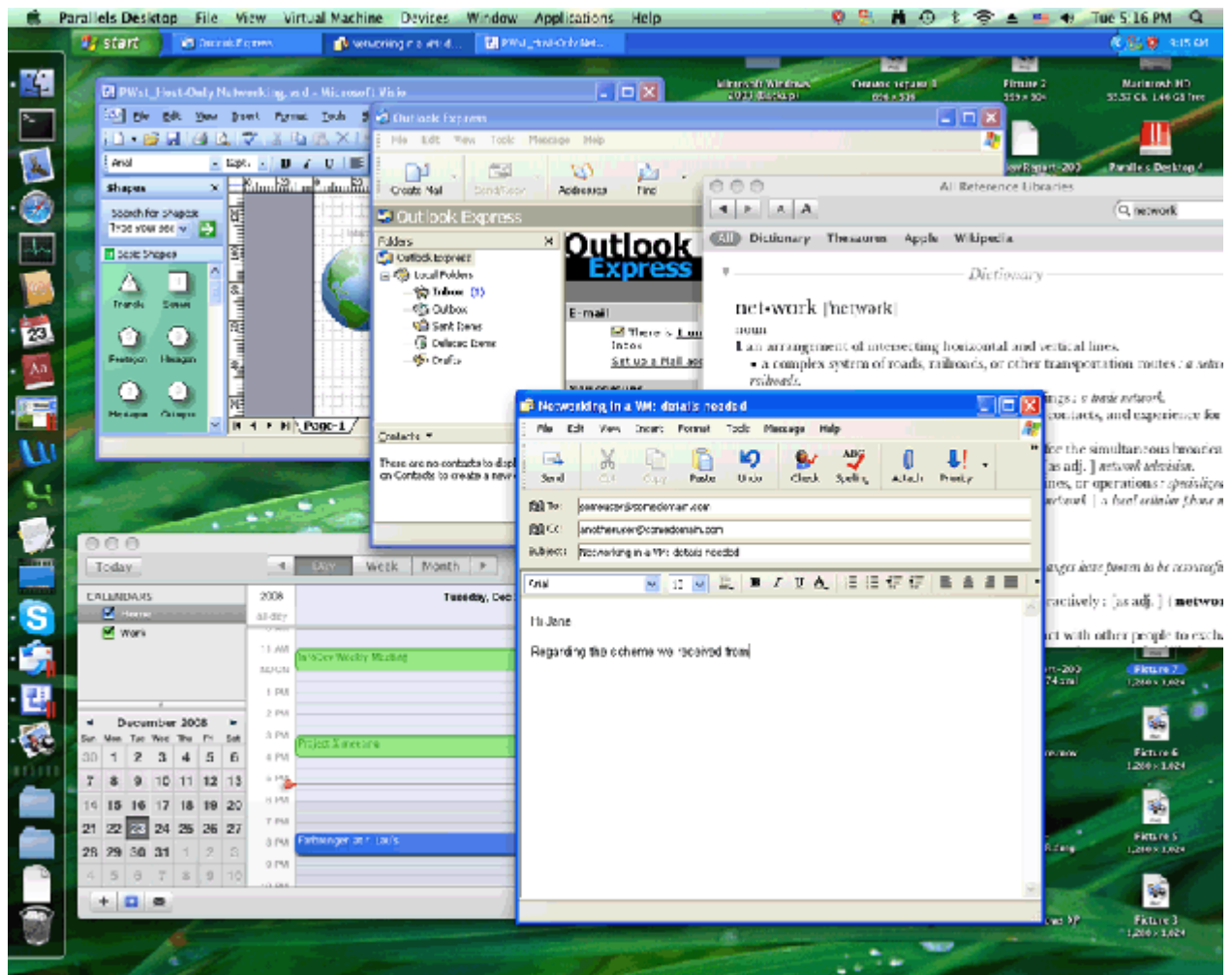
Coherence

Coherence is a visual mode of working with a virtual machine that enables you to:

- Use your Windows applications side by side with your Mac OS X applications.
- Use the Windows taskbar side by side with Mac OS X Dock.
- Move the Windows applications windows from one display to another (if you have more than one display).

When you switch a running virtual machine with one or more running applications into the Coherence mode, you will see the guest OS applications windows on your Mac OS X desktop along with the Mac OS X applications windows.

When a Windows guest OS application window is active, you can see the Parallels Desktop menus in the Mac OS X menubar.



The current version of Parallels Desktop provides a close integration between guest OS applications and Mac OS X:

- The Windows file system is accessible from Mac OS X and vice versa.
- Transparent file associations in both systems let you open Windows files in Mac OS X applications and Mac OS X files in Windows applications.
- The same default browser and email client can be used in both systems.
- The Dock displays both Windows and Mac OS X applications icons.
- Windows **Start** menu can be accessed from the Dock.

Switching to the Coherence Mode

Only a running virtual machine with Parallels Tools (p. 97) installed can be switched to the Coherence mode.

To switch to the Coherence mode:

- Click the  icon on the toolbar, or
- Choose **Coherence** from the **View** menu, or
- In the Window mode, click the Coherence button  in the lower right corner of the virtual machine window, or
- Press Control+Command+Return keys.

Note: To exit the Coherence mode, make your Windows guest OS active by clicking the Start button icon or anywhere on the Windows toolbar, and select the desired view mode from the Parallels Desktop **View** menu.

You can also configure your virtual machine to always start in Coherence by editing the **Startup and Shutdown** settings (p. 172) in Virtual Machine Configuration.

Using the Dock in Coherence

You can open Windows guest OS applications directly from the Dock or Mac OS X Desktop by clicking their icons. As you start a Windows application, its icon appears in the Dock. When the application is closed, or the virtual machine is stopped, the application icon disappears from the Dock.

To keep the icon in the Dock:

- 1** Right-click (Control-click) the Windows application icon in the Dock.
- 2** Choose **Keep in Dock** from the shortcut menu.

Clicking a Windows application icon in the Dock starts the virtual machine and the application in it. The virtual machine is automatically switched to Coherence.

Using the Windows Taskbar

By default, both Windows taskbar and Mac OS X Dock are visible. You can use any of the Windows taskbar elements right from Mac OS X Desktop. You can hide the Windows taskbar by choosing **View > Hide Windows Taskbar**. When the Windows taskbar is hidden, it is convenient to use the Start button icon in the Dock. If you click this icon, the Windows **Start** menu appears. To display this icon, select the **Use Start button icon in Coherence** option in the Parallels Desktop appearance preferences (p. 50).



Using Application Switcher

You can switch between any of the running Mac OS X and Windows applications by using Application Switcher.

- 1 Press Command+Tab on the keyboard, you will see the Application Switcher bar across the desktop with all applications running in both Windows and Mac OS X.
- 2 Select the application by clicking its icon in the bar.



Using Expose With Your Windows Applications

When working in Coherence, you can use Expose to navigate between the Windows and Mac OS X applications windows opened on your desktop. To activate Expose, press the F9 key (on portable Macintosh computers, use the Fn+F9 key combination instead).

If the F9 key doesn't activate Expose, refer to Mac Help for information about changing the Mac OS X shortcuts.

Sharing your Windows and Mac applications

You can use Mac OS X applications to open the files in your Windows guest OS and vice versa. The list of Parallels Shared Applications is created during Parallels Tools installation. The list includes your Mac OS X applications and is available when you choose **All Programs > Parallels Shared Applications** from the Windows **Start** menu. You can select any application from the list and start it.

Right-click a file in Mac OS X or Windows, and choose any available Mac OS X or Windows application from the **Open With** list.

Note: To share your Mac OS X and Windows applications, you need to disable the **Isolate Mac from Windows** option in the **Security** pane (p. 179) of the virtual machine configuration.

Using Mac OS X Trash

You can remove files and folders that you do not need any more by simply dragging them from your virtual machine to the Trash in Mac OS X. After a file or folder is removed, it is automatically placed to Windows Recycle Bin and can be viewed by choosing **Windows Recycle Bin** from the **View** menu. You can then restore the file/folder by right-clicking it and selecting **Restore**. If you wish to empty the Recycle Bin contents, choose **Empty Windows Recycle Bin** from the **File** menu.

Using SmartSelect

You can choose the application that will always open files of a certain type in Mac OS X, no matter whether it is a Windows or a Mac OS X application. You can adjust the SmartSelect associations in the **Shared Applications** pane (p. 184) of the virtual machine configuration.

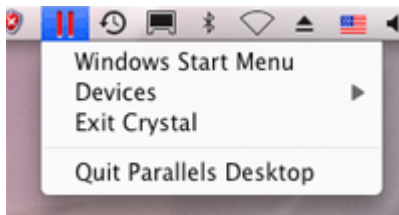
Crystal Mode

The Crystal mode is similar to the Coherence mode (p. 148) but provides even higher level of integration between the host and the guest operating systems. In this mode, all Parallels Desktop controls, icons, and menus are hidden, except for the Parallels icon in the Mac menu bar and Windows Applications folder in the Dock.

Parallels Menu Bar Icon

This icon is used to control your virtual machine and Parallels Desktop while in the Crystal Mode.

- Click this icon to open a basic menu. It allows you to access the Windows Start menu, manage the virtual machine's devices, return to Window mode by choosing **Exit Crystal**, quit Parallels Desktop, and to switch between the running virtual machines.
- Right-click this icon to open the Windows start menu.
- Alt-click (or Option-click) this icon to open an extended menu. The extended menu includes additional options, including **Report a Problem**, **Configure**, **Preferences**, and many others.



Windows Applications Folder in the Dock

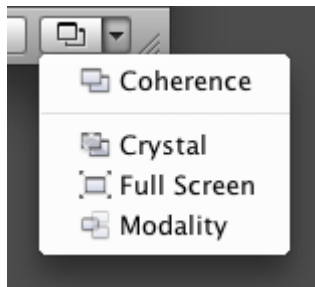
If you selected the **Show Windows Applications folder in Dock** option in the **Shared Applications** pane (p. 184) of Virtual Machine Configuration, the folder with all applications installed in your Windows virtual machine will be displayed in the Dock. You can use this folder to quickly access your Windows applications.



Switching to the Crystal Mode

Only a running virtual machine with Parallels Tools (p. 97) installed can be switched to the Coherence mode. To start working in the Crystal mode, do one of the following:

- Choose **Crystal** from the virtual machine **View** menu.
- Click the **Crystal** button  in the Parallels Desktop toolbar.
- Click the **View Mode** menu  in the lower right corner of the virtual machine window, and select **Crystal**.



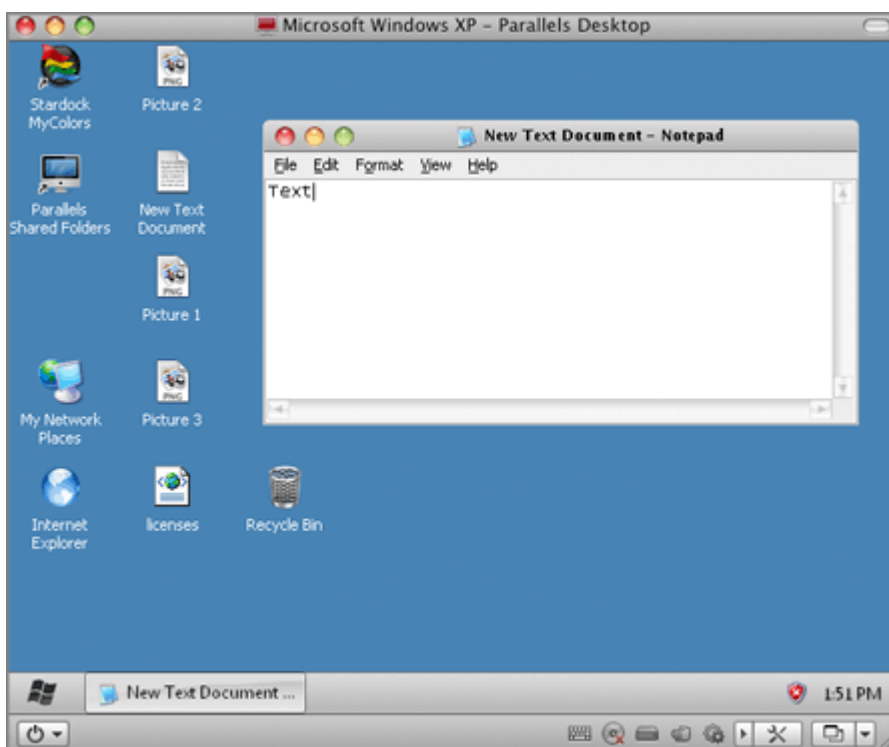
To switch the virtual machine from Crystal to the Window mode, click the Parallels Status icon in the Mac menu bar and select the **Exit Crystal** option.

Note: You can switch from Crystal to the Window mode only. You can then switch from Window to any other mode.

Using the MacLook Theme in Windows

The MacLook theme for your Windows virtual machine is a predefined set of icons, fonts, colors, and other elements that makes the Windows guest OS look like Mac OS X.

Note: This theme is available for Windows XP and later Windows guest operating systems with up to date Parallels Tools (p. 97) installed. To be able to use this theme, you need to log in to Windows as an administrator.



Enabling the MacLook Theme

To enable MacLook for your virtual machine, do one of the following:

- Choose **Use MacLook** from the **View** menu.
- Choose **Configure** from the **Virtual Machine** menu, click the **Options** button, and select the **Use MacLook** option in the **Services** pane.

Once the MacLook theme is enabled, it will be automatically applied to all view modes.

Sharing Folders and Disks

A shared folder is a folder on your Mac that can be accessed from your virtual machine. Such folders can be used for exchanging files between the primary OS (Mac OS X) and the virtual machine or between several virtual machines. You can also share the Windows virtual machine disk volumes with Mac OS X - they will be mounted on the Mac OS X Desktop.

In the operating system, where a shared folder resides, it appears as a usual folder, while in the virtual machine it is shared to, it appears as a network shared folder.

A shared folder or volume resides on the computer (host computer or a virtual machine) to which it initially belongs. It means, that it occupies space on the hard disk of the computer or virtual machine it originally belongs to.

Using shared folders is possible in the guest operating systems with Parallels Tools (p. 98) installed.

Setting up a shared folder requires three steps:

- 1 Make sure that Parallels Tools are installed in your guest OS. See *Installing Parallels Tools* (p. 97) for detailed descriptions on how to do so in a particular guest OS.
- 2 Make sure that the *Isolate Mac from Windows* option (or *Isolate Mac from Linux* for Linux virtual machines) is disabled in the *Security* pane (p. 179) of *Virtual Machine Configuration*.
- 3 Add a shared folder(s) to your virtual machine configuration. For the instruction on how to do that, see *Shared Folders Settings* (p. 180).

Adding a Shared Folder

- 1 Start Parallels Desktop, and open a virtual machine.
- 2 Open the *Virtual Machine Configuration* dialog by:
 - choosing *Configure* from the *Virtual Machine* menu, or
 - clicking the *Configure* button on the toolbar of the virtual machine window.
- 3 In the *Virtual Machine Configuration* dialog, click the *Options* button, and select the *Shared Folders* pane.
- 4 Click the *Add* button . The dialog for adding user-defined shared folders will appear.
- 5 In this dialog:
 - Select the *Enabled* option.
 - In the *Path* field, specify a folder in the Mac OS X file system that will be shared.
 - in the *Name* field, specify a name for the folder which will appear in your guest OS.
 - Provide a description for the shared folder if needed in the *Description* field.
 - If you want to restrict writing to this folder from inside the guest OS, select the *Read-Only* option. You will be able to save files to this folder in Mac OS X only. Click *OK*.

☒ Enabled

Path:

Name:

Description:

☐ Read-only

- 6 The folder appeared in the User-defined Mac OS X folders table. Click OK in the Virtual Machine Configuration dialog to save the changes, and quit the dialog.
- 7 Now you can start your virtual machine and view the shared folders in the guest OS.

Viewing Shared Folders in Windows Guest OS

- 1 After you have created a shared folder, start your Windows virtual machine, and you will see the Parallels Shared Folders shortcut on the Windows desktop.
- 2 Double-clicking this shortcut will lead you to the \\.\psf directory where all your shared folders are stored.

Note: To be able to save files to a shared folder from inside the virtual machine, make sure that the Read-Only option is disabled.

Viewing Shared Folders in Linux Guest OS

- 1 After you have created a shared folder, start your Linux virtual machine.
- 2 Shared folders will be automatically mounted to the /media/psf or /mnt/psf directory upon the virtual machine start.

Sharing Windows Disks to Mac OS

If you want to access your Windows virtual machine's volumes from Mac OS X, you can enable inverse sharing. To do so:

- 1 Start Parallels Desktop, and open a virtual machine.
- 2 Open the Virtual Machine Configuration dialog by:
 - choosing **Configure** from the Virtual Machine menu, or
 - clicking the **Configure** button on the toolbar of the virtual machine main window.
- 3 In the Virtual Machine Configuration dialog, click the **Options** button, and select the **Shared Folders** pane.
- 4 Select the **Access Windows folders from Mac** option to enable access to all virtual disks and partitions available in the virtual machine from your Mac. You will be able to find the virtual machine disks in the virtual machine PVM bundle. Locate the virtual machine bundle in Finder, right-click its name, select **Show Package Contents** from the context menu, and open the **Windows Disks** folder.

Note: By default, virtual machines' bundles are stored in the /Users/<Username>/Documents/Parallels/ folder or in the /Users/Shared folder. To locate the virtual machine bundle, right-click its name in the **Parallels Virtual Machines** list, and select **Show in Fider** from the context menu.

- 5 You can also select **Mount virtual disks to Mac OS X desktop** to mount the shared virtual hard disks to your Mac OS X desktop. After you enable this option, the virtual machine's volumes will be accessible from the Mac OS X desktop where they will appear as connected volumes.

Windows network shares cannot be mounted.

Note: If the virtual machine's volumes are not mounted on Mac OS X desktop, go to **Finder > Preferences > General** and make sure that the **Connected servers** option is selected.

For more information about accessing the virtual machine's disks from Mac OS, see **Browsing Virtual Hard Disks In Finder** (p. 166).

Working With Shared Files and Folders

Parallels Desktop allows you to open some files, located in the virtual machine shared folders (p. 180), in Mac OS X applications. It may become useful if, for example, you cannot open a file in the virtual machine applications. Just right-click the file and choose **Open on Mac** from the context menu. For example, if you right-click a `.txt` file and select this command, the file will be opened in the `TextEdit` application.

Parallels Desktop also allows you to show the files and folders, located in the virtual machine shared folders (p. 180), in Finder. It may become useful if you want to perform various actions on the object, for example, to apply color to it. To display a file or folder in Finder, right-click it and choose **Show in Finder** from the context menu.

Using Shared Profile

Parallels Desktop provides close integration between your Mac OS and Windows guest OS. Now you can access certain Mac Home folders directly from Windows and vice versa. To use this functionality, you should have Parallels Tools (p. 97) installed in the virtual machine and the *Isolate Mac from Windows* option disabled in the **Security** pane (p. 179).

Note: To enable the Shared Profile functionality, you must share all Mac disks or at least your Mac Home folder. You can configure the necessary sharing settings on the **Shared Folders** pane (p. 180) or click **OK** on this pane to automatically enable Mac OS X Home folder sharing together with enabling Shared Profiles.

If the Shared Profile functionality is activated, you can choose one of the following options:

- Select **Desktop** to use the Mac desktop as the desktop in your Windows guest OS.
- Select **Documents** to use the Mac **Documents** folder on your Mac as the **My Documents** folder in your Windows guest OS.
- Select **Pictures** to use the **Pictures** folder on your Mac as the **My Pictures** folder in your Windows guest OS.
- Select **Music** to use the **Music** folder on your Mac as the **My Music** folder in your Windows guest OS.
- The **My Videos** folder to the **Movies** folder on your Mac (for Windows XP/Vista/7 only)
- The **Downloads** folder to the **Downloads** folder on your mac (for Windows Vista/7 only)

Warning: If you delete any Mac OS X file from the Windows desktop when the Mac OS X desktop sharing is enabled, you will not be able to find it in Mac OS X Trash or Windows Recycle Bin. The file will be deleted from your computer permanently.

When Shared Profile is enabled, the virtual machine's desktop will display the icons present on Mac OS X Desktop, the **My Documents** folder will contain items stored in the **Documents** folder on your Mac. The other folders will behave in a similar way.

To enable and configure Shared Profile, use the **Shared Profile** pane (p. 182) of Virtual Machine Configuration.

Disabling Shared Profile

You can disable Shared Profile either by disabling Shared Profile in the **Shared Profile** pane (p. 182) or by disabling Mac folders sharing at runtime (p. 145) or in Virtual Machine Configuration (p. 182).

Using Shared Applications

You can use Mac OS X applications to open the files in your Windows guest OS and vice versa.

Note: To share your Mac OS X and Windows applications, you need to disable the **Isolate Mac from Windows** option in the **Security** pane (p. 179) of the virtual machine configuration.

Using Mac OS X Applications in Windows Guest OS

The list of Parallels Shared Applications is created during the Parallels Tools installation. The list includes your Mac OS X applications and is available when you choose **All Programs > Parallels Shared Applications** from the Windows **Start** menu. You can select any application from the list and start it. To use this functionality, enable the **Share Mac OS X applications with Windows** option in the **Shared Applications** pane (p. 184).

To open a Windows file with the Mac OS X application you prefer, right-click the file and choose the application from the **Open With** list. To open a Mac OS X file in a virtual machine's application, you can drag this file to this application icon on the Windows desktop.

Using Windows Applications in Mac OS X

You can create a list of Windows applications in Mac OS X and run them even when the virtual machine is stopped. If you start a Windows application when the virtual machine is stopped, the virtual machine will automatically start and switch to Coherence (p. 148).

To open a file with the application you prefer, irrespective of where the file or the application belongs to, right-click the file and choose the application from the **Open With** list. To open a Mac OS X file in a virtual machine's application, you can drag this file to this application icon on the Windows desktop.

If you selected the **Show Windows Applications folder in Dock** option in the **Shared Applications** pane (p. 184) of Virtual Machine Configuration, the folder with all applications installed in your Windows virtual machine will be displayed in the Dock. You can use this folder to quickly access the needed Windows application.



You can also create aliases for your favorite Windows applications on Mac OS Desktop and add their icons to the Dock.

To create an alias for the application and add its icon to the Dock:

- 1** Start your Windows virtual machine.
- 2** Start any of your favorite Windows applications in the virtual machine. When the application is started, its icon appears in the Dock.
- 3** To create an alias for your favorite Windows application, right-click the application icon in the Dock, and select **Keep in Dock** from its shortcut menu.

The application alias appears on the Mac OS desktop. It will be available from the Dock even when the virtual machine is stopped. If you double-click this alias when the virtual machine is turned off, the virtual machine and the corresponding application in it will start automatically.

Sharing Windows System Tray Icons With Mac OS X

To extend the integration between Mac OS X and a Windows guest operating system installed in the virtual machine, you can share Windows system tray icons with Mac OS X in the Coherence and Crystal view modes. After sharing, the icons will be displayed in the Mac OS X menu bar in the Coherence and Crystal view modes and you will be able to use the system tray applications by clicking these icons.

To share Windows system tray icons, you need to configure the Crystal & Coherence view modes settings (p. 194).

Using SmartSelect

SmartSelect allows you to open files of particular types, stored in Mac OS X, in Windows guest OS applications. Moreover, you can also open files of particular types, stored in Windows guest OSs, in Mac OS X applications.

Note: To use SmartSelect, you should install Parallels Tools (p. 97) in the virtual machine and disable the **Isolate Mac from Windows** option in the **Security** pane (p. 179) of the virtual machine configuration.

SmartSelect is available for the following guest OSs:

- Windows 2000
- Windows Server 2003
- Windows XP
- Windows Vista
- Windows Server 2008
- Windows 7

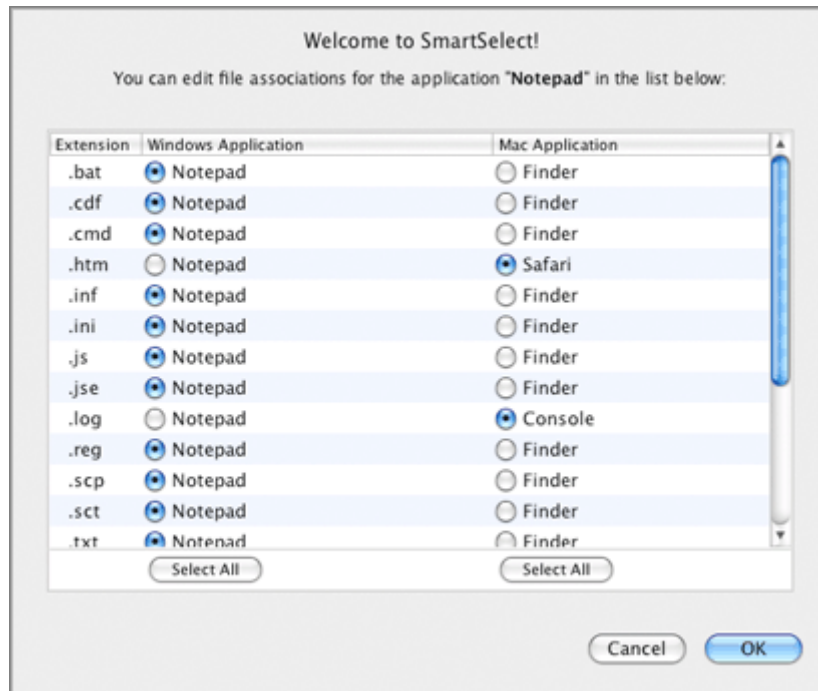
To enable SmartSelect, you need to configure the **Shared Applications** (p. 184) settings in **Virtual Machine Configuration**.

Opening Files in Mac OS X With Windows Applications

To make the description of opening files in Mac OS X with Windows applications more vivid, let us assume that you have the `doc.txt` file stored in Mac OS X and you want to open it with Notepad.

- If you want to open the `doc.txt` file with Notepad only once, right-click this file, choose **Open With** from the shortcut menu, and select Notepad. If there is no Notepad in the context menu, click **Other**, and select **Windows Applications for Windows > Notepad** in Finder.
- If you want to open all `.txt` files stored in Mac OS X with Notepad from now on:
 1. Right-click the `doc.txt` file, choose **Open With** from the shortcut menu, and select Notepad.
 2. Right-click the Notepad icon in the Dock, and choose **SmartSelect** from the shortcut menu.

3. A list of SmartSelect file associations will open. You may edit the list by selecting the applications to open files with particular types of extensions.



4. Find the .txt extension, select the Notepad application, and click OK to save the associations. From now on, all .txt files stored in Mac OS X will open in Notepad.

When trying to open a file stored in Mac OS X with the associated Windows guest OS application, mind the following:

- If the virtual machine containing this application is shut down, suspended, or paused, double-clicking the file will start or resume this virtual machine. When the guest OS boots up, the file will open in the application.
- If the virtual machine containing this application is deleted or removed from the **Parallels Virtual Machines** dialog, you will not be able to open the file with the associated application. In this case, choose another application to open this file using the **Open With** list accessible through the shortcut menu.

The SmartSelect File Associations After You Remove Parallels Desktop

If some types of Mac OS X files are associated with certain Windows applications, after you remove Parallels Desktop, it will be impossible to open them in the Windows applications they are associated with. When you try to open such a file after Parallels Desktop is removed, you will have to choose a Mac application to open this file using the **Open With** list accessible through the shortcut menu. To restore the SmartSelect file associations, reinstall Parallels Desktop on your Mac, and register the virtual machine that has the associated Windows applications installed.

Opening Files in Windows Guest OS With Mac OS X Applications

To make the description of opening files in Windows guest OSs with Mac OS X applications more vivid, let us assume that you have the doc.txt file stored in the Windows guest OS and you want to open it with TextEdit.

- If you want to open the doc.txt file with TextEdit only once, right-click this file, choose **Open With** from the shortcut menu, and select TextEdit.
- If you want to open all .txt files stored in this Windows guest OS with TextEdit from now on:
 1. Right-click the doc.txt file, choose **Open With** from the shortcut menu, and click **Choose Program**.
 2. Select TextEdit, choose **Always use the selected program to open this kind of file**, and click **OK** to save the association.

From now on, all .txt files stored in this Windows guest OS will open in TextEdit.

Sharing Web Applications

When you work with Mac OS X and Windows applications simultaneously, you may notice that clicking a hyperlink in a Windows application opens the corresponding web page in the browser set as default in the Windows guest OS and clicking a hyperlink in a Mac OS X application opens the web page in the Mac OS X default browser.

With Parallels Desktop, you can set a single web application for opening similar web pages from both Mac OS X and Windows applications.

You can specify different Internet applications for opening each of the following types of web pages:

- **Web pages.** Web pages accessible through the HTTP and HTTPS protocols.
- **Email.** Links in the `mailto` format.
- **Newsgroups.** Links in the `news` . format.
- **FTP.** Locations accessible through the FTP protocol.
- **RSS.** RSS feeds.
- **Remote access.** Locations accessible through the Telnet and Secure Shell (SSH) protocols.

For setting up shared web applications, use the Internet Applications pane of the Virtual Machine Configuration (p. 168) dialog.

To open the Internet Applications pane:

- 1** Select a virtual machine and open its configuration by choosing **Configure** from the **Virtual Machine** menu.
- 2** Click the **Internet Applications** item in the left pane of the Virtual Machine Configuration (p. 168) dialog.

Note: You can specify different shared web applications for each of your Windows virtual machines that have Parallels Tools installed.

For more information about setting up shared web applications, refer to **Internet Applications Settings** (p. 186).

Usage Tip

Sharing the web applications can be useful in software development and web site building to check the compatibility with different Internet browsers. Create several virtual machines and install the necessary Internet browsers in each of them. Right-click the file you want to check and specify the browser to use through **Open With**.

Note: The **Open With** list displays only the Internet browsers available through the virtual machines that are currently running.

Browsing Virtual Hard Disks in Finder

For easy access to the files of your virtual machines, you can mount their hard disks in Mac OS X Finder together with other disks and storage devices.

If you want your virtual hard disks to be mounted to the Mac OS X desktop when the virtual machine is running, you should perform the following actions:

- 1 Open the **Shared Folders** pane (p. 180) of the **Virtual Machine Configuration** dialog and enable the **Mount virtual disks to Mac OS X desktop** option.

Note: To be able to edit the settings on the **Shared Folders** pane, you should have **Parallels Tools** (p. 98) installed in the virtual machine and the **Isolate Mac from Windows** option disabled in the **Security** pane (p. 179).

- 2 Open the **Finder Preferences**, click **General** on the toolbar and select the **Connected servers** option in the list of items displayed on the desktop.

If you want to manage the virtual machine content without starting the virtual machine, you can mount the virtual hard disks manually using **Parallels Mounter** (p. 267):

- 1 Right-click the virtual machine file (PVM), and choose **Open with > Parallels Mounter** from the shortcut menu. By default, virtual machines' bundles are stored in the `/Users/<Username>/Documents/Parallels/` folder or the `/Users/Shared` folder.
- 2 To view and work with the contents of a mounted volume, select the volume's icon in the sidebar of the Finder window.

Note: If you copy files to a Windows virtual machine using **Parallels Mounter**, you need to log in to Windows as an administrator to be able to open them inside the virtual machine.

- 3 To unmount the volume, click the **Eject** button next to the volume's name in the sidebar.

Note: You can use **Parallels Mounter** to mount volumes associated with third-party (VMware, VirtualBox, Virtual PC) virtual machines as well.

Working With Objects

For closer integration between Mac OS X and your Windows guest OS, Parallels Desktop provides the possibility to copy and paste formatted text and pictures and drag and drop files between Mac OS X and the virtual machine operating system.

Note: To use these functionalities, you should have Parallels Tools (p. 97) installed in the virtual machine and the **Isolate Mac from Windows** option disabled in the **Security** pane (p. 179).

Copying and Pasting Formatted Text

When you work with your Mac and Windows-based virtual machines side by side, you may need to copy and paste text between them.

Parallels Desktop allows you to copy and paste text of any size between Mac and Windows applications. This text can be italic/bold/underlined, it can be of various colors/fonts/sizes and contain spaces.

You can copy and paste text from:

- Mac OS X applications to the virtual machine applications (Word, Excel, Outlook, Notepad, Wordpad, etc)
- the virtual machine applications to Mac OS X applications (TextEdit, Safari, Mozilla Firefox, MS Office for Mac, etc)

Copying and Pasting Pictures

When you work with your Mac and virtual machines side by side, you may need to copy and paste different pictures between them.

Parallels Desktop allows you to copy and paste pictures between Mac and Windows picture or graphic editors.

Dragging and Dropping Files

Close integration of Mac and Windows-based virtual machines allows you to drag and drop different files between them.

CHAPTER 8

Configuring a Virtual Machine

This chapter explains how you can edit your virtual machine configuration:

- configure general parameters (p. 169) (the name, amount of memory, number of processors, etc).
- edit different virtual machine options (p. 171) (the Optimization, Security, Shared Folders preferences, etc).
- configure the virtual hardware devices (p. 201) currently available inside the virtual machine and add new devices.

In this chapter, you can also find detailed information about networking in a virtual machine (p. 228).

The configuration of an existing virtual machine can be changed in the **Virtual Machine Configuration** dialog. You can open the **Virtual Machine Configuration** dialog by doing one of the following:

- Click the **Configure** button on the toolbar of the virtual machine main window.
- Choose **Configure** from the **Virtual Machine** menu.
- In **Virtual Machine Directory** window, right-click the virtual machine and choose **Configure**.

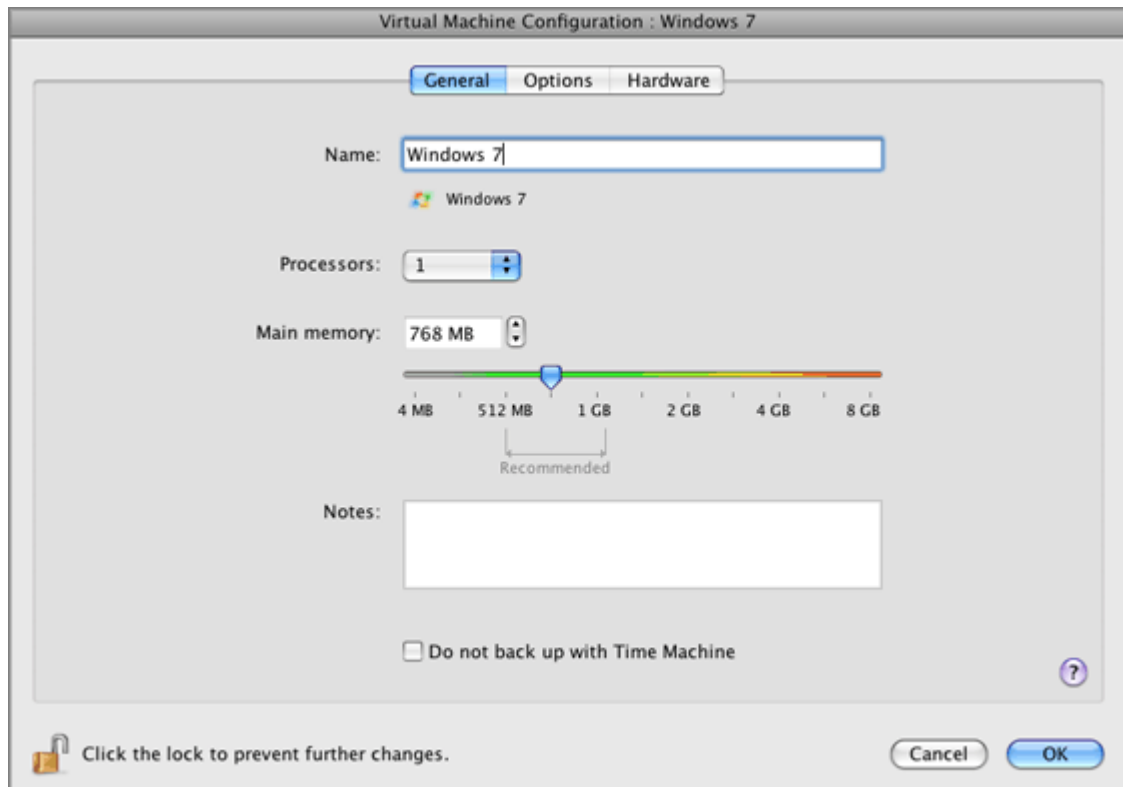
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General Settings

You can view and change the virtual machine name, processors number, amount of memory, and other general parameters.

Note: Some of these settings can be changed only when the virtual machine is not running.



General Preferences include the following parameters:

- The virtual machine name. The **Name** field displays the name assigned to the virtual machine. The length of the name is limited to 50 characters. The name of the virtual machine is displayed on its guest OS window (p. 39).
- The guest OS type and version. This field displays the type of the operating system installed in the virtual machine or declared to be installed in future. The OS type and version fields should reflect the real operating system type and version installed in the virtual machine.
- The number of processors. The **Processors** field allows you to change the number of virtual CPUs that will be used to handle the processes running in the virtual machine. The maximum allowable number of virtual CPUs is automatically calculated by Parallels Desktop. The calculation is based on the number of physical CPUs available to your Mac OS X computer.

Note: It is reasonable to use more than one CPU in your guest OS if you are going to use applications that perform better under multi-core processors.

- The main memory amount. In the **Main Memory** field, you can set the amount of RAM that will be available to the virtual machine. To configure the main memory limit, drag the slider or type the value directly into the **Main Memory** field.

Note: If your Mac has 1 GB of RAM, it is strongly recommended to assign not more than 512 MB to a single virtual machine.

- The virtual machine description. The **Notes** field displays additional information related to the virtual machine.

Backing up with Time Machine

If you are using Time Machine for backing up your Mac, you may exclude the virtual machine from the Time Machine backups by selecting the **Do not back up with Time Machine** option. Time Machine backups may decrease the performance of your virtual machine when it is running in parallel with the Time Machine backup. When your virtual machine is not running (when it is stopped or suspended), the Time Machine backups do not affect it in any way.

For more information about backing up your virtual machines, refer to *Backing Up a Virtual Machine* (p. 242).

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

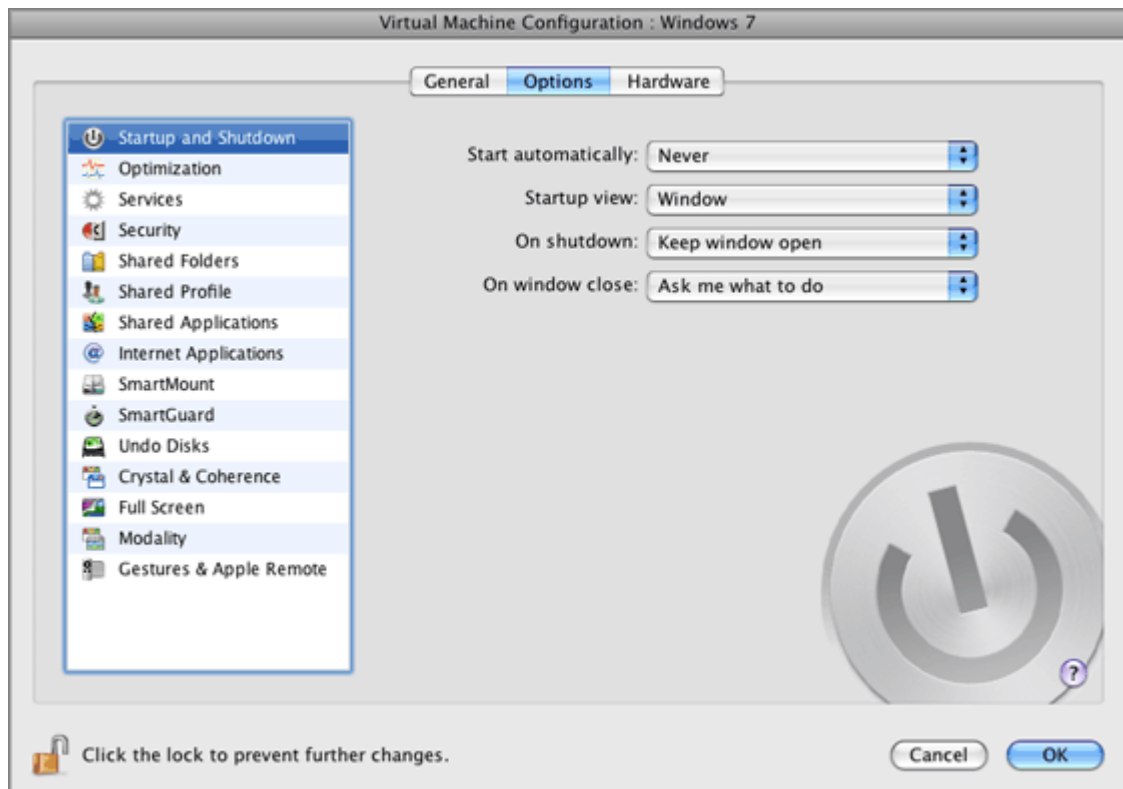
Options

The virtual machine options include the following settings:

- **Startup and Shutdown** (p. 172). In this pane, you can define a number of parameters related to the procedures of starting and shutting down your virtual machine.
- **Optimization** (p. 174). These settings relate to the virtual machine performance.
- **Services** (p. 177). This pane allows you to manage two Parallels Tools-related parameters: the time synchronization between your virtual machine guest OS and Mac OS X and the mouse pointer automatic capture and release.
- **Security** (p. 179). The **Security** settings determine the overall level of virtual machine's isolation from Mac OS X.
- **Shared Folders** (p. 180). In this pane, you can manage shared folders and their parameters.
- **Shared Profile** (p. 182). These preferences let you access your Mac OS X desktop and some of Mac Home folders directly from the Desktop and the corresponding folders in your Windows guest OS.
- **Shared Applications** (p. 184). These settings relate to sharing applications between the guest Windows OS and Mac OS X.
- **Internet Applications** (p. 186). In this pane, you can set rules to open similar items with the same Internet applications, no matter to which system they belong.
- **SmartMount** (p. 188). These settings relate to the automatic detection and mounting of removable devices in your virtual machines.
- **SmartGuard** (p. 190). In this pane, you can schedule the automatic creation of snapshots.
- **Undo Disks** (p. 192). In this pane, you can enable and configure the Undo Disks option.
- **Crystal & Coherence** (p. 194). In this pane, you can configure a number of options related to the Crystal and Coherence view modes for your virtual machine.
- **Full Screen** (p. 196). In this pane, you can configure a number of options related to the Full Screen view mode.
- **Modality** (p. 198). In this pane, you can configure a number of Modality-related options for your virtual machine.
- **Gestures & Apple Remote** (p. 200). After enabling the options in this pane, you can use the Apple Remote and a touchpad to control some Windows applications in your virtual machine.

Startup and Shutdown Settings

Using the Startup and Shutdown Settings, you can define a number of parameters related to the procedures of starting and shutting down your virtual machine.



Starting the Virtual Machine Automatically

The **Start automatically** option defines the cases in which the virtual machine can be started automatically.

- Select **Never** if you do not want your virtual machine to be started automatically in any case.
- Select **When window opens** if you want your virtual machine to start automatically when you open it from the **Parallels Virtual Machines** list (p. 36).
- Select **When Parallels Desktop starts** if you want your virtual machine to start automatically every time you start Parallels Desktop.

Startup View

The **Startup view** option defines the mode in which the virtual machine will work after you select from the **Parallels Virtual Machines** list (p. 36) and start. If the **Window**, **Full screen**, **Coherence**, **Crystal**, or **Modality** option is selected, the virtual machine will automatically switch to the specified view mode (p. 122). If the **Same as last time** option is selected, the virtual machine will start in the same mode that was applied to it before it was turned off.

Action on the Virtual Machine Shutdown

The **On shutdown** option defines the operation to be performed when you stop the virtual machine.

- Select **Keep window open** if you want the virtual machine window to stay open after the virtual machine is stopped.
- Select the **Close window** option if you want the virtual machine window to automatically close after the virtual machine is stopped.
- Select **Quit Parallels Desktop** if you want Parallels Desktop to quit after the virtual machine is stopped. If there are any other running virtual machines, Parallels Desktop will ask what to do with them before closing.

Action on Closing the Virtual Machine Window

The **On window close** option defines the operation to be performed when you close the virtual machine's window.

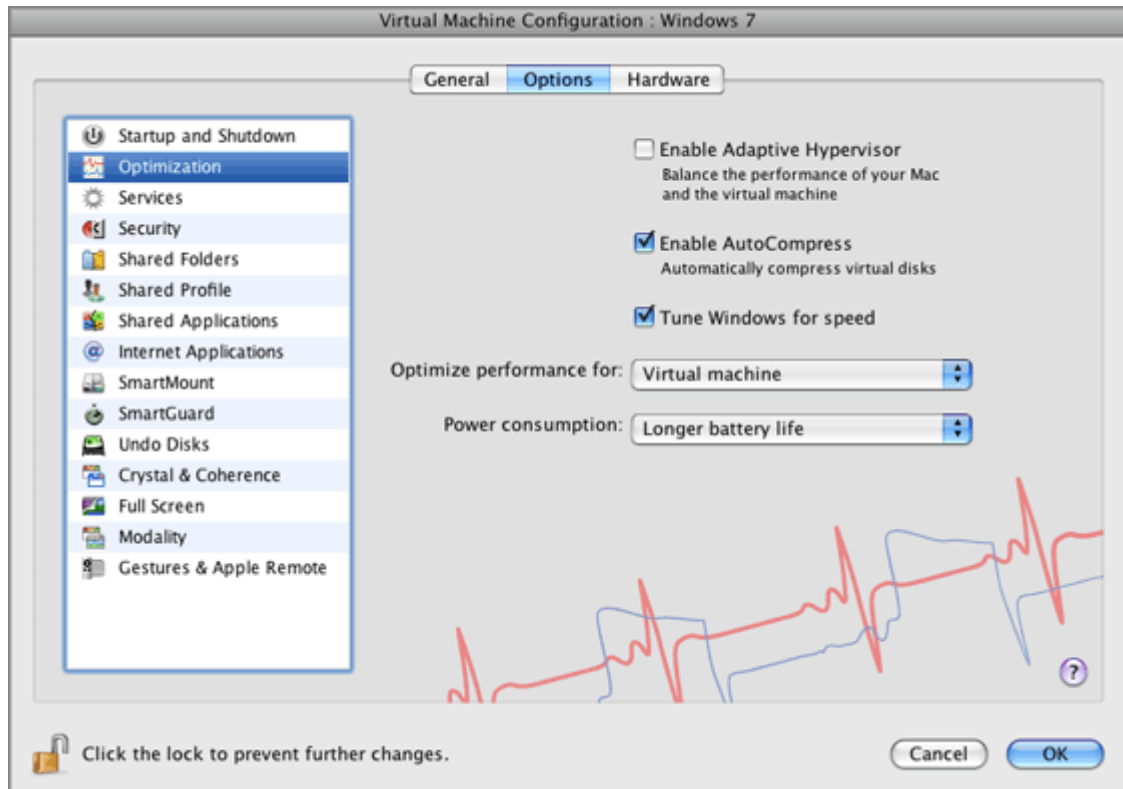
- Select **Suspend** if you want the virtual machine to be suspended when you close its window.
- Select **Stop** if you want the virtual machine to be shut down when you close its window.
- If you select **Ask me what to do**, you will be prompted to choose the operation to perform with the virtual machine each time you close its window.

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Optimization Settings

Using the Optimization Settings, you can optimize your virtual machine performance.



Using Adaptive Hypervisor

Select the **Enable Adaptive Hypervisor** option to automatically allocate the host computer CPU resources between the virtual machine and Mac OS X applications depending on what application you are working with at the moment. If your virtual machine window is in focus, the priority of this virtual machine processes will be set higher than the priority of the Mac's processes and as a result more CPU resources will be allocated to the virtual machine, if you switch to the primary OS window - the priority of its working applications will be set higher and the CPU resources will be relocated to Mac OS X.

Compressing the Disk Automatically

If you use an expanding (p. 218) virtual hard disk in your virtual machine, its image file size on the physical hard disk increases as you add new data to the virtual hard disk. When you delete some data from this virtual hard disk, free unused space appears on the disk but the amount of space your virtual machine occupies on the hard disk of your Mac does not reduce. To regularly free the unused space back to Mac, use the **Enable AutoCompress** option. The virtual hard disk in an expanding format will be reviewed twice a day and, if the unused space occupies more than 50 percent of the hard disk image size, it will be compressed and the hard disk image file size will be decreased. As a result, there will be more free space on your Mac's hard disk.

Note: The AutoCompress option is available for Windows virtual machines only. Compressing can be performed for virtual machines without snapshots (p. 249) and with the Undo disks option (p. 192) disabled.

On the Hard Disk pane (p. 208), you can compress the disk manually whenever you want.

Tuning Windows for Speed

You can make your Windows virtual machine work even faster by selecting **Tune Windows for speed**. This option disables some of the additional Windows features that tend to slow down the performance of Windows.

Optimizing Performance

To make your Windows virtual machine boot faster, select the **Tune Windows for speed** option. Some additional Windows features causing system overload will be disabled.

Note: This option is available for Windows XP and later Windows virtual machines.

The **Optimize performance for** option defines the priority of distributing the main physical computer memory resources:

- Click the **Optimize performance for** field and select **Virtual machine** to allocate more physical computer memory resources to the virtual machine and its applications. Selecting this option may significantly increase the virtual machine performance; however, it may slow down the productivity of your Mac OS X applications.
- Click the **Optimize performance for** field and select **Mac OS X applications** to allocate more memory resources to the physical computer and its applications. In this case, the memory resources usage will be optimized to provide better performance of your Mac OS X applications.

Optimizing Power Consumption

This option allows you to control the virtual machine power consumption when Parallels Desktop is installed on a Mac laptop computer that is running on batteries (for example, MacBook Pro):

- If you select **Longer battery life** in the **Power consumption** field, the virtual machine power consumption will be automatically reduced to provide a longer life for your Mac laptop battery.
- If you select **Better performance**, the virtual machine and its applications will operate at the maximum possible speed. However, enabling this option may significantly reduce your Mac laptop battery life.

If you select the **Enable battery in virtual machine** option, the battery status will be displayed in your virtual machine each time your Mac laptop computer runs on batteries. This option is available only on laptop Macs.

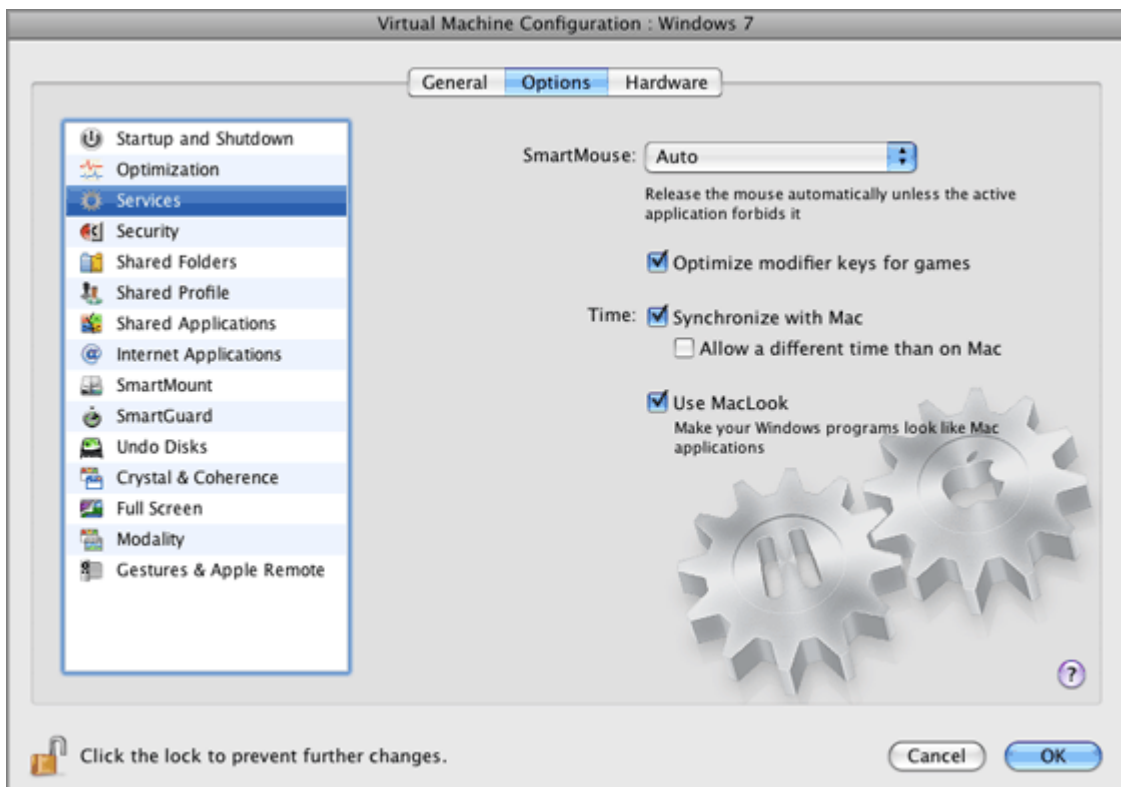
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Services Settings

Using the **Services Settings**, you can manage two Parallels Tools-related parameters: the time synchronization between Mac OS X and your virtual machine guest OS and the mouse pointer automatic capture and release. These options are available only when Parallels Tools are installed in the virtual machine.

Note: Some of these settings can be changed only when the virtual machine is not running.



SmartMouse

The **SmartMouse** option makes the mouse smoothly move between the virtual machine and your Mac. With this option enabled, Parallels Desktop automatically grabs the mouse input when you move the pointer to the virtual machine, and releases it when you move it back to Mac OS.

- If you select **On**, the mouse input will be automatically captured in the virtual machine window when the mouse pointer hovers over it and then released when it moves back to Mac OS, which will make the mouse move seamlessly between your Mac and the virtual machine.
- If you select **Off**, you will need to click inside the virtual machine window to capture the mouse input, and press Ctrl+Alt to release it back to your Mac.

Note: Ctrl+Alt is the default key combination. You can define another key combination for releasing the mouse in the **Keyboard and Mouse** (p. 53) pane of Parallels Desktop Preferences.

- If you select **Auto**, the option will automatically become disabled (**Off**) each time you use a game, graphic application, or any other program that uses its own mouse pointer instead of using the operating system pointer. The option will be automatically enabled (**On**) after you quit the application.

Modifier Keys Optimization

Select the **Optimize modifier keys for games** option if you actively use modifier keys (Alt, Ctrl, Shift) in action games. If you select this option, signals from these keys will be processed faster.

Time Synchronization

Select the **Synchronize with Mac** option to synchronize the time settings of your virtual machine with those of your Mac.

If the time zone set in your virtual machine differs from that of your Mac, you can maintain this time difference by selecting the **Allow a different time than on Mac** option.

MacLook

MacLook theme (p. 154) is a predefined set of icons, fonts, colors, and other elements that makes Windows guest OS look like Mac OS X. Select the **Use MacLook** option if you want use the MacLook theme in your virtual machine. If you select this option, MacLook theme will be enabled in all view modes.

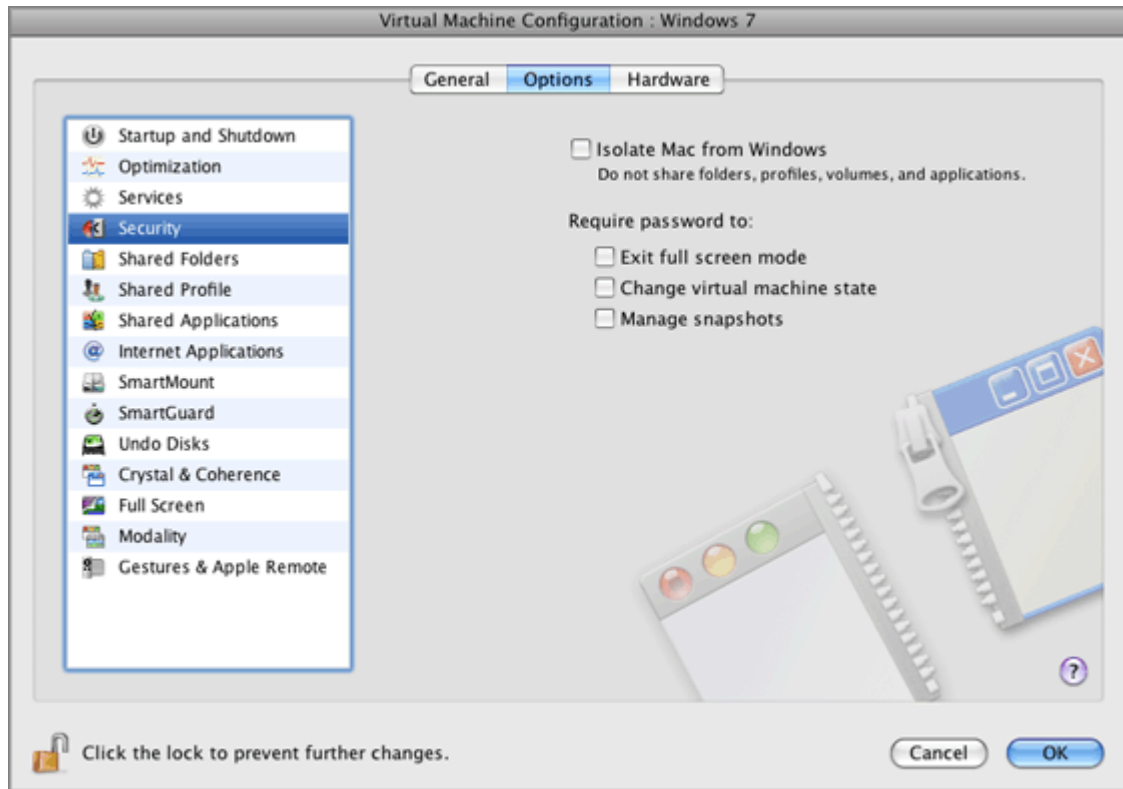
Note: This theme is available for virtual machines with Windows XP or later Windows guest operating systems that have an up-to-date version of Parallels Tools (p. 97) installed.

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Security Settings

You can set restrictions for performing some actions and make your virtual machine isolated from your Mac using the Security Settings.



If you want isolate your virtual machine from Mac OS X, select the **Isolate Mac from Windows** option (**Isolate Mac from Linux** for Linux virtual machines). This option disables all integration features, including Shared Folders (p. 180), Shared Profile (p. 182), Shared Applications (p. 184), Internet Applications (p. 186), and SmartMount (p. 188). You will also not be able to copy or move objects between the virtual machine and your Mac.

You can set restrictions on the following operations for non-administrator users:

- **Exit full screen mode.** An administrator's password will be required to exit the Full Screen (p. 125) view mode.
- **Change virtual machine state.** An administrator's password will be required to start, stop (p. 117), suspend, or otherwise change the virtual machine state.
- **Manage snapshots.** An administrator's password will be required to create or delete a virtual machine snapshot (p. 249), or revert to a snapshot.

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

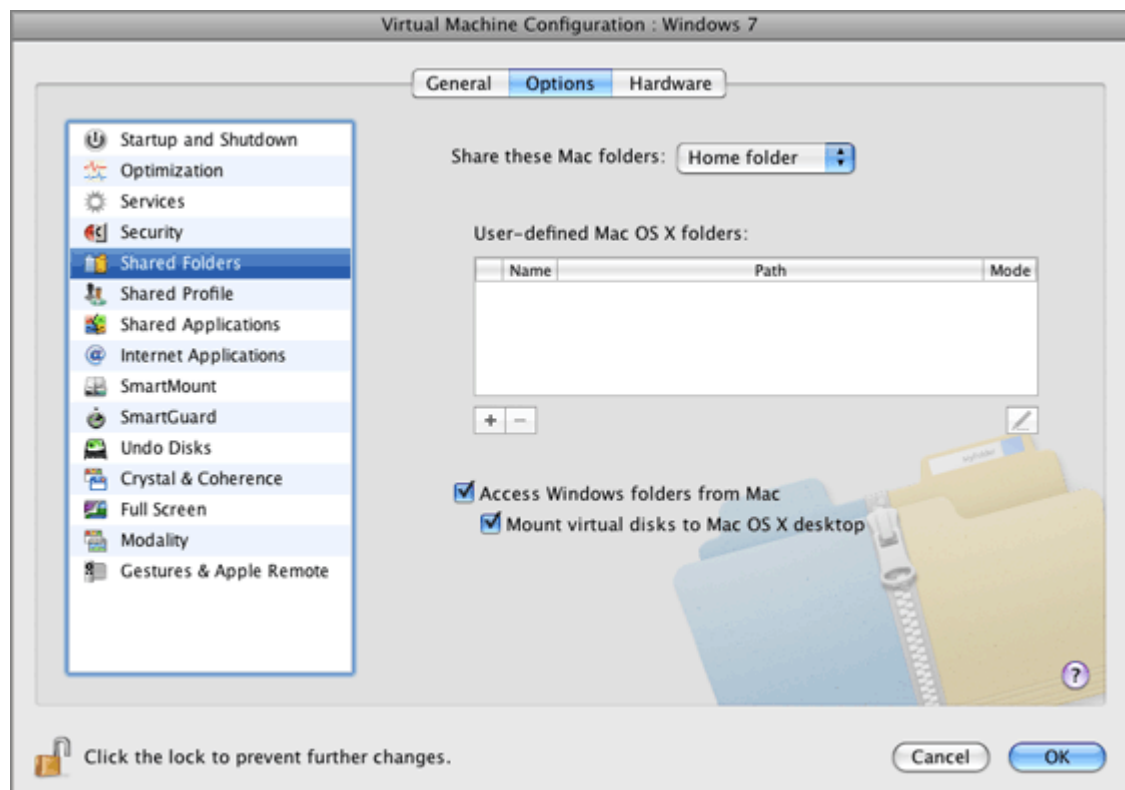
the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Shared Folders Settings

Shared folders can be set up for Windows, Linux, and Mac OS X guest operating systems.

Note: To be able to edit the Shared Folders Settings, you should have Parallels Tools (p. 98) installed in the virtual machine and the Isolate Mac from Windows option disabled in the Security pane (p. 179).

You can also change the shared folders settings at runtime. To learn how to do it, refer to the Changing the Configuration at Runtime section (p. 145)



Sharing Mac OS X Folders to the Guest OS

To configure access to the disks and folders on the physical computer from inside the virtual machine, click the **Share these Mac folders** field, and select one of the following:

- Select **All disks** to provide the virtual machine with access to all disks and folders of your Mac.
- Select **Home folder** to provide the virtual machine with access to the Home folder on the physical computer.
- Select **None** to disable the Mac folders sharing.

Note: When you share the Mac disks or folders with a virtual machine, they still reside and occupy space on the Mac's hard disk.

Defining physical computer folders to be shared

In the **User-defined Mac OS X folders** table, you can manually specify one or more folders on the physical computer to be shared with the virtual machine.

To add a shared folder:

- 1 Click the **Add** button .
- 2 In the **Add Shared Folder** dialog, specify the following settings:
 - **Enabled.** Select this option to enable the shared folder.
 - **Path.** In this field, type the path to the folder you want to share with the virtual machine. You can also use the **Choose** button to locate the folder.
 - **Name.** In this field, type the shared folder name under which the folder will be accessible from inside the virtual machine.
 - **Description.** In this field, you can provide a brief description for the shared folder.
 - **Read-only.** Select this option if you want the shared folder to have a read-only status when accessed from inside the virtual machine.
- 3 Click **OK**.

To remove a shared folder, select its name and click the **Remove** button .

For more information about shared folders, see **Sharing Folders and Disks** (p. 155).

Sharing Windows disks to Mac OS X

Note: This option is not available for Linux and Mac OS X guest operating systems.

Select the **Access Windows folders from Mac** option to enable access to all virtual disks and partitions available in the virtual machine from the physical computer. You will be able to find the virtual machine disks in the virtual machine PVM bundle. Locate the virtual machine bundle in Finder, right-click its name, select **Show Package Contents** from the context menu, and open the **Windows Disks** folder.

You can also select **Mount virtual disks to Mac OS X desktop** to mount the shared virtual hard disks to your Mac OS X desktop. After you enable this option, the virtual machine's volumes will be accessible from the Mac OS X desktop where they will appear as connected volumes. Windows network shares cannot be mounted.

Note: If the virtual machine's volumes are not mounted on the Mac OS X Desktop, go to **Finder > Preferences > General** and make sure that the **Connected servers** option is selected.

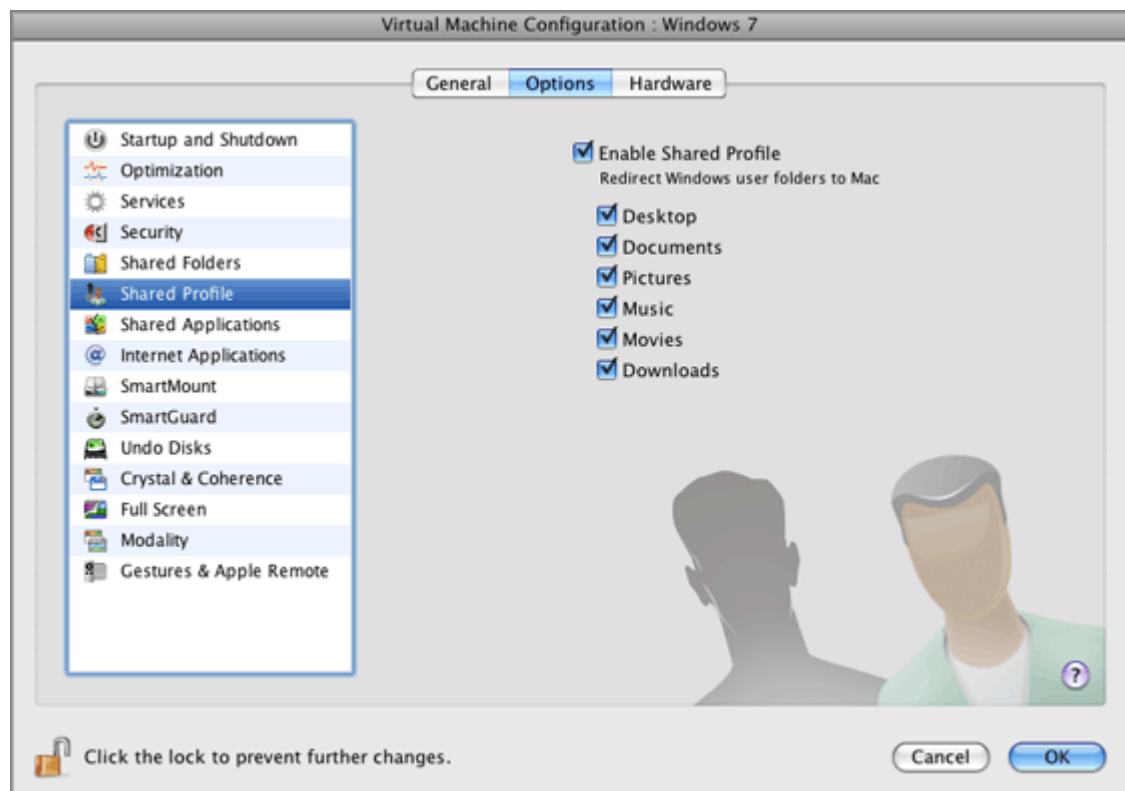
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Shared Profile Settings

Using the **Shared Profile Settings**, you can make Mac OS X desktop and some of the Home folder items accessible directly from the Desktop and the corresponding folders in your Windows guest OS.

Note: To use the functionality available on the **Shared Profile** pane, you should have **Parallels Tools** (p. 98) installed in the virtual machine and the **Isolate Mac from Windows** option disabled in the **Security** pane (p. 179).



Note: To enable the Shared Profile functionality, you must share all Mac disks or at least your Mac Home folder. You can configure the necessary sharing settings on the **Shared Folders** pane (p. 180) or click **OK** on this pane to automatically enable Mac OS X Home folder sharing together with enabling Shared Profiles.

If the Shared Profile functionality is activated, you can choose one of the following options:

- Select **Desktop** to use the Mac desktop as the desktop in your Windows guest OS.
- Select **Documents** to use the Mac **Documents** folder on your Mac as the **My Documents** folder in your Windows guest OS.
- Select **Pictures** to use the **Pictures** folder on your Mac as the **My Pictures** folder in your Windows guest OS.
- Select **Music** to use the **Music** folder on your Mac as the **My Music** folder in your Windows guest OS.
- Select **Movies** to use the **Movies** folder on your Mac as the **My Videos** folder in your Windows guest OS (available for Windows XP/Vista/7 only).
- Select **Downloads** to use the **Downloads** folder on your Mac as the **Downloads** folder in your Windows guest OS (available for Windows Vista/7 only).

Warning: If you delete any Mac OS X file from the Windows desktop when the Mac OS X desktop sharing is enabled, you will not be able to find it in Mac OS X Trash or Windows Recycle Bin. The file will be deleted from your computer permanently.

For more information about the Shared Profile functionality, see **Using Shared Profile** (p. 159).

Note: The Shared Profile functionality is available for Windows guest operating systems only.

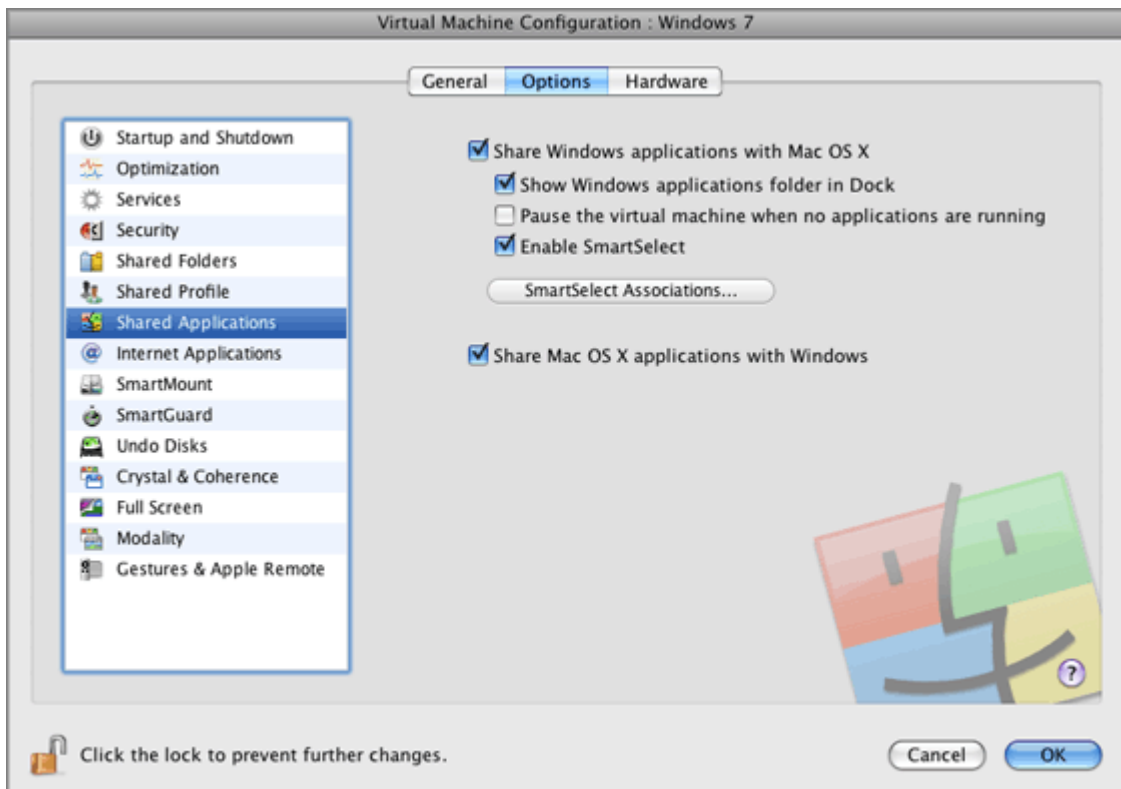
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Shared Applications Settings

Using the Shared Applications Settings, you can configure the applications sharing between Windows and Mac OS.

Note: These options are available only when Parallels Tools are installed in the virtual machine and the **Isolate Mac from Windows** option disabled in the **Security** pane (p. 179).



Windows applications

Select **Share Windows applications with Mac OS X** to allow using Windows applications for opening the files in Mac OS X. Before using a Windows application in Mac OS X for the first time, you should open it once in the virtual machine guest OS. If you enabled this option, you can configure the following options:

- If you select **Show Windows Applications folder in Dock**, the folder with all applications installed in your Windows virtual machine will be always displayed in the Dock.
- Select the **Pause virtual machine when no applications are running** option to save your Mac resources. Pausing a virtual machine releases the resources, such as RAM and CPU, currently used by this virtual machine. The released resources can then be used by the host computer and its applications or by other virtual machines running on the host computer.

If you select this option, the virtual machine will be automatically paused provided that:

- the virtual machine is running but the virtual machine window (p. 39) is not active over 30 seconds
- there are no applications running in the guest operating system (no icons of the guest OS applications are present in the Dock)
- Select **Enable SmartSelect** to enable the SmartSelect functionality allowing you to associate certain files with certain applications, irrespective of whether these are Mac or Windows files, or Mac or Windows applications. To specify applications to open certain types of files, click **SmartSelect Associations...** and specify the file extensions and applications to open them. For detailed information on the SmartSelect functionality, refer to **Using SmartSelect** (p. 162).

For more information on working with shared applications, refer to the **Using Shared Applications** section (p. 160).

Mac OS X applications

To be able to open Windows files with Mac OS X applications, select **Share Mac OS X applications with Windows**.

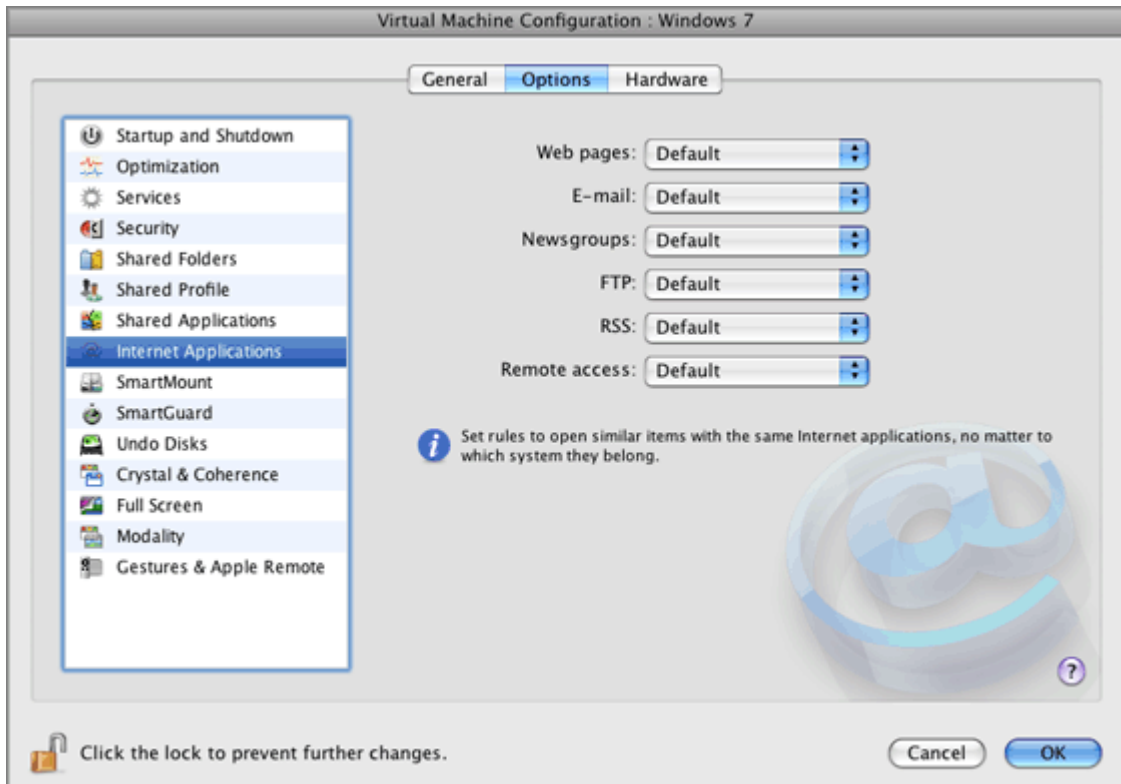
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Internet Applications Settings

Using the Internet Applications Settings, you can specify the settings for opening different types of Internet-related files and locations.

Note: To use the functionality available on the Internet Applications pane, you should have Parallels Tools (p. 98) installed in the virtual machine and the Isolate Mac from Windows option disabled in the Security pane (p. 179).



You can specify different Internet applications for opening each of the following types of web pages:

- Web pages. Web pages accessible through the HTTP and HTTPS protocols.
- E-mail. Links in the `mailto` format.
- Newsgroups. Links in the `news` . format.
- FTP. Locations accessible through the FTP protocol.
- RSS. RSS feeds.
- Remote access. Locations accessible through the Telnet and Secure Shell (SSH) protocols.

To set applications for opening these types of web pages and links:

- 1 Click the box next to the type name.
- 2 Choose the appropriate Internet application from the list.

Note: This list contains Internet applications installed in Mac OS X and your virtual machine.

For more information on sharing web applications, refer to **Sharing Web Applications** (p. 165).

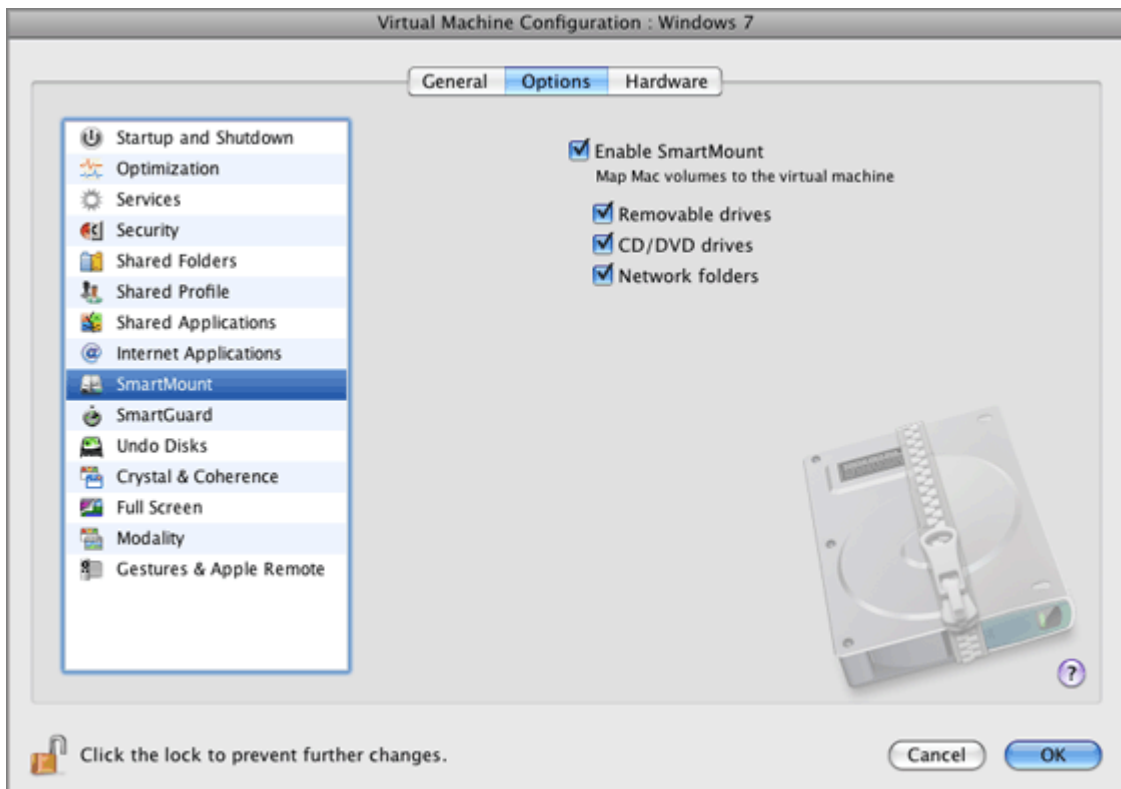
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

SmartMount Settings

Using the SmartMount Settings, you can automate the detection and mounting of removable devices in your virtual machines.

Note: To use options available on this pane, you should have Parallels Tools installed in the virtual machine and the **Isolate Mac from Windows** option disabled in the **Security** pane (p. 179).



To enable the SmartMount feature, you should select **Enable SmartMount** in this pane, and select one or several types of devices to mount.

If the SmartMount functionality is enabled and you connect a device of the selected type to Mac OS X, this device is also automatically mounted to your guest operating system as a network drive. For example, a USB flash drive plugged in to your Mac will be accessible from both the `/Volumes` folder in Mac OS X and `My Computer` in the Windows virtual machine.

The following devices can be automatically mounted to your virtual machines:

- **Removable drives.** Select this option if you want external storage devices such as USB hard disks and USB flash drives to be mounted to your guest OS.
- **CD/DVD drives.** Select this option if you want CD and DVD drives or CD/DVD images (DMG, ISO, and so on) to be mounted to your guest OS.
- **Network folders.** Select this option if you want network shares connected to Mac OS X to be mounted to your guest OS.

The permissions you will have for managing the mounted device from inside the virtual machine will coincide with those you have for this device in Mac OS X. So, if you can read from and write to a USB flash drive in Mac OS X, you will have the same permissions for this drive from inside the virtual machine. At the same time, if you are connecting a USB flash drive that is formatted with NTFS, you will have read-only access to it because Mac OS X cannot write to NTFS volumes.

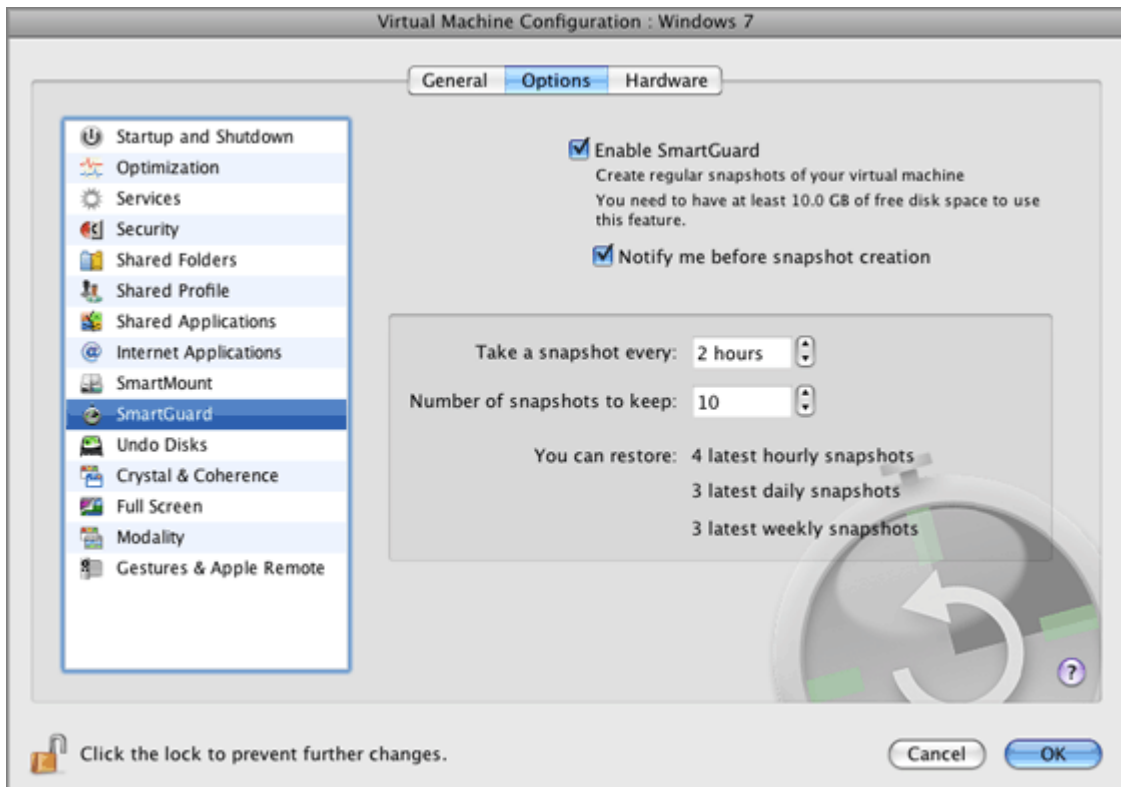
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

SmartGuard Settings

Using the SmartGuard Settings, you can automate snapshots creation. You can find detailed information on snapshots and how to work with them in the *Working with snapshots* chapter (p. 249).

Note: When your virtual machine is paused, snapshot can be created neither manually nor automatically.



To enable the SmartGuard functionality, select the **Enable SmartGuard** option at the top of the SmartGuard pane.

Note: The SmartGuard feature is available only when the **Undo Disks** feature (p. 192) is disabled and the virtual machine is not running in **Safe Mode** (p. 126).

If you want to know when it is time to make the next snapshot and to be able to reject the snapshot creation, enable the **Notify me before snapshot creation** option.

Setting the Time Interval

Set how often snapshots should be made in the **Take a snapshot every** field. You can set from one hour to 48 hours.

If the time interval is less than 24 hours, SmartGuard will allow you to restore the latest hourly, daily and weekly snapshot. If the time interval is more than 24 hours, you will be able to restore the latest daily, weekly and monthly snapshot.

To manage the snapshots and restore any of them, use **Snapshot Manager** (p. 251).

Restricting the Snapshots Number

Use the **Number of snapshots to keep** field to set the maximum number of snapshots that can be stored on your Mac. The maximum available value is 100 snapshots. As soon as **Snapshots Manager** reaches the limit for snapshots and needs to make a new one over limit, it deletes the oldest snapshot.

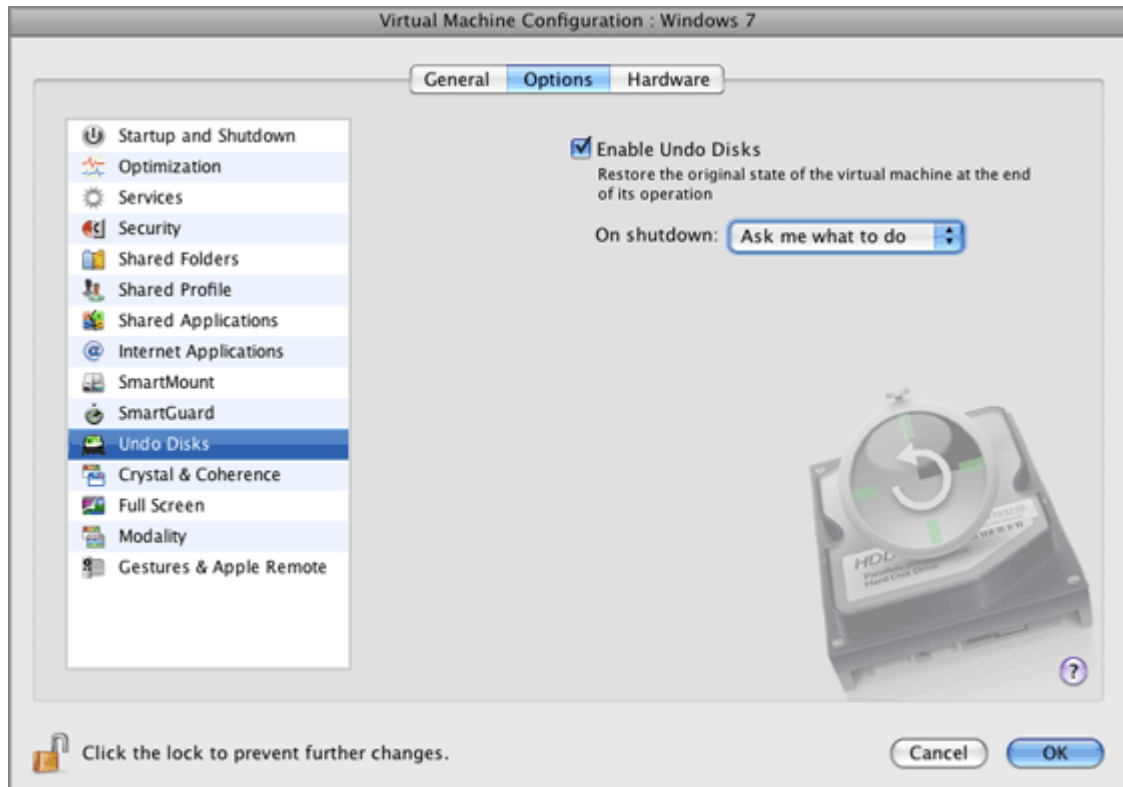
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Undo Disks Settings

Using the Undo Disk Settings, you can enable and configure the Undo Disks feature.

Note: This option can be enabled or disabled only when the virtual machine is not running.



The **Enable Undo Disks** option allows you to discard or apply the changes you made to the virtual machine's hard disk during your working session. If you choose to discard them, the changes will be discarded when you shut down the virtual machine. When you start this virtual machine again, its virtual hard disk will have the same data it contained before you started the previous working session. If you choose to apply the changes on the virtual machine shutdown, the next time you start this virtual machine, its virtual hard disk will store the changes you made during the previous working session.

Note: When enabled, the **Undo Disks** feature is applied to all virtual hard disks this virtual machine uses.

You can choose whether you want to discard the changes you made to the virtual machine's hard disk or choose the action to perform in the **On shutdown** field.

- **Discard changes.** Select this option if you want to discard the changes when you shut down this virtual machine.
- **Ask me what to do.** If this option is selected, you will be prompted to choose the action to perform with the changes (discard or apply them) each time you shut down the virtual machine.

Notes: 1. You cannot create snapshots of virtual machines that have this option enabled.

2. This option cannot be enabled for the virtual machines using the **Boot Camp** partition.

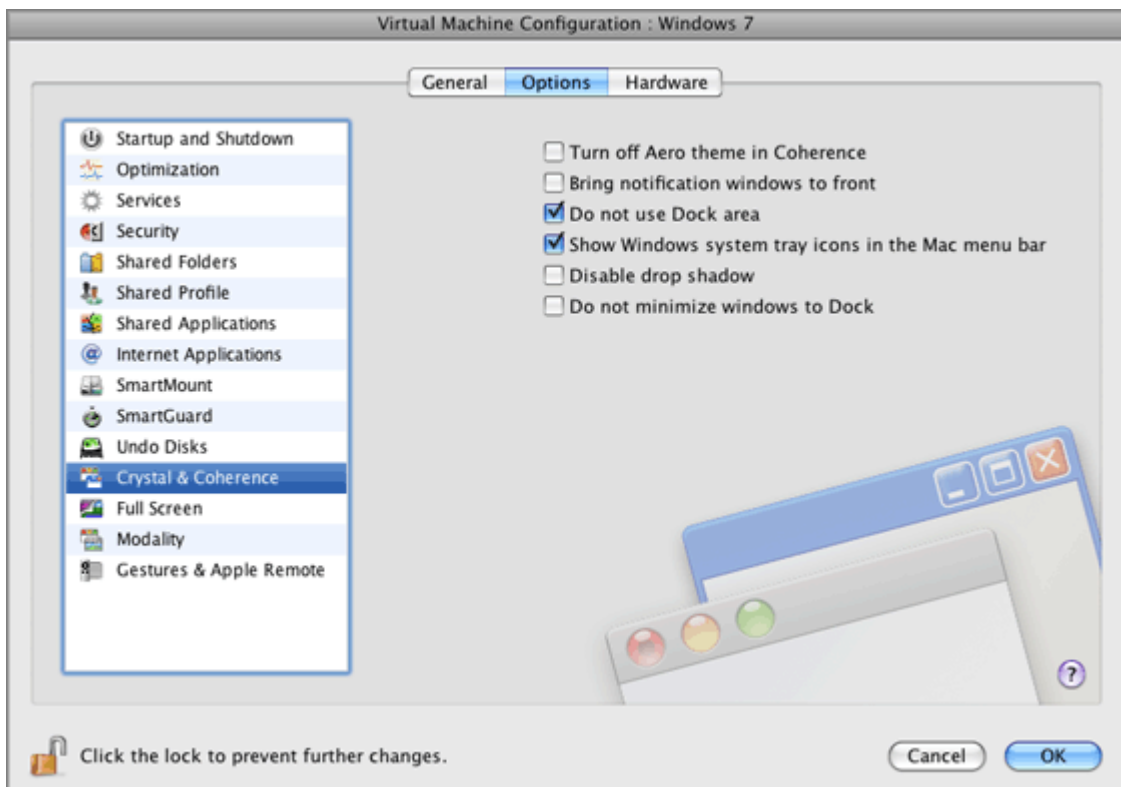
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Crystal & Coherence Settings

Using the Crystal & Coherence Settings, you can configure a number of options related to the Crystal and Coherence view modes for your virtual machine. These view modes are available only for Windows virtual machines that have Parallels Tools installed.

Note: For detailed information on the Crystal and Coherence view modes, see *Working in the Crystal View Mode* (p. 152) and *Working in Coherence* (p. 148).



On this pane, you can configure the following options:

- **Turn off Aero theme in Coherence.** This option is available for Windows 7 and Windows Vista guest operating systems. If you select this option, you will not be able to use the Aero theme in the Coherence and Crystal view modes. In the other view modes, the Aero theme will be available.
- **Bring notification windows to front.** Select this option to always display Windows notifications above the active Mac OS X applications. With this option disabled, you will see Windows notifications only if you work with the corresponding Windows applications.
- **Do not use Dock area.** Select this option to exclude the Mac OS X Dock from the working area and to make Windows applications avoid the screen area occupied by the Dock.
- **Show Windows system tray icons in the Mac menu bar.** If you select this option, the Windows system tray icons will be available from both the Windows taskbar and the Mac OS X menu bar.
- **Disable drop shadow.** Select this option to disable the shadow frames of running Windows applications. Switching off shadows may improve the performance of your virtual machine when operating in the Coherence and Crystal modes.
- **Do not minimize windows to Dock.** Select this option to make minimized Windows applications appear on the taskbar only. With this option disabled, all minimized Windows applications will appear both on the taskbar and in the Dock.

Note: If you use several displays, you can arrange how you will see applications when moving them from one display to another. To this effect, select **System Preferences > Displays > Arrangement** on the Mac OS X menu and arrange the available displays in the **Displays** dialog.

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

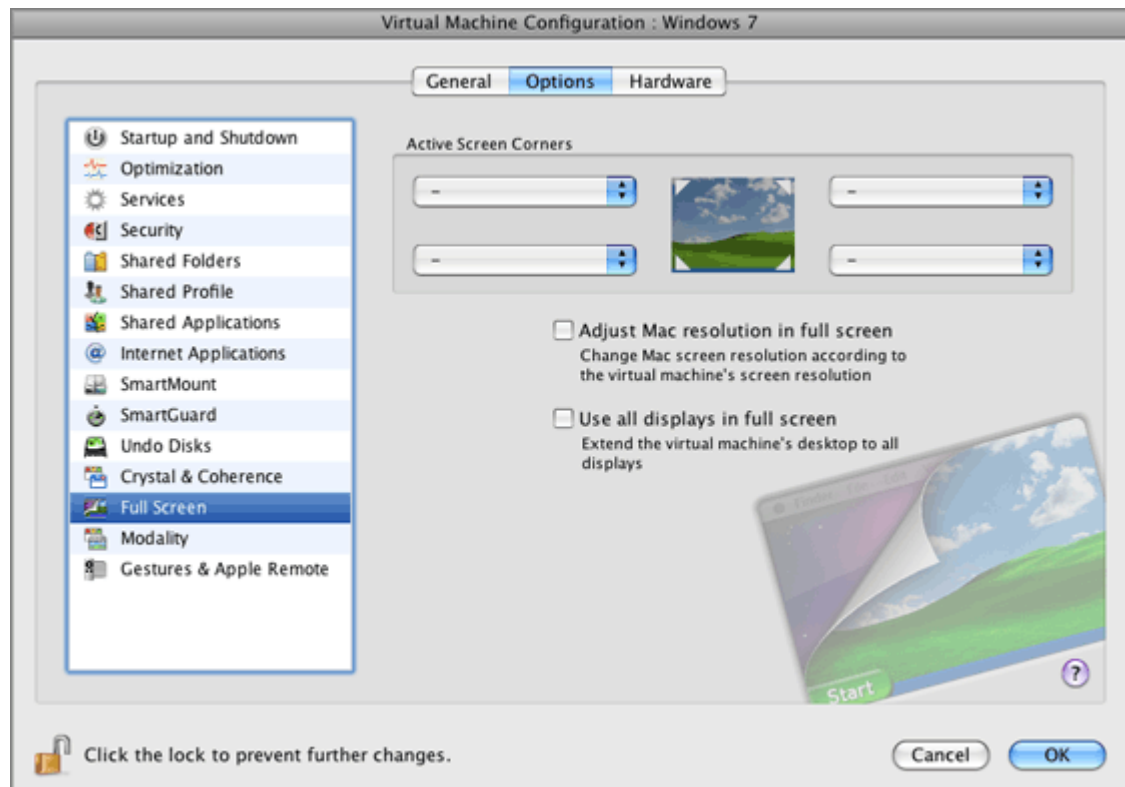
the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Full Screen Settings

Using the **Full Screen Settings**, you can configure the virtual machine's appearance and behavior when it is running in the Full Screen view mode.

In the Full Screen mode, the guest operating system window occupies the whole screen and all Mac OS X and Parallels Desktop controls are hidden.

You can configure the **Full Screen Settings** even when the virtual machine is running.



Active Screen Corners

You can set actions for screen corners in the Full Screen mode. Once you've set an active corner, move the mouse to the corresponding corner of your screen in the Full Screen mode to see the result.

To set an action for a screen corner, click the field near this corner, and select the desired action from the menu:

- **Window.** On clicking the corresponding active corner, the virtual machine will switch to the Window view mode.
- **Crystal.** On clicking the corresponding active corner, the virtual machine will switch to the Crystal view mode (p. 152).
- **Coherence.** On clicking the corresponding active corner, the virtual machine will switch to the Coherence view mode (p. 148).
- **Modality.** On clicking the corresponding active corner, the virtual machine will switch to the Modality view mode.
- **Show menu bar.** On clicking the corresponding active corner, the Mac OS X menu bar and Dock will appear.

Adjusting the Host Computer Screen Resolution to the Virtual Machine Resolution in Full Screen

When you switch the virtual machine to the Full Screen mode, its screen resolution:

- changes to the physical computer screen resolution if you have Parallels Tools installed or
- remains the same.

In the second case, if the virtual machine screen resolution is lower than that of your physical computer, in the Full Screen mode, the virtual machine's screen will appear on a black background. If the virtual machine's screen resolution is higher than that of the host computer, in the Full Screen mode, the virtual machine's screen will have scroll bars.

To adjust the screen resolution of your physical computer to that of the virtual machine, select the **Adjust Mac resolution in full screen** option. In this case your computer will change its screen resolution each time the virtual machine is switched to the Full Screen mode.

Using All Displays in Full Screen

If you have multiple displays connected to your Mac, the guest operating system can use all these displays in the Full Screen mode. To enable this feature for the virtual machine, select **Use all displays in full screen**. Now if you change the view mode to Full Screen, your guest operating system will occupy all available displays.

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

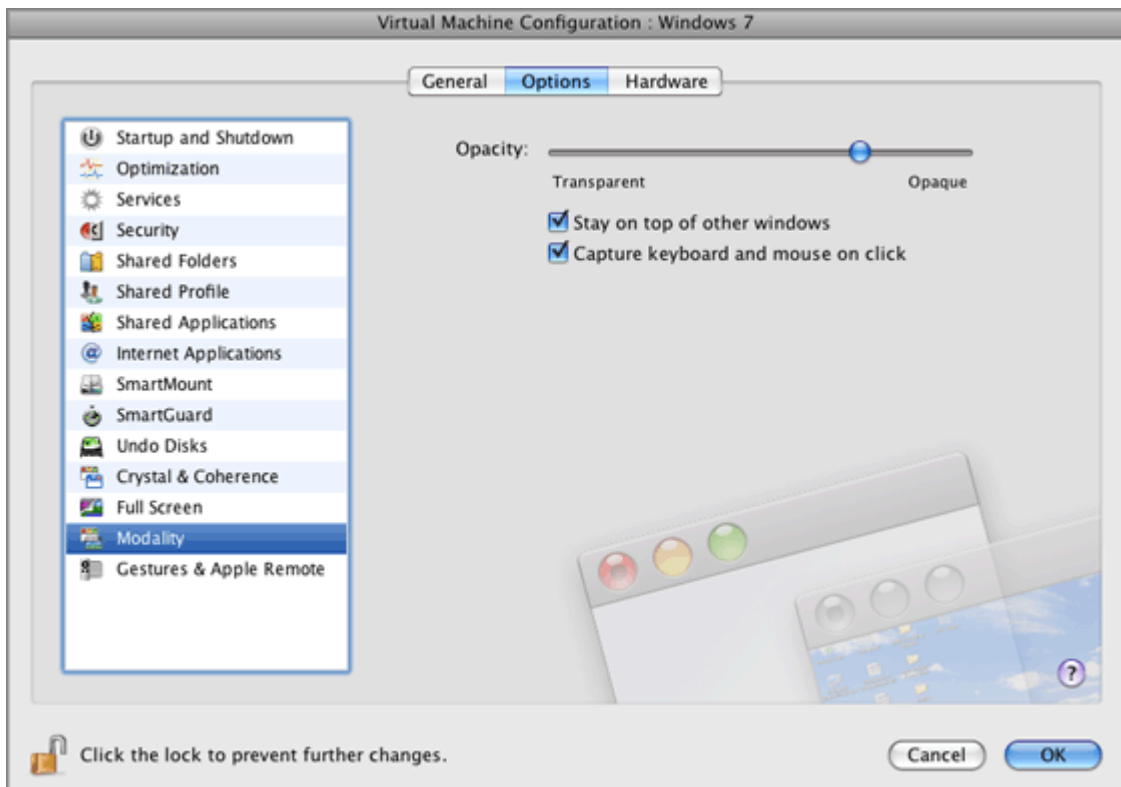
the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Modality Settings

Using the **Modality Settings**, you can configure the virtual machine's appearance and behavior when it is running in the Modality mode.

In the Modality mode, you can resize the virtual machine windows and place them side by side with your Mac's applications. A Modality window can be scaled to any size, and its content will still be active, which allows you to monitor the tasks running inside the virtual machine while you are working on the Mac's side.

You can configure the settings on this pane even when the virtual machine is running.



In the Modality mode, the virtual machine's window becomes transparent by default. You can specify the level of visibility in the **Opacity** field by dragging the slider between **Transparent** and **Opaque**. You can change the level of transparency for your running virtual machine when it is in the Modality mode.

To manage the behavior of the virtual machine's window in the Modality mode, use the following options:

- **Stay on top of other windows.** Clear this option if you do not want the virtual machine's window to appear on top of all other open windows when the virtual machine is in Modality.
- **Capture keyboard and mouse on click.** Clear this option if you do not want the virtual machine to capture the keyboard and mouse input when in Modality.

By default, both these options are selected.

To learn how to switch to Modality, refer to the **Changing View Modes** section (p. 122).

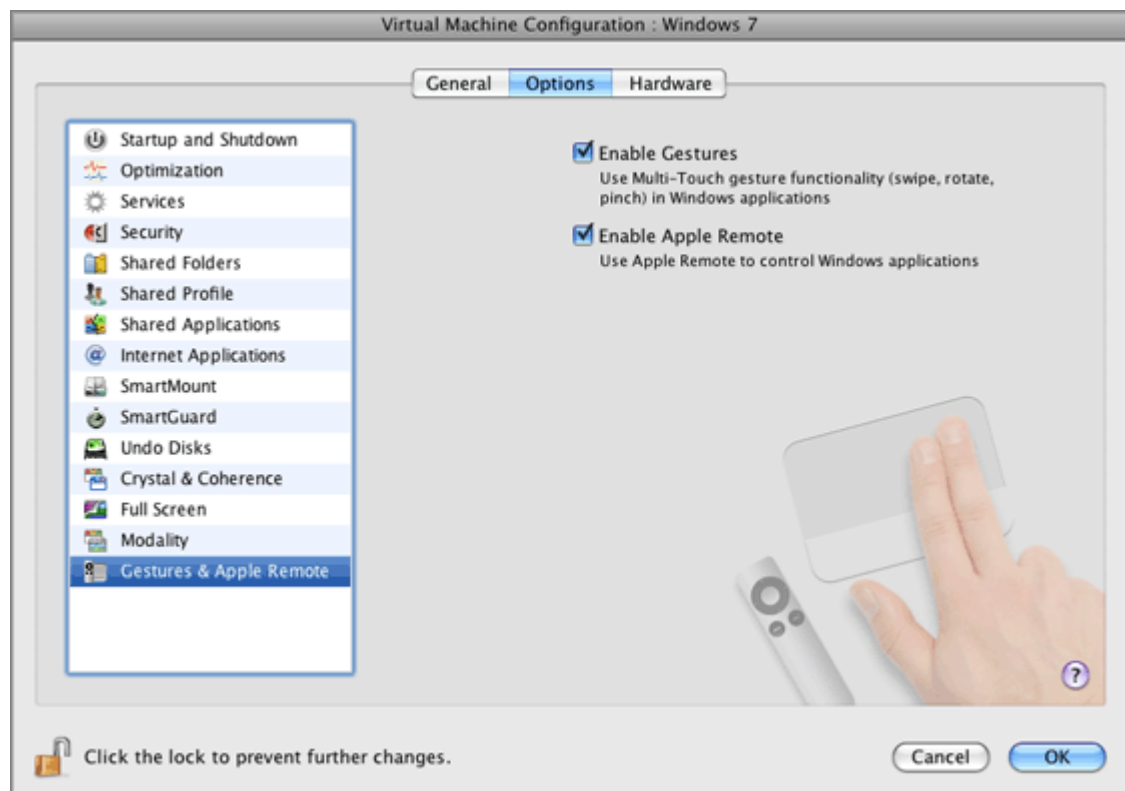
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Gestures & Apple Remote Settings

You can use the touchpad or Apple Remote to control some Windows applications in your virtual machine.

Note: This feature is available for Windows virtual machines that have Parallels Tools installed.



To use these features, enable the following options:

- **Enable Gestures.** Enable this option to use the touchpad (if you have one on your Mac) to control some Windows applications.
- **Enable Apple Remote.** Enable this option to use the Apple Remote to control some Windows applications.

For detailed information on using gestures and the Apple Remote, see *Using Touchpad Gestures and the Apple Remote* (p. 134).

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Hardware Settings

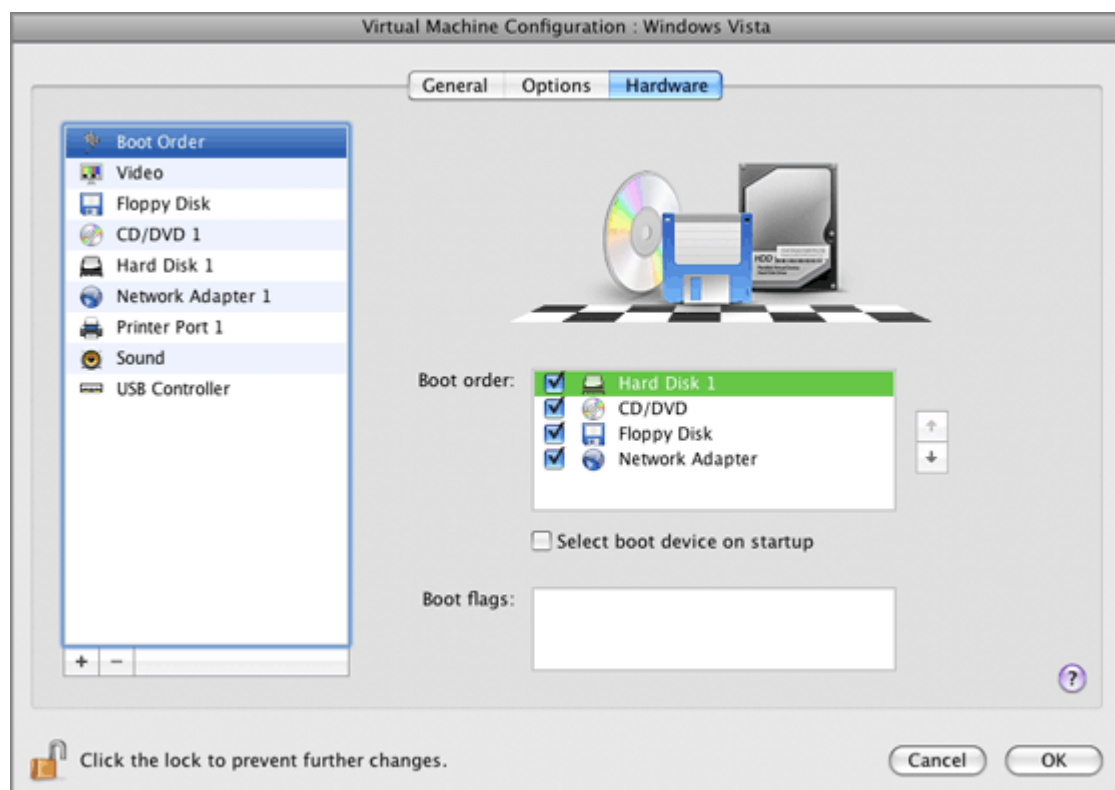
Using the Virtual Machine Configuration dialog, you can configure the virtual hardware available in your virtual machine:

- Configure the devices currently available inside the virtual machine.
- Add or remove devices.
- Configure the boot order of your virtual machine.

Boot Order Settings

Using the **Boot Order Settings**, you can configure the virtual machine boot sequence, that is, the order in which the virtual machine will try to load the operating system from different boot devices.

Note: These settings cannot be changed when the virtual machine is running.



The currently supported boot devices are listed below:

- **Hard Disk.** Select this device if you want the virtual machine to boot up from its virtual hard disk drive.
- **CD/DVD-ROM.** Select this device if you want the virtual machine to boot up from the media connected to its virtual CD/DVD-ROM drive.

Note: The virtual machine will use the CD/DVD-ROM drive specified as **CD/DVD-ROM 1** in its configuration.

- **Floppy Disk.** Select this device if you want the virtual machine to boot up from a floppy disk image connected to its virtual floppy disk drive.
- **Network Adapter.** Select this device if you want your virtual machine to boot from a network adapter using PXE (Pre-Execution Environment).

Note: The virtual machine will use the network adapter specified as **Network Adapter 1** in its configuration.

Every time you start the virtual machine, it tries to boot from the device specified as the first one in the **Boot order** list. If the virtual machine cannot boot from the first device (for example, no media is connected to it), the virtual machine proceeds to the second device in the list and tries to boot from this device, and so on.

On this pane, you can perform the following operations:

- Change the currently set boot sequence by selecting the name of the corresponding boot device in the **Boot order** list and moving it up or down using the arrows to the right of the list.
- Remove a boot device from the sequence by clearing the check box next to its name.

If you choose the **Select boot device on startup** option, you will see the following message at the virtual machine startup: "Press ESC to select boot device". If you press ESC pending 5 seconds, you will be able to select a boot device. If you do not press ESC, the virtual machine will try to boot from the devices specified in the **Boot order** list.

Note: Make sure that the device you wish to use for your virtual machine booting (hard disk drive, CD-ROM drive, floppy disk drive, or network adapter) is available to the virtual machine and configured properly. If you do not have any boot devices configured in your virtual machine, you will see the following error message after you start the virtual machine: "No boot device is available". In this case, you should stop the virtual machine and configure at least one boot device for it.

The **Boot flags** field is intended for specifying the flags that can change the virtual machine system behavior. The system flags can be used by the Parallels customer support team in cases when something goes wrong in your virtual machine. It is not recommended to type anything into this field without being instructed to do so by the customer support staff.

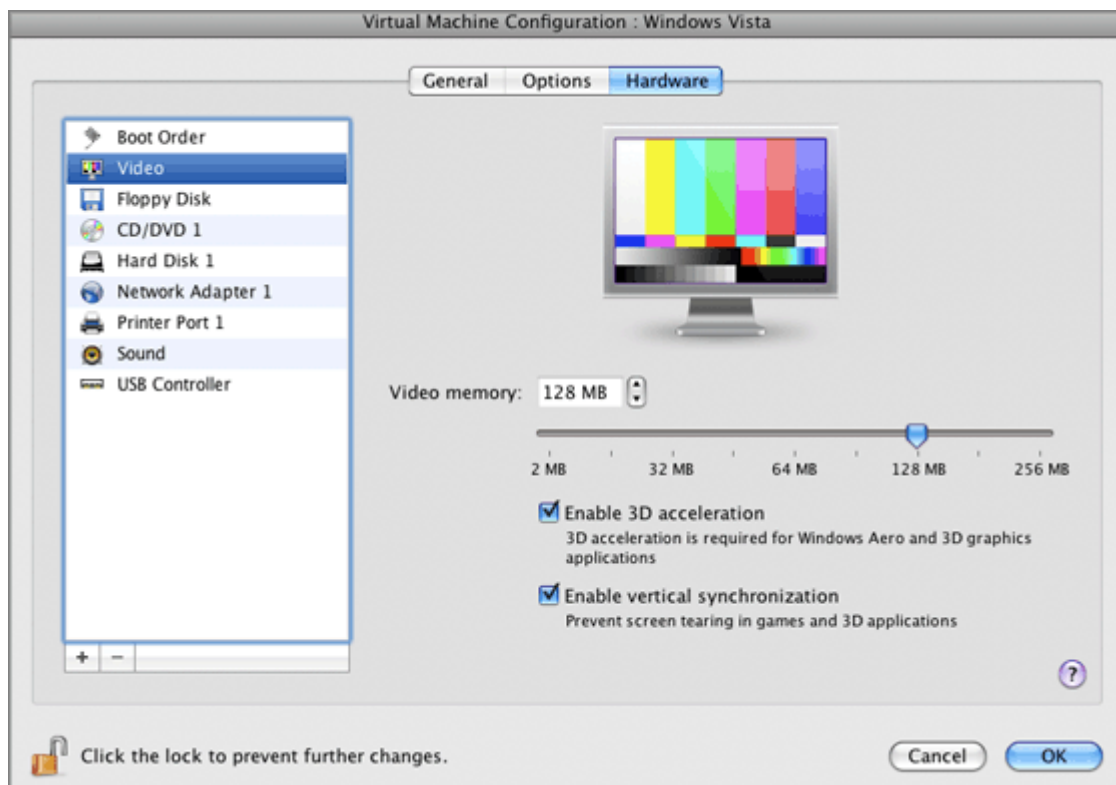
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Video Settings

To view and configure the amount of video memory available to the virtual machine's video card, use the Video Settings.

Note: These settings cannot be changed when the virtual machine is running.



In the **Video memory** field, you can set the amount of video memory that will be available to the virtual machine.

To configure the video memory limit, do one of the following:

- drag the slider
- use the spin box arrows
- type the value directly into the **Video memory** field

Enabling 3D Acceleration

If you want to use games or applications that require video cards that support DirectX or OpenGL, select the **Enable 3D acceleration** option. For more information, refer to **Using 3D Graphics Applications** (p. 132).

Enabling Vertical Synchronization

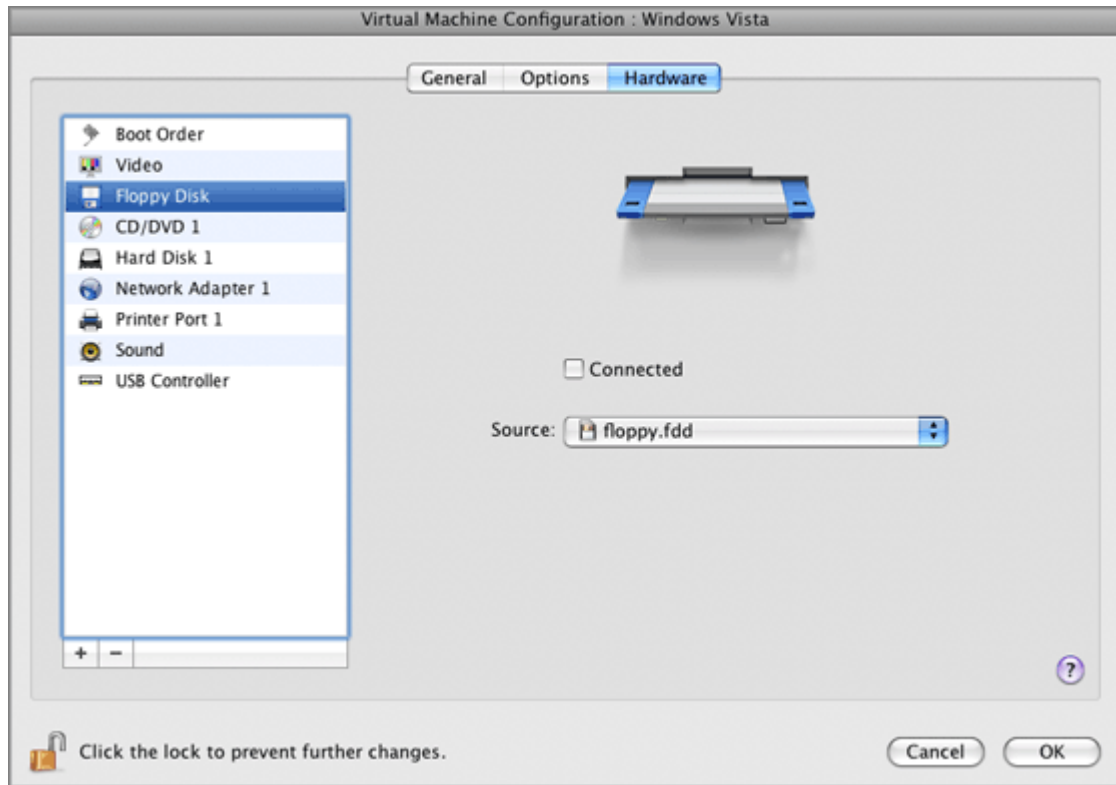
Sometimes in games and 3D applications, a newly rendered frame may overlap a previously rendered one and then screen tearing happens. This occurs when the video card or the software using it begins updating the actively-displayed memory in a manner that is out of sync with the monitor's refresh rate. To prevent screen tearing, select the **Enable vertical synchronization** option.

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Floppy Settings

To view and configure the virtual machine floppy disk drive settings, use the Floppy Disk Settings.



Select the **Connected** option if you want the floppy disk drive or floppy disk image to be automatically connected to the virtual machine on its startup.

In the **Source** field, you should specify the source device or image file that will emulate the virtual machine floppy disk drive:

- If a real floppy disk drive is connected to your Mac and you want to use it in your virtual machine, click the **Source** field, and select the real device name from the list.
- If you want to use a floppy disk image, click the **Source** field, and choose the virtual machine default `floppy.fdd` file, or click **Choose an image file**, and specify the path to the desired floppy disk image file on your Mac.

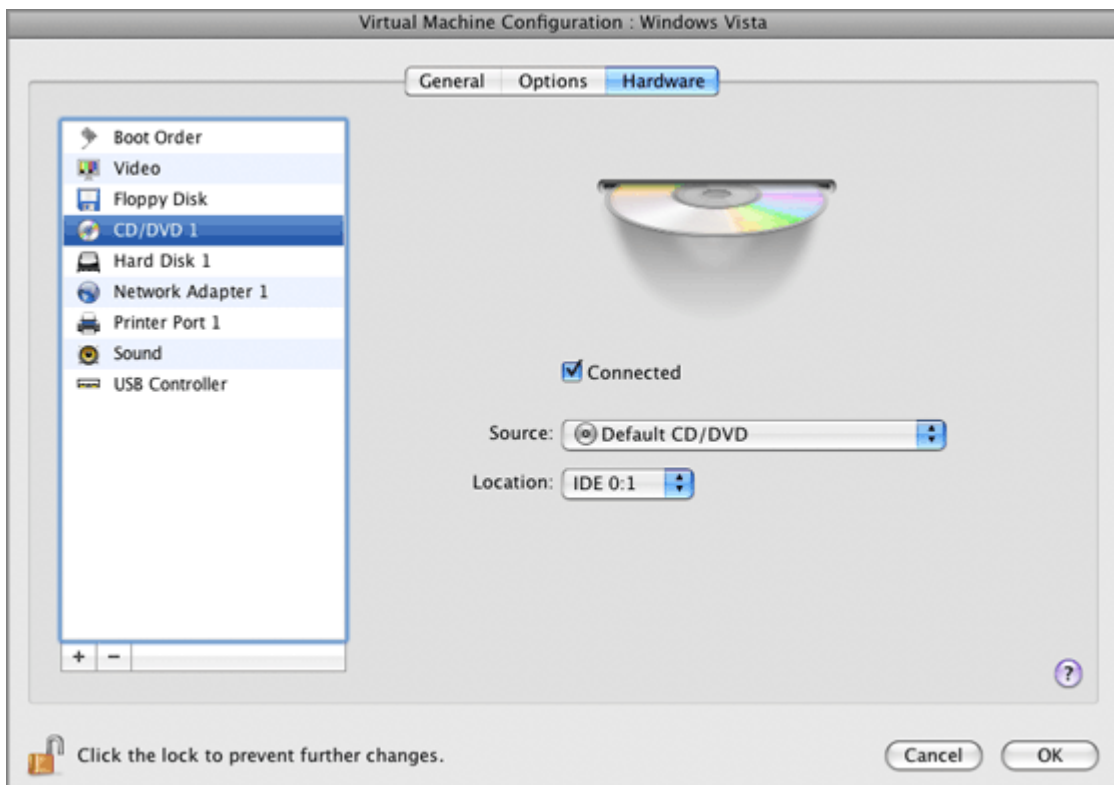
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

CD/DVD Settings

To configure the virtual machine's CD/DVD drive settings, use the **CD/DVD Settings**. Virtual CD/DVD drives can be connected either to physical CD/DVD drives or to CD/DVD images.

Note: You can connect up to four IDE devices (hard disks or CD/DVD drives) and 15 SCSI devices to a virtual machine. Each device is listed separately in the **Virtual Machine Configuration** dialog and has its own number.



Select the **Connected** option if you want the CD/DVD drive to be automatically connected to the virtual machine on its startup.

To emulate the virtual CD/DVD drive, you can connect one of the real CD/DVD drives on your physical computer or a CD/DVD image file to the virtual machine.

Note: Parallels virtual machines support ISO and DMG image files and may support CUE and CCD image files.

In the **Source** field, the source device or image file that emulates the virtual machine CD/DVD drive is specified. You can change the source device:

- To use a real CD/DVD drive as the virtual machine CD/DVD drive, click the **Source** field, and select the real device name from the list.
- To use an image file as the virtual machine's CD/DVD drive, click the **Source** field, and choose the image file from the list, or click **Choose an image file**, and specify the path to the desired image file on your Mac.

In the **Location** field, you can specify the type of interface for connecting the device:

- **IDE.** Using this interface type, you can connect up to four virtual devices (hard disks or CD/DVD drives).
- **SCSI.** Using this interface type, you can connect up to 15 virtual devices (hard disks or CD/DVD drives).

Note: 1. The Mac OS X guest OS does not support the SCSI controller. In the latest Linux distributions (e.g. RHEL 5.3), the SCSI driver may be not installed. In this case, you should install this driver in your Linux guest OS to be able to use the SCSI controller.

2. The SCSI 7:0 location is not available for selecting, since it is occupied by the SCSI controller itself.

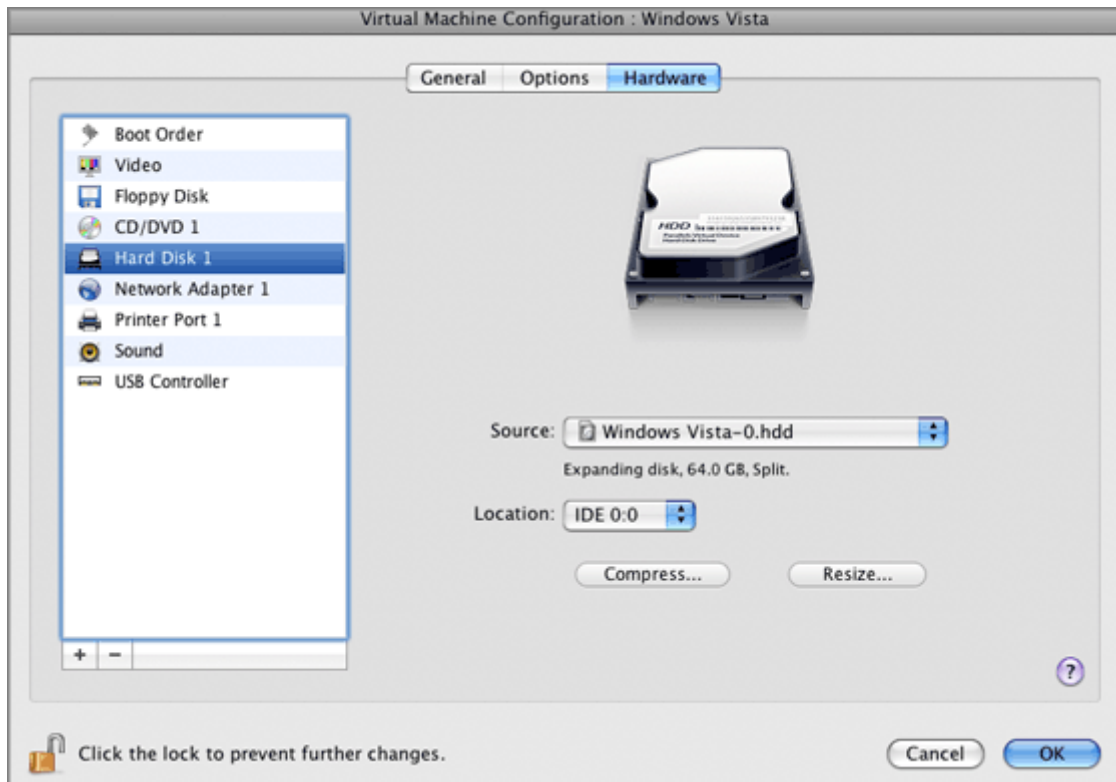
If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Hard Disk Settings

To view and configure the virtual hard disk settings, use the **Hard Disk** pane of Virtual Machine Configuration. The current version of Parallels Desktop allows virtual machines to use hard disk images in the `.hdd` format and Windows Boot Camp partitions.

Note: You can connect up to four IDE devices (hard disks or CD/DVD drives) and 15 SCSI devices to a virtual machine. Each device is listed separately in the **Virtual Machine Configuration** dialog and has its own number.



In the **Source** field, the virtual hard disk file (`.hdd`) that emulates the virtual machine hard disk is specified. You can change the hard disk source:

- To use the Boot Camp partition (p. 255) as the virtual machine hard disk, click the **Source** field, and select the Boot Camp partition name from the list.
- To use a virtual hard disk file as the virtual machine hard disk, click the **Source** field, and choose the virtual hard disk file from the list, or click **Choose an image file**, and specify the path to the desired image file (`.hdd`) on your Mac.

In the **Location** field, you can specify the type of interface for connecting the device:

- **IDE.** Using this interface type, you can connect up to four virtual devices (hard disks or CD/DVD drives).
- **SCSI.** Using this interface type, you can connect up to 15 virtual devices (hard disks or CD/DVD drives).

Note: 1. The Mac OS X guest OS does not support the SCSI controller. In the latest Linux distributions (e.g. RHEL 5.3), the SCSI driver may be not installed. In this case, you should install this driver in your Linux guest OS to be able to use the SCSI controller.

2. The SCSI 7:0 location is not available for selecting, since it is occupied by the SCSI controller itself.

Compressing the Disk

If you use an expanding (p. 218) virtual hard disk in your virtual machine, its image file size on the physical hard disk increases as you add new data to the virtual hard disk. When you delete some data from this virtual hard disk, free unused space appears on the disk, but the amount of space your virtual machine occupies on the hard disk of your Mac does not reduce. To free the unused space back to Mac, click the **Compress** button. The virtual hard disk will be compressed and the hard disk image file size will be decreased. As a result, there will be more free space on your Mac's hard disk.

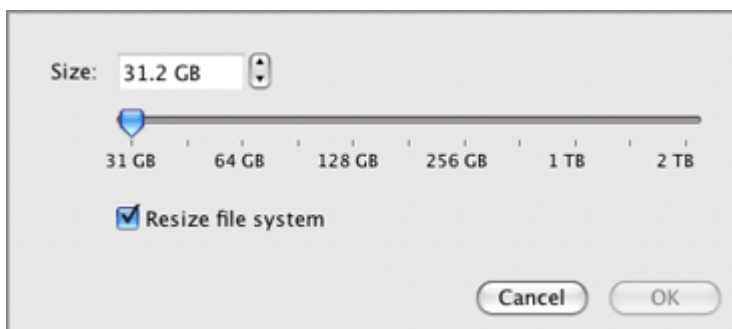
Note: The **Compress** option is available for Windows virtual machines only. Compressing can be performed for virtual machines without snapshots (p. 249) and with the Undo disks option (p. 192) disabled.

On the **Optimization** pane (p. 174) of Virtual Machine Configuration, you can enable regular automatic disk compression.

Resizing the Disk

If you find that the capacity of your virtual machine's hard disk does not fit your needs anymore, you can change its size. Click the **Resize** button, and the dialog for changing the disk size will appear.

Note: If your virtual machine is running, has snapshots, or uses a Boot Camp partition as a hard disk, its virtual hard disks cannot be resized.



To change the disk size, drag the slider or type the new size in the **Size** field. Select the **Resize file system** option if you want to change the file system size:

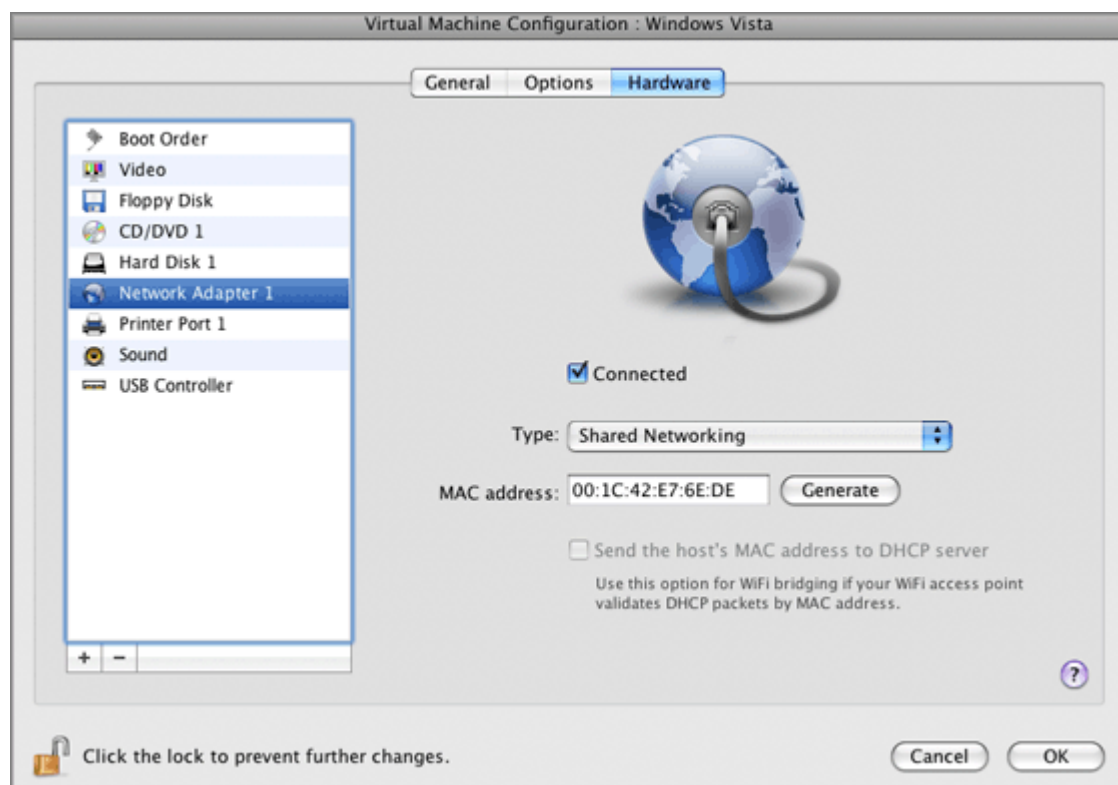
- If you select the **Resize file system** option when increasing the disk size, the additional disk space will be added to the last volume. If you clear the **Resize file system** option, the added space will appear as unallocated space and will be invisible to the guest operating system. To allocate this space, you will have to either create a new partition or expand an existing partition. For instructions on allocating the added space, see *Initializing the Newly Added Space* (p. 222).
- If you select the **Resize file system** option when decreasing the disk size, the disk will be decreased via removing the unallocated space and decreasing the size of the disk partitions. If you clear the **Resize file system** option when decreasing the disk size, you will be able to remove the unallocated space of the disk only and the disk partitions will remain untouched.

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Network Adapter Settings

Using the Network Adapter Settings, you can change the type of networking used in your virtual machine.



Select the **Connected** option if you want the virtual machine to start up with this network adapter connected.

You can choose one of the following types of networking for the virtual machine network adapter:

- **Shared Networking.** Select this option to enable the Network Address Translation (NAT) feature for the virtual machine. In this case, your virtual machine will share whatever network connection is currently used by the host computer.

See **Shared Networking** (p. 228) to learn how to configure this type of networking.

- **Bridged Networking.** Select this option to allow the virtual machine to access the local network and Internet through one of the network adapters installed on the host computer. In this case, the virtual machine is treated as a stand-alone computer on the network and should be configured in the same way as a real one. You can choose the physical adapter where the virtual machine adapter will be bridged in the list below the **Bridged Networking** option.

See **Bridged Ethernet Networking** (p. 230) to learn how to configure this type of networking.

- **Host-Only Networking.** Select this option to allow the virtual machine to connect to the host computer and the virtual machines residing on it and to make it invisible outside the host computer.

See **Host-Only Networking** (p. 231) to learn how to configure this type of networking.

In the **MAC address** field, you can change the MAC address currently assigned to the virtual machine. MAC addresses are automatically generated during the virtual machine creation. However, you can modify the default MAC address by typing another value in the **MAC address** field or clicking the **Generate** button. When entering a new MAC address, make sure that it is unique within your network.

WiFi Bridging Support

To be able to connect to wireless networks from your virtual machine:

- 1 Click the **Type** field.
- 2 Choose the **AirPort** adapter from the **Bridged Networking** list, and click **OK** to apply the changes.

After you perform these steps, your virtual machine will be able to connect to the Internet through the AirPort adapter of your Mac.

When you try to connect to the Internet via WiFi, and the WiFi Access Point has the **Validate DHCP packets** option enabled, you may experience problems with connecting to the Internet. In this case, enable the **Send the host's MAC address to DHCP server** option to ensure that your virtual machine gets an IP address for accessing the Internet.

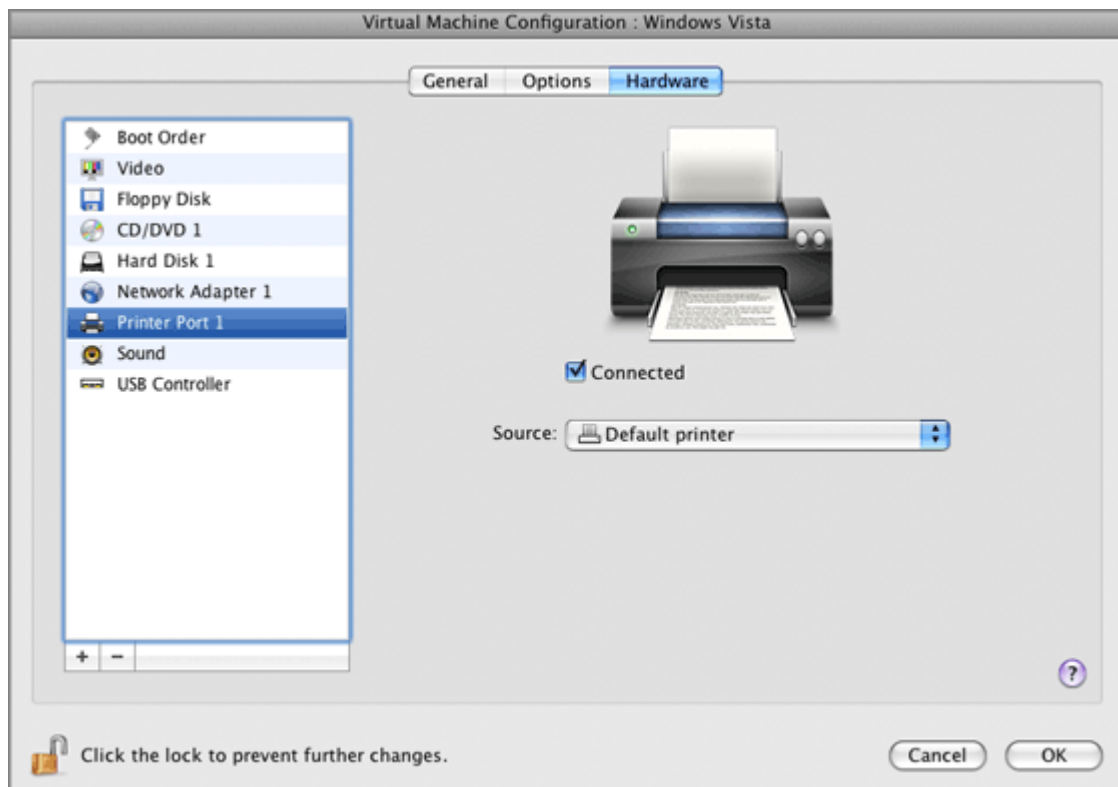
Note: Enabling the **Send the host's MAC address to DHCP server** option will not work with some DHCP servers - your virtual machine may get the same IP address as the physical computer has.

If you cannot configure your virtual machine to work in the Bridged Ethernet mode, you can consider using another networking mode: Shared Networking mode (p. 228) or Host-Only Networking mode (p. 231).

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Printer Port Settings

Using the Printer Port Settings, you can configure the virtual machine's printer ports settings. A virtual machine can have up to three printer ports.



Select the **Connected** option if you want the virtual machine to start up with the printer port connected.

In the **Source** field, the source device that emulates this printer port is specified. A printer port can be emulated by one of the following devices:

- **Default printer.** You can use any of the printers connected to your Mac in your virtual machine. Click the **Source** field, and select the appropriate printer from the list.

By default, the HP Color LaserJet 8500 PS printer supporting PostScript is installed in Windows virtual machines, irrespective of the real printer model and version. In most cases, modern printers support PostScript and that is why you should disregard the printer name you see in the Windows printing wizard and complete the procedure.

- **Real printer port.** If your Mac has a physical printer port, you can connect it to your virtual machine. Click the **Source** field, and select the physical port name from the list.
- **Output File.** You can emulate the virtual machine printer port by using an output file. Click the **Source** field, and choose an output file from the list, or click **Choose an output file**, and specify the path to the desired output file on your Mac.

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Serial Port Settings

In the **Serial Port** pane, you can configure the virtual machine serial port settings.

Using serial ports, you can establish a connection between

- the virtual machine and the host computer devices (using a real port) or
- between two virtual machines located on the same host computer (using a socket).

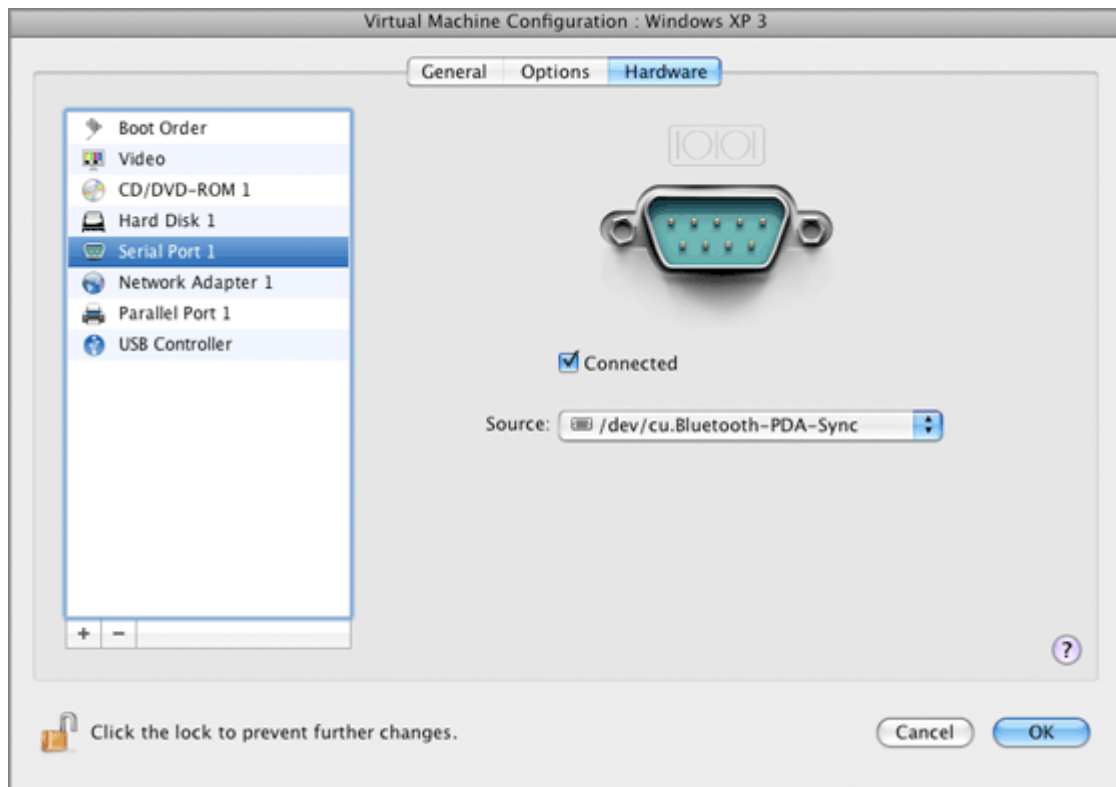
If you want to connect your virtual machine to the host computer device, you should create a serial port emulated by a real port. The **Serial Port** list comprises the devices on the host computer that are available for connection. The connected device, being used in any virtual machine, cannot be used by the host computer. To be able to use it in the host computer, you should first disconnect it from the virtual machine. To do that, use the virtual machine status bar.

If you want to connect two virtual machines with each other, you need to create a serial port emulated by a socket in each virtual machine. The names of the serial ports should be identical. The connection between the virtual machines via serial ports is bidirectional. It means that the working modes of the sockets set during the port creation can be changed later in the **Serial Port** pane.

If you need to log the performance activity of your virtual machine or to record the data from it and use this information later on, you can connect your virtual machine serial port to an output file on the physical server. You will be able to view and analyze the activity history of the virtual machine any time you need it by exploring this file.

You can add a new serial port to your virtual machine using Add Hardware Assistant. For the instruction on how to create serial ports, refer to **Adding and Removing Devices** (p. 220).

Note: You can connect up to four serial ports to a virtual machine.



Select the **Connected** option if you want the virtual machine to start up with the serial port connected.

In the **Source** field, the source device that emulates this serial port is specified. Serial ports can be emulated by the following devices:

- **Real Port.** Select this option to connect the virtual machine serial port to one of the existing serial ports on the host computer. In this case, you will need to choose the appropriate port on the host computer in the **Serial port** list.
- **Socket.** Select this option to connect two virtual machines through the sockets. When connecting the virtual machine to a socket, you can use the default path to the socket or type a new one in the **Socket** field. You can also configure the role the virtual machine will play in the connection by selecting the necessary role in the **Mode** list. Selecting **Server** enables you to use this virtual machine to direct the other one. Selecting **Client** enables you to direct this virtual machine from the other one.

Note: If you change the socket mode of the first virtual machine, make sure that the socket mode of the second virtual machine is also modified.

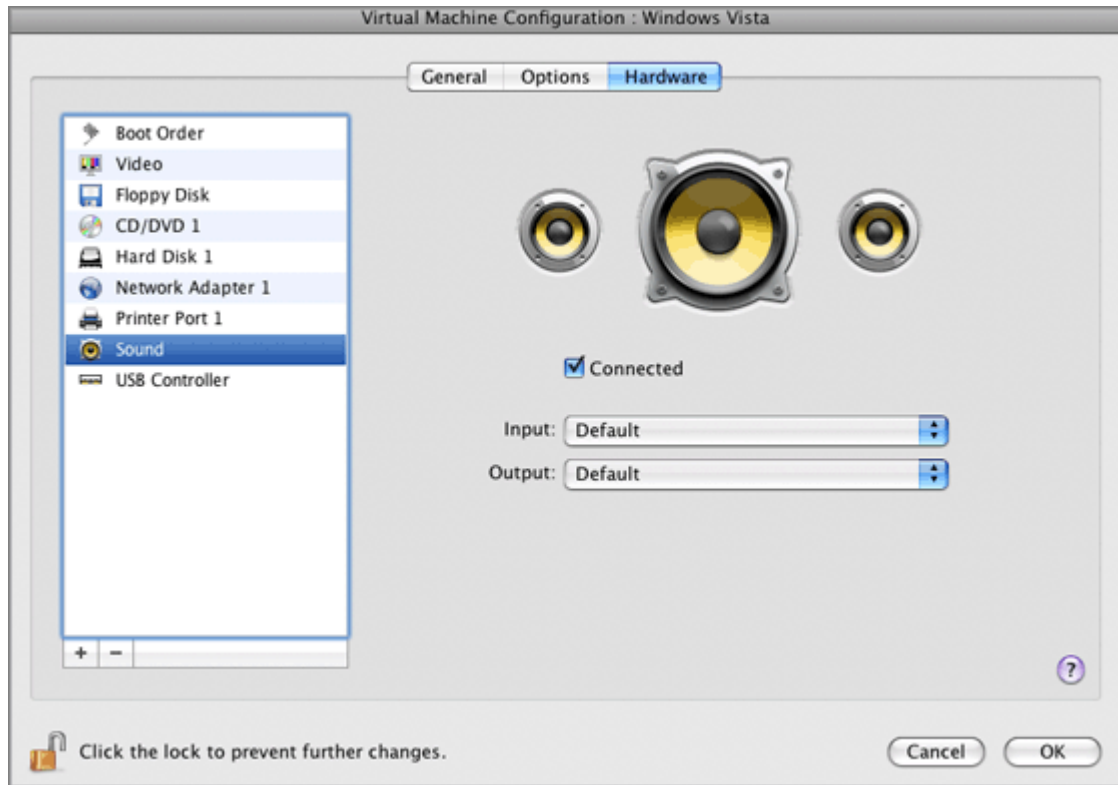
- **Output File.** Select this option to connect the virtual machine serial port to an output file. You can accept the default path or type your own one in the **File** field. You can also use the **Choose** button to locate the necessary file.

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Sound Settings

The Sound pane of Virtual Machine Configuration allows you to configure the virtual machine sound device parameters.



Select the **Connected** option to have the sound device automatically connected on the virtual machine startup.

Use the **Input** list to choose the necessary device. You can choose one of the following devices:

- **Default.** Select this option if you want to use the input device set as default in Mac OS.
- **Built-in Input.** Select this option if you want to use one of the input devices of your Mac.
- **Null device.** Select this option if you want to mute the input device.

Use the **Output** list to choose the necessary device. You can choose one of the following devices:

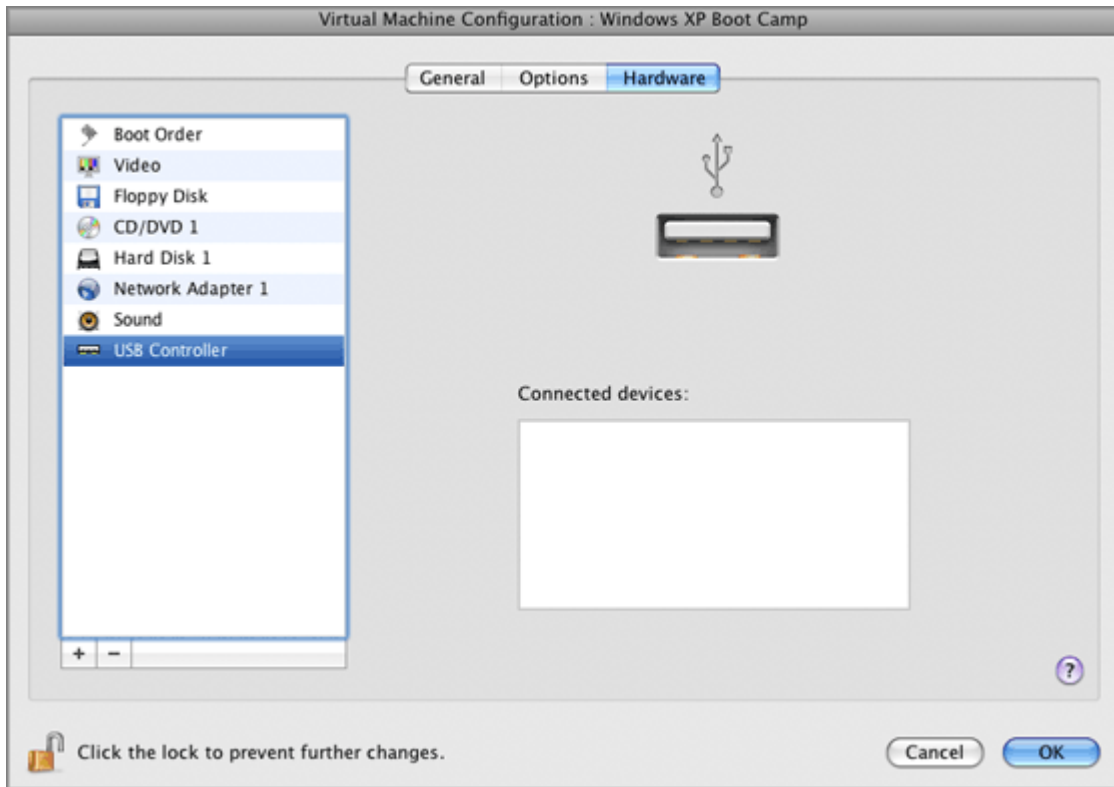
- **Default.** Select this option if you want to use the input device set as default in Mac OS.
- **Built-in Output.** Select this option if you want to use one of the output devices of your Mac.
- **Null device.** Select this option if you want to mute the output device.

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click

the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

USB Settings

A virtual machine can emulate only one USB controller, which provides you with the possibility to connect up to eight USB 2.0 and eight USB 1.1 devices to the virtual machine.



In the USB Controller pane, you can see the USB devices currently connected to your virtual machine.

If you want to prevent Virtual Machine Configuration from further unauthorized changes, click the Lock icon  at the bottom of the window. The next time someone wants to change the settings on any pane of Virtual Machine Configuration, an administrator's password will be required.

Support for Virtual and Real Disks

This section lists the types of disks that can be used by Parallels virtual machines and provides the information about basic operations you can perform on these disks.

Supported Types of Hard Disks

Parallels virtual machines can use either virtual hard disks or Boot Camp partitions as their hard disks.

Virtual Hard Disks

The capacity of a virtual hard disk can be set from 100 MB to 2 TB.

Virtual hard disks can be of either *plain* or *expanding* format. When you create a virtual machine in Express Windows or Typical mode (in the New Virtual Machine assistant), the disk is created in the *expanding* format.

plain	A plain virtual hard disk image file has a fixed size. The size is determined when the disk is created. Plain disks can be created with the help of New Virtual Machine assistant (the Custom mode.)
expanding	An expanding virtual hard disk image file is small initially. Its size grows as you add applications and data to the virtual hard disk in the guest OS.

Split disks

A virtual disk of either format can be a single-piece disk or a split disk. A split disk is cut into 2 GB pieces and is stored as a single .hdd file.

Boot Camp Partitions

With Parallels Desktop, you can choose how to use your Boot Camp Windows XP, Windows Vista, or Windows 7 operating system: to boot in it natively (via Boot Camp) or in a virtual machine (via Parallels Desktop). A Boot Camp Windows partition can be used as a bootable disk or as a data disk in Parallels virtual machines. For detailed information, see *Using the Boot Camp Partition in a Virtual Machine* (p. 255).

Note: You cannot create snapshots or use the Undo Disks option for a virtual machine that uses the Boot Camp partition.

CD/DVD Discs and Their Images

Parallels Desktop can access real CD/DVD discs and images of CD/DVD discs.

Parallels Desktop has no limitations on using multi-session CD/DVD discs. A virtual machine can play back audio CDs without any limitations on copy-protected discs.

If your host computer has a recordable optical drive, you can use it to burn CD or DVD discs in a virtual machine.

Parallels Desktop supports CD/DVD disc images in ISO, CUE, and CCD formats.

Note: DMG disk images made with Mac OS X Disk Utility are also supported by Parallels Desktop. When creating such an image, make sure you create a *read-only* and *uncompressed* image without any encryption.

Floppy Disks and Floppy Disk Images

Parallels Desktop can use two types of floppy disks:

- Real diskettes inserted into a real floppy disk drive that is connected to the virtual machine.
- Floppy disk image files having the `.fdd` extension and connected to the virtual machine.

Parallels Desktop treats floppy disk images like real diskettes. Parallels Desktop supports floppy disk image files that have the `.fdd` extension and 1.44 MB size.

With Parallels Desktop, you can also create an image of a blank floppy using the Floppy Disk pane of the **Virtual Machine Configuration** dialog.

Note: Parallels Desktop cannot create images of real diskettes.

Adding and Removing Devices

Adding new devices to a virtual machine is easier than connecting new devices to a real computer. Removing or disconnecting devices is also easy. The following virtual devices can be added to the configuration or removed from it:

- virtual hard disk drive
- CD/DVD drive
- floppy disk drive
- network adapter
- serial port
- printer port
- sound device
- USB controller

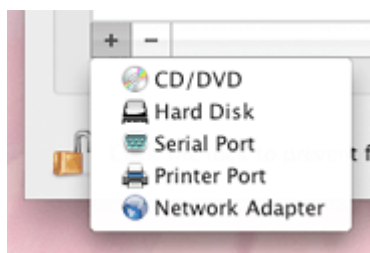
Any of the aforementioned devices can be added to the corresponding virtual machine only when it is stopped.

Note: To be able to connect any virtual device to a real one, you should have system privileges to access the real device. Otherwise, the real device will not appear in the list of available devices even though it is installed on your computer.

Adding a New Device to a Virtual Machine

- 1 Choose **Configure** from the **Virtual Machine** menu to open **Virtual Machine Configuration**.
- 2 Click the **Hardware** button at the top of the **Virtual Machine Configuration** dialog to open the pain for editing hardware devices.
- 3 Click the **Add** button  in the bottom part of the **Virtual Machine Configuration** dialog, and select the device to be added to your virtual machine.

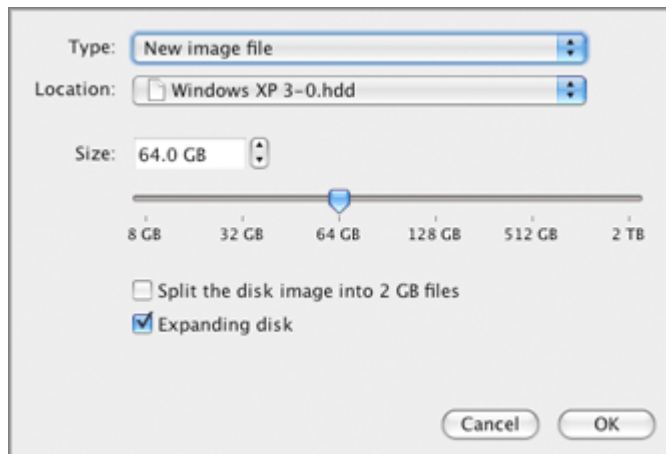
Note: The **Add** button is disabled when the virtual machine is running. You need to stop the virtual machine before you can use this button.



- 4 If you selected any device except for a hard disk, the corresponding device with a typical configuration is added at once and ready for use.

If you selected a hard disk, you should specify some parameters:

- The hard disk type: a new image file or an existing one. Select Boot Camp if you want to add an existing Boot Camp partition as a hard disk to your virtual machine.
- The hard disk location. Provide the path on your Mac to the existing image file or the path and name for the new image file. By default, Parallels Desktop offers to save the new image file in the virtual machine PVM bundle (p. 13).
- The hard disk size for the new hard disk image file.
- For the new hard disk image file, you can choose one of the following formats: *Expanding* or *Plain*. By default, the hard disk will have the *Plain* format. To create an *Expanding* hard disk, select the Expanding disk option. If you want the virtual hard disk to be splitted, select the Split the disk image to 2 GB files option. For more information on hard disk formats, refer to Support for Virtual and Real Disks (p. 218).



Click OK, to add the hard disk. After you added a new virtual hard disk to the virtual machine configuration, it will be invisible to the operating system installed inside the virtual machine until the moment you initialize it. For detailed information how to do it, see Initializing the Newly Added Disk (p. 223).

After the new device is added, you can manage its properties as usual and start using it.

Removing Devices From the Virtual Machine Configuration

- 1 Choose **Configure** from the **Virtual Machine** menu to open Virtual Machine Configuration.
- 2 Click the **Hardware** button at the top of the Virtual Machine Configuration dialog to open the pain for editing hardware devices.
- 3 Select the device you want to remove, and click the **Remove** button in the bottom part of the Virtual Machine Configuration dialog.

Note: If you accidentally click the **Remove** button , click **Cancel** in Virtual Machine Configuration. Once you click OK, the device will be removed.

Initializing the Newly Added Space

This section provides some general guidelines on initializing new virtual hard disks or new space added to your existing virtual hard disks.

Initializing the Newly Added Disk

After you added a new virtual hard disk to the virtual machine configuration, it will be invisible to the operating system installed inside the virtual machine until the moment you initialize it.

Initializing the New Virtual Hard Disk in Windows

To initialize the new virtual hard disk in a Windows guest OS, you will need the Disk Management utility available through:

- In Windows Vista: **Start > Control Panel > System and Maintenance > Administrative Tools > Create and Format Hard Disk Partitions > Disk Management.**
- In Windows XP: **Start > Control Panel > Administrative Tools > Computer Management > Storage > Disk Management.**

When you open the Disk Management utility, it automatically detects that a new hard disk was added to the configuration and launches **Initialize and Convert Disk Wizard**:

- 1** In the introduction window, click **Next**.
- 2** In the **Select Disks to Initialize** window, select the newly added disk and click **Next**.
- 3** In the **Select Disks to Convert** window, select the newly added disk and click **Finish**.

The added disk will appear as a new disk in the Disk Management utility window, but its memory space will be unallocated. To allocate the disk memory, right-click this disk name in the Disk Management utility window and select **New Simple Volume** in Windows Vista or **New Volume** in Windows XP. The **New Simple Volume Wizard**/**New Volume Wizard** window will appear. Follow the steps of the wizard and create a new volume in the newly added disk.

After that your disk will become visible in **Computer/My Computer** and you will be able to use it as a data disk inside your virtual machine.

Initializing the New Virtual Hard Disk in Linux

Initializing the new virtual hard disk in a Linux guest OS comprises two steps: allocating the virtual hard disk space and mounting this disk in the guest OS.

To allocate the space, you will need to create a new partition on this virtual hard disk, using the **fdisk** utility.

Note: To use the **fdisk** utility, you need the **root** privileges.

- 1** Launch Terminal.
- 2** To list the IDE disk devices present in your virtual machine configuration, enter:

```
fdisk /dev/hd*
```

Note: If you added a SCSI disk to the virtual machine configuration, use the **fdisk /dev/sd*** command instead.

- 3** By default, the second virtual hard disk appears as **/dev/hdc** in your Linux virtual machine. To work with this device, enter:

```
fdisk /dev/hdc
```

Note: If this is a SCSI disk, use the **fdisk /dev/sdc** command instead.

4 To get extensive information about the disk, enter:

```
p
```

5 To create a new partition, enter:

```
n
```

6 To create the primary partition, enter:

```
p
```

7 Specify the partition number. By default, it is **1**.

8 Specify the first cylinder. If you want to create a single partition on this hard disk, use the default value.

9 Specify the last cylinder. If you want to create a single partition on this hard disk, use the default value.

10 To create a partition with the specified settings, enter:

```
w
```

When you allocated the space on the newly added virtual hard disk, you should format it by entering the following command in the terminal:

```
mkfs -t <FileSystem> /dev/hdc1
```

Note: <FileSystem> stands for the file system you want to use on this disk. It is recommended to use `ext3` or `ext2`.

When the added virtual hard disk is formatted, you can mount it in the guest OS.

1 To create a mount point for the new virtual hard disk, enter:

```
mkdir /mnt/hdc1
```

Note: You can specify a different mount point.

2 To mount the new virtual hard disk to the specified mount point, enter:

```
mount /dev/hdc1 /mnt/hdc1
```

When you mounted the virtual hard disk, you can use its space in your virtual machine.

Creating a New Partition in Windows

To create a new partition on the unallocated space of your virtual hard disk, you can use Disk Management, a Windows build-in utility for partitioning hard disks. The steps below provide instructions on partitioning the added space in Windows XP. For other Windows operating systems, the procedure will be very similar to this one.

To create a new partition on Windows XP

- 1 Start the virtual machine that uses the enlarged virtual disk.
- 2 To start the Disk Management utility, choose **Control Panel** from the **Start** menu. Double-click **Administrative Tools** and open **Computer Management**. In the **Storage** section, select **Disk Management**
or
choose **Run** from the **Start** menu and type:
diskmgmt.msc
Click **OK**.
- 3 In the **Disk Management** window, right-click **Unallocated Capacity** and choose **New Partition** from the shortcut menu.
- 4 In the **New Partition wizard Introduction** window, click **Next**.
- 5 In the **Select Partition Type** window, select **Primary partition** and click **Next**.
- 6 Specify the partition size and click **Next**.
- 7 Assign a drive letter for the new partition and click **Next**.
- 8 In the **Format partition** window, select **Format partition with the following settings**. Set **File system** to **NTFS** and **Allocation unit size** to **Default**. Type the volume name in the **Volume label** field and click **Next**.
- 9 Carefully review the settings and click **Finish** to start formatting.

When the operation is completed, the new volume appears in the **Computer Management** window and in **My Computer**.

Creating a New Partition in Linux

In most Linux systems, you can use the `fdisk` utility to create a new partition and to do other disk management operations.

Note: To be able to execute the commands necessary to create a new partition on Linux, you must have the `root` privileges.

As a tool with a text interface, `fdisk` requires typing the commands on the `fdisk` command line. The following `fdisk` commands may be helpful:

Options	Description
m	Displays the available commands.
p	Displays the list of existing partitions on your <code>hda</code> drive. Unpartitioned space is not listed.
n	Creates a new partition.
q	Exits <code>fdisk</code> without saving your changes.
l	Lists partition types.
w	Writes changes to the partition table.

To create a new partition on Linux

- 1 Start a terminal.
- 2 Start `fdisk` using the following command:

```
/sbin/fdisk /dev/hda
```

where `/dev/hda` stands for the hard drive that you want to partition.

- 3 In `fdisk`, to create a new partition, type the following command:

```
n
```

- When prompted to specify the **Partition type**, type `p` to create a primary partition or `e` to create an extended one. There may be up to four primary partitions. If you want to create more than four partitions, make the last partition extended, and it will be a container for other logical partitions.
- When prompted for the **Number**, in most cases, type `3` because a *typical* Linux virtual machine has two partitions by default.
- When prompted for the **Start cylinder**, type a starting cylinder number or press **Return** to use the first cylinder available.
- When prompted for the **Last cylinder**, press **Return** to allocate all the available space or specify the size of a new partition in cylinders if you do not want to use all the available space.

By default, `fdisk` creates a partition with a **System ID** of `83`. If you're unsure of the partition's **System ID**, use the

```
l
```

command to check it.

- 4 Use the

```
w
```

command to write the changes to the partition table.

- 5 Restart the virtual machine by entering the

```
reboot
```

command.

- 6 When restarted, create a file system on the new partition. We recommend that you use the same file system as on the other partitions. In most cases it will be either the Ext3 or ReiserFS file system. For example, to create the Ext3 file system, enter the following command:

```
/sbin/mkfs -t ext3 /dev/hda3
```

- 7 Create a directory that will be a mount point for the new partition. For example, to name it data, enter:

```
mkdir /data
```

- 8 Mount the new partition to the directory you have just created by using the following command:

```
mount /dev/hda3 /data
```

- 9 Make changes in your static file system information by editing the /etc/fstab file in any of the available text editors. For example, add the following string to this file:

```
/dev/hda3 /data ext3 defaults 0 0
```

In this string /dev/hda3 is the partition you have just created, /data is a mount point for the new partition, Ext3 is the file type of the new partition. For the exact meaning of other items in this string, consult the Linux documentation for the mount and fstab commands.

- 10 Save the /etc/fstab file.

Expanding an Existing Partition

If you want to add the unallocated space to a partition that is not the last on this virtual hard disk, you can use third-party applications designed to easily reorganize the hard disk drive without losing the data on it (for example, you can use Acronis® Disk Director Suite).

Note: Acronis Disk Director Suite is provided free of charge for registered users of Parallels Desktop for Mac. You can download the application from the Parallels Download Center (http://www.parallels.com/download/desktop/pdfm5-en_US) page.

Networking in a Virtual Machine

Parallels Desktop allows you to use three types of networking in your virtual machines:

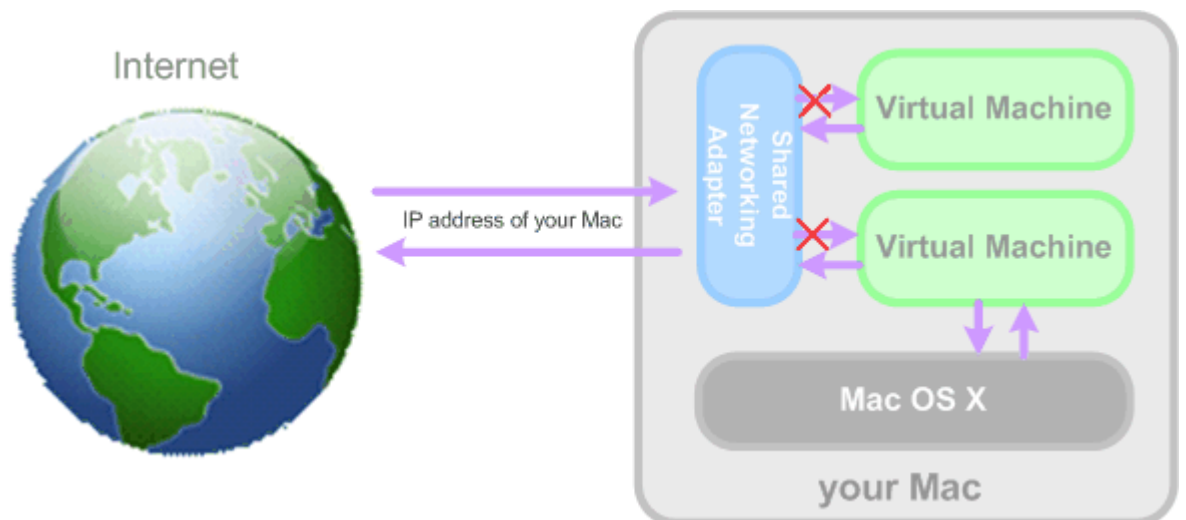
- **Shared Networking** (p. 228). This type of networking allows the virtual machine to use the current network connections of your physical computer.
- **Bridged Ethernet** (p. 230). This type of networking allows the virtual machine to use one of the physical computer's network adapters, which makes it appear as a separate computer on the network the physical computer belongs to.
- **Host-only networking** (p. 231). This type of networking allows the virtual machine to access only the physical computer and other virtual machines residing on it.

By default, the virtual machine uses Shared Networking, because configuring it requires minimal effort from the users. The Bridged Ethernet networking mode is more complex, and you may need to contact your system administrator to set it up properly.

Detailed information on these types of networking and the way to configure them is provided in the following subsections.

Shared Networking

By default, all virtual machines created using the *Express Windows* and *Typical* modes are set to work in the Shared Networking mode. In this mode your virtual machine can access other computers on your local network and the Internet by using the IP address of the physical computer. The virtual machine itself does not have its own IP address on the network. This mode allows you to specify port forwarding rules (p. 60) for the virtual machines running on your Mac, which can be especially useful when running HTTP, FTP, or other types of servers in virtual machines.



The Shared Networking mode does not require any additional configuration. With this mode enabled, your virtual machine will share whatever network connection your physical computer uses at the moment.

You may wish to use the Shared Network mode in the following cases:

- your computer accesses the Internet via a modem or another non-Ethernet device
- you need to access the Internet from inside your virtual machine but are concerned about security
- you have problems with working in the Bridged Ethernet mode

To configure your virtual machine to use Shared Networking:

- 1** Choose **Configure** from the **Virtual Machine** menu to open the **Virtual Machine Configuration** dialog.
- 2** Click **Hardware** and select **Network Adapter** in the list.
- 3** On the **Network Adapter** pane, select **Shared Networking** from the **Type** list and make sure that the **Connected** option is enabled.

Note: In the **MAC address** field, you can change the MAC address currently assigned to the virtual machine. MAC addresses are automatically generated during the virtual machine creation. However, you can modify the default MAC address by typing another value in the **MAC address** field or clicking the **Generate** button. When entering a new MAC address, make sure that it is unique within your network.

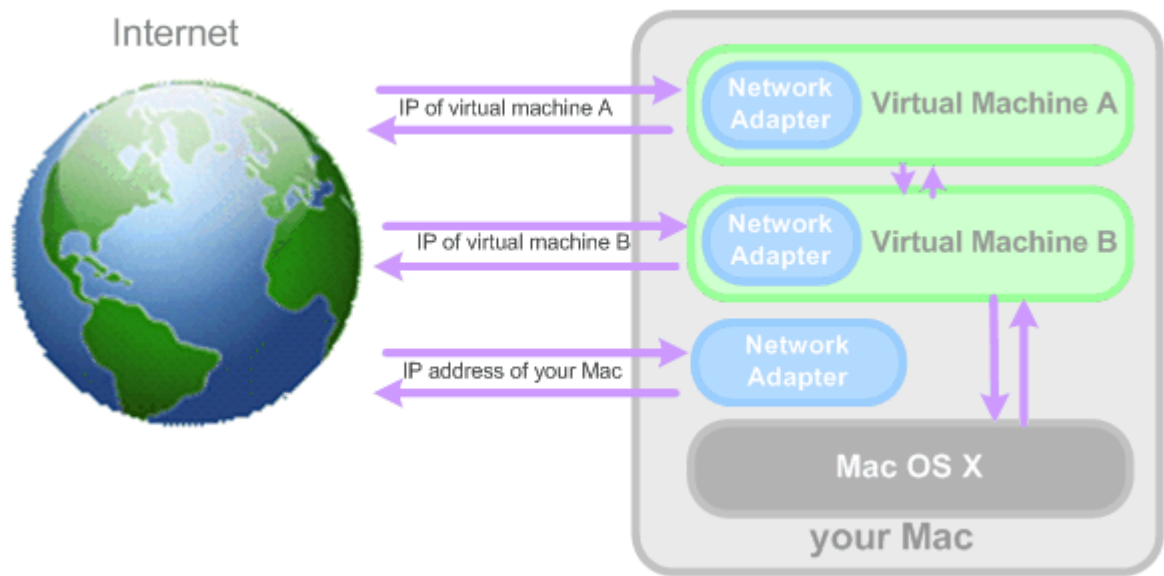
- 4** Click **OK**.

For the information about troubleshooting networking problems, refer to the Parallels knowledge base <http://kb.parallels.com/> available at the Parallels website.

Bridged Ethernet Networking

When operating in the Bridged Ethernet mode, your virtual machine appears on the network as a stand-alone computer with its own IP address and network name.

Note: The Bridged Ethernet networking mode is more complex than the Shared Networking mode (p. 228), and you may need to contact your system administrator to configure it properly.



To configure your virtual machine to work in the Bridged Ethernet mode:

- 1 Choose **Configure** from the **Virtual Machine** menu to open the **Virtual Machine Configuration** dialog.
- 2 Click **Hardware** and select **Network Adapter** in the list.
- 3 On the **Network Adapter** pane, select the adapter you want to use from the **Type** list and make sure that the **Connected** option is enabled.

Note: In the **MAC address** field, you can change the MAC address currently assigned to the virtual machine. MAC addresses are automatically generated during the virtual machine creation. However, you can modify the default MAC address by typing another value in the **MAC address** field or clicking the **Generate** button. When entering a new MAC address, make sure that it is unique within your network.

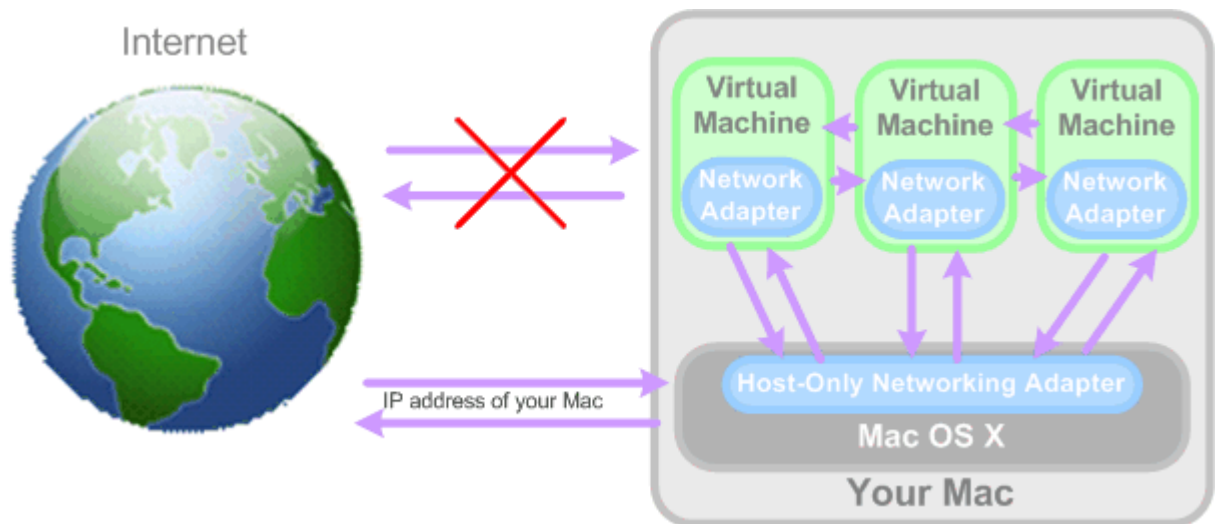
- 4 Click **OK**.

If you cannot configure your virtual machine to function in the Bridged Ethernet mode, you can consider using another networking mode: Shared Networking (p. 228) or Host-Only Networking (p. 231).

For the information about troubleshooting networking problems, refer to the Parallels knowledge base <http://kb.parallels.com/> available at the Parallels website.

Host-Only Networking

Parallels Desktop provides a closed network that is accessible only to the primary operating system and virtual machines running on it. The primary operating system is connected to this network via the Parallels Host-Only Networking adapter automatically created on the physical computer during the Parallels Desktop installation. The addresses for the virtual machines connected to this network are provided by the Parallels DHCP server.



To configure your virtual machine to use Host-Only Networking:

- 1 Choose **Configure** from the **Virtual Machine** menu to open the **Virtual Machine Configuration** dialog.
- 2 Click **Hardware** and select **Network Adapter** in the list.
- 3 On the **Network Adapter** pane, select **Host-Only Networking** from the **Type** list and make sure that the **Connected** option is enabled.

Note: In the **MAC address** field, you can change the MAC address currently assigned to the virtual machine. MAC addresses are automatically generated during the virtual machine creation. However, you can modify the default MAC address by typing another value in the **MAC address** field or clicking the **Generate** button. When entering a new MAC address, make sure that it is unique within your network.

- 4 Click **OK**.

For the information about troubleshooting networking problems, refer to the Parallels knowledge base <http://kb.parallels.com/> available at the Parallels website.

Using WiFi in the Virtual Machine

Parallels Desktop provides you with an opportunity to connect your virtual machine to a wireless network.

Using the Bridged Ethernet mode (p. 230), you can set up a WiFi connection and access the Internet wirelessly. When operating in this mode, your virtual machine appears on the network as a stand-alone computer with its own IP address and network name.

To configure your virtual machine to access the Internet through WiFi:

- 1 Choose **Configure** from the **Virtual Machine** menu to open the **Virtual Machine Configuration** dialog.
- 2 Click **Hardware** and select **Network Adapter** in list.
- 3 Select **Bridged Networking > AirPort** from the **Type** list and make sure that the **Connected** option is enabled.
- 4 Click **OK**.

After you perform these steps, your virtual machine will be able to connect to the Internet through the AirPort adapter of your Mac.

Note: If the WiFi bridging does not work in your virtual machine, try to enable the **Send the host's MAC address to DHCP server** option in the **Network Adapter** pane to ensure that the virtual machine gets a valid IP address from the WiFi access point for accessing the Internet.

If you cannot configure your virtual machine to function in the Bridged Ethernet mode, you can consider using another networking mode: Shared Networking (p. 228) or Host-Only Networking (p. 231).

For the information about troubleshooting networking problems, refer to the Parallels knowledge base <http://kb.parallels.com/> available at the Parallels website.

Bridging a Virtual Machine to VLAN

If your Mac is a VLAN (virtual local area network) member, Parallels Desktop allows you to bridge the virtual machines running on the Mac to this VLAN.

To bridge a virtual machine to the VLAN, do the following:

- 1 Choose **Configure** from the **Virtual Machine** menu to open the **Virtual Machine Configuration** dialog.
- 2 Click **Hardware** and select the **Network Adapter** in the list.
- 3 Select **Bridged Networking > VLAN** from the **Type** list and make sure that the **Connected** option is enabled.
- 4 Click **OK**.

The virtual machine will be bridged to the selected VLAN.

CHAPTER 9

Managing Virtual Machines

This chapter provides the information on how to change a virtual machine configuration and how to set user preferences for a particular virtual machine or all of them.

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Cloning a Virtual Machine

An exact copy of a virtual machine can be created using Clone Virtual Machine Assistant. The clone is a separate virtual machine that includes as many virtual hard disks as were connected to the original machine. The assistant places the cloned virtual machine into a default folder, but you may specify a different one.

In the virtual machine clone, the names of all the devices, drivers and virtual hard disk images remain the same as they were in the original machine. All connections between the devices in the cloned VM will be the same as in the original virtual machine.

If a device in the original machine was connected to an external resource, this device in the clone will be connected to the same resource. The only exception is serial/prINTER port log files. If such files are used by the original virtual machine, Parallels Desktop creates a new set of empty log files for the clone.

If the original virtual machine has a snapshot tree, the virtual machine clone will have the same structure of snapshots.

If a network adapter was enabled in the original configuration, Parallels Desktop generates a new Mac address for the clone.

You can also make a clone of a clone, and give it a unique name. The resulting clone will have the same configuration and the same devices connected as the initial clone.

Unlike snapshots (p. 249), a virtual machines and its clones are used separately and there is no any connection between them after the clones creation. If you need to delete an initial virtual machine from which you have made clones, you can do it without any threat to the clones.

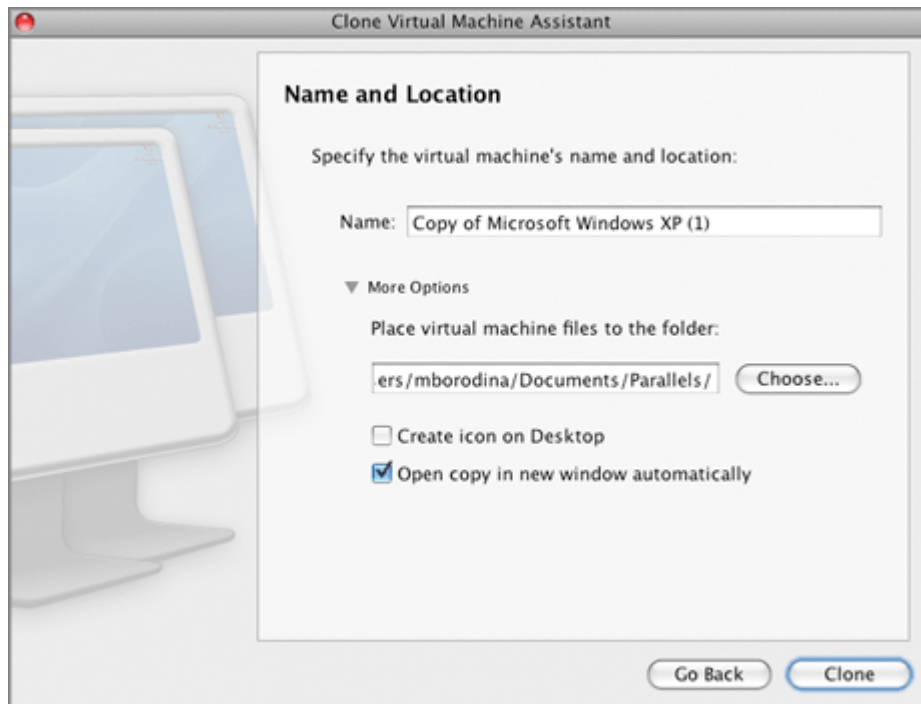
Before cloning a virtual machine, make sure that:

- The virtual machine is turned off. If the virtual machine is running, the **Clone** option in the **File** menu is disabled.
- The virtual machine has a guest OS. You cannot clone a virtual machine without a guest OS.

To make a clone of a virtual machine:

- 1** Open the virtual machine you want to clone.
- 2** From the **File** menu, select **Clone**. The **Clone Virtual Machine Assistant** window appears. If you do not want the **Introduction** window to appear in the future, select **Always skip introduction**. Click **Continue**.
- 3** In the **Name and Location** window, specify the name and folder for the virtual machine clone. The name suggested by the assistant is made by adding "Copy of" to the original virtual machine name. You can specify another name but it should not be longer than 50 characters.

To specify the location for the virtual machine clone, click the **More Options** item, and type the location in the **Place virtual machine files to the folder** field, or use the **Choose** button to locate the virtual machine clone.



If you want to provide a quick access to the virtual machine clone, select the **Create icon on Desktop** option located under the **Place virtual machine files to the folder** field.

To test the newly created virtual machine clone immediately after its creation, select the **Open copy in new window automatically** option.

Click **Clone** to start cloning the virtual machine.

- 4 The **Cloning Finished** window informs you that copying has been completed successfully and the new machine is ready. Click **Done** to close the assistant.

Removing a Virtual Machine

Removing a Virtual Machine From the List

If you do not need one of your virtual machines, you can remove it from the **Parallels Virtual Machines** list. You will be able to add it back to the list (p. 112) later.

To remove a virtual machine from the list, stop it if it is running and perform one of the following actions:

- Drag the virtual machine from the **Parallels Virtual Machines** list.
- Right-click the virtual machine name in the **Parallels Virtual Machines** list, and select **Remove** from the context menu. In the window that appeared, click **Keep File**.



Deleting a Virtual Machine From Your Mac

To delete a virtual machine from your Mac permanently, stop it if it is running and perform one of the following actions:

- Right-click the virtual machine name in the **Parallels Virtual Machines** list, and select **Remove** from the context menu. In the window that appeared, click **Move to Trash**.
- Delete its files from the disk manually. The virtual machine files are stored in the `/Users/<Username>/Documents/Parallels/` folder or in the `/Users/Shared` folder by default. Each virtual machine is represented by a single PVM file.

Warning! Before deleting the virtual machine, make sure that none of the virtual machine files (like virtual hard disk) are used by other virtual machines.

Working With Virtual Machine Templates

Parallels Desktop makes your work with virtual machines even more convenient by enabling you to create templates of Parallels virtual machines.

A template, like a virtual machine, has hardware and may have operating system and software installed. The only difference is that it cannot be started. A template can be easily converted to an ordinary virtual machine and vice versa.

Using one template, you can create as many virtual machines as you need and the disk space of your Mac allows. The virtual machines created using such a template will have the same hardware configuration, operating system, and software that this template has.

You can convert an existing virtual machine into a template or make a clone of the virtual machine that will be used as a template and continue using the original virtual machine.

Creating a Virtual Machine Template

If you need to create a number of virtual machines with same configuration, you can create a virtual machine template and use it to create new virtual machines.

There are two ways of creating a virtual machine template:

- Convert an existing virtual machine into a virtual machine template.
- Clone an existing virtual machine to a virtual machine template.

If you choose to convert a virtual machine into a template, this virtual machine will change its operating system icon to a template icon in the list of virtual machines and it will be available as a template only. You will not be able to run it as a virtual machine.

If you do not want to convert a virtual machine into a template but need to make a copy of it with the same configuration, you can make a clone of this virtual machine that will be used as a template.

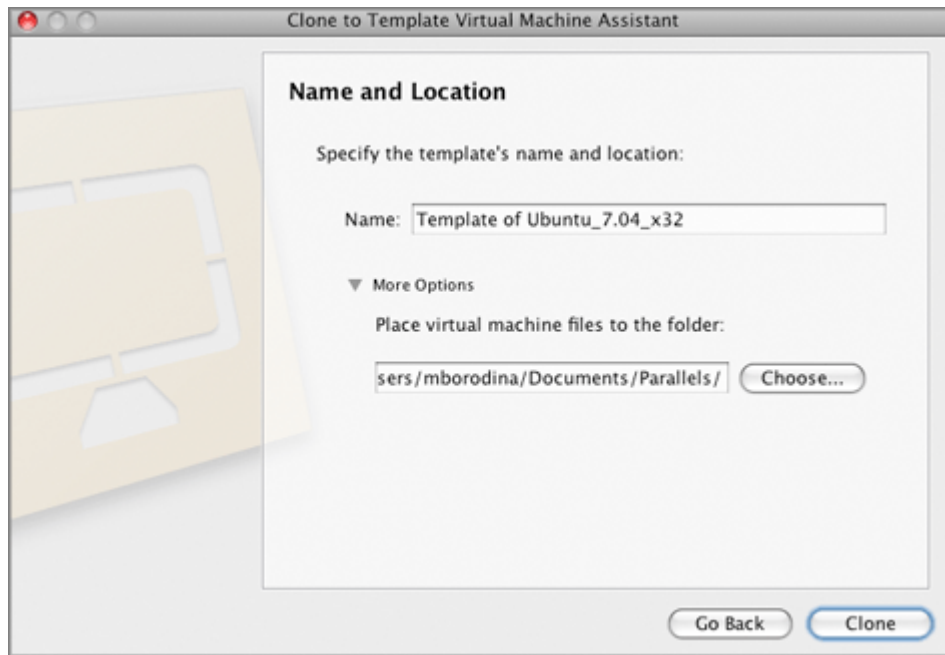
To convert an existing virtual machine into a template:

- 1 Launch Parallels Desktop.
- 2 Choose the virtual machine you want to convert into a template from the list of Parallels virtual machines.
- 3 Choose **Convert to Template** from the **File** menu.
- 4 The virtual machine will become a template and will have a different icon indicating that it is a template.

To clone a virtual machine to a template:

- 1 Launch Parallels Desktop.
- 2 Choose the virtual machine you want to clone to a template from the list of Parallels virtual machines.
- 3 Start Clone to Template Virtual Machine Assistant by choosing **Clone to Template** from the **File** menu.
- 4 In the **Introduction** window, click **Continue**. To skip this window next time you start the assistant, select **Always skip introduction**.
- 5 In the **Name and Location** window, specify the name and location for the virtual machine template, and click **Clone**. You can use the **Choose** button to change the location.

By default, the virtual machine template files will be placed to the following folder on your Mac: `/Users/UserName/Documents/Parallels/<Virtual Machine Template Name>/`.



- 6 In the Creation Finished window, click Done to quit the assistant.

Deploying a Virtual Machine Template

A virtual machine template cannot be run as a virtual machine. To be able to run it as a virtual machine, you should create a virtual machine that will have the same configuration as the template has.

There are two ways of creating a virtual machine from a template:

- Convert a template into a virtual machine.
- Deploy a template to a new virtual machine.

If you convert a virtual machine template into a virtual machine, its icon will be moved from the virtual machines list, and you will be able to use it as a virtual machine.

If you deploy a virtual machine template to a virtual machine, the Deploy Virtual Machine Template assistant will create a new virtual machine, but the template will not be removed from the Parallels Virtual Machines list.

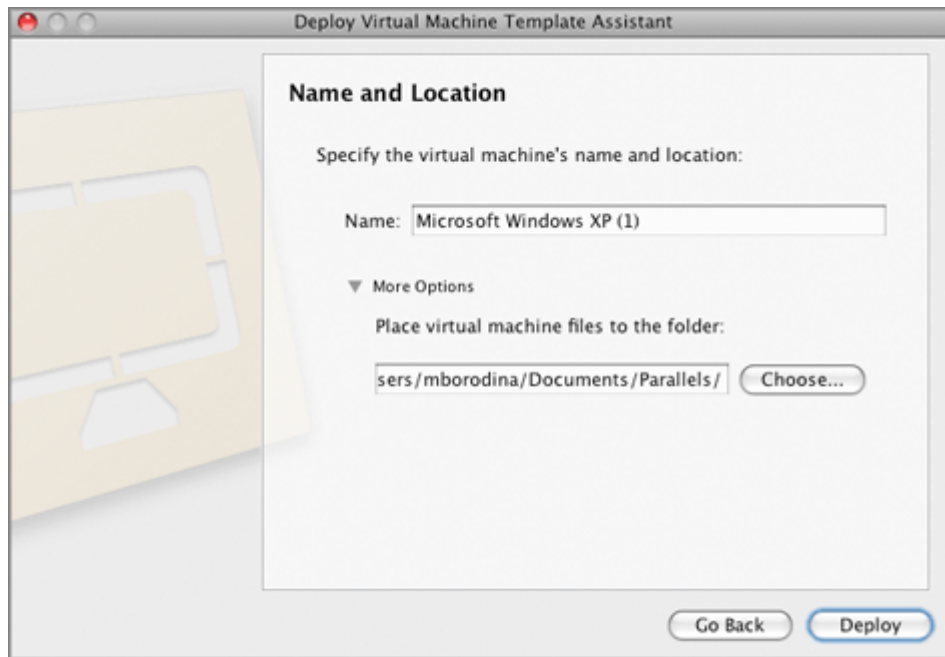
To convert a virtual machine template into a virtual machine:

- 1** Launch Parallels Desktop.
- 2** In the **Parallels Virtual Machines** list, right-click the virtual machine template you want to convert into a virtual machine, and choose **Convert to Virtual Machine** from the shortcut menu.
- 3** The virtual machine template will be processed into a virtual machine and will change its icon.

To deploy a virtual machine template to a new virtual machine:

- 1** Launch Parallels Desktop.
- 2** In the **Parallels Virtual Machines** list, click the virtual machine template you want to be deployed to a virtual machine, and click **Create** or right-click the template name, and choose **Deploy to Virtual Machine** from the shortcut menu.
- 3** Deploy Virtual Machine Template Assistant starts. In the **Introduction** window, click **Continue**. To skip this window next time you start the assistant, select **Always skip introduction**.
- 4** In the **Name and Location** window, specify the name and location for the virtual machine and click **Deploy**. You can use the **Choose** button to change the location.

By default, the virtual machine files will be placed to the following folder on your Mac: `/Users/UserName/Documents/Parallels/<Virtual Machine Template Name>/`.



5 In the Deployment Finished window, click Done to close the assistant.

The resulting virtual machine will have the same configuration that the original template had.

Backing Up a Virtual Machine

Most people don't seriously consider regular backups as a necessity until they have experienced a significant data loss. You should create your own backup strategy to protect yourself from data loss. Virtual machines are vulnerable to crashes as well as physical computers.

You can back up your virtual machine using one or several of the following methods:

- Copy the virtual machine files manually.
- Clone the virtual machine with the help of Clone Virtual Machine Assistant (p. 234). Give a descriptive name to the clone and save it in a location specially designated for backups.
- Include the virtual machine files in the automatic Time Machine backups by editing the **General** settings (p. 169) in the virtual machine configuration.
- Use third-party backup utilities like Acronis True Image.

Copying the virtual machine files

You can locate your virtual machine in Finder and create a backup copy of the virtual machine file (PVM).

- 1 In the **Parallels Virtual Machines** list, right-click the virtual machine name, and select **Show in Finder** from the context menu. In Finder, go to the folder where your virtual machine is stored.
- 2 Locate the required virtual machine PVM file.

Note: PVM file is bundle that contains the virtual machine configuration file (PVS), virtual hard disk file (HDD), and other files. For more information about the virtual machine files, see **Parallels Virtual Machine** (p. 14).

- 3 Copy the virtual machine's PVM file to a safe location.

Cloning the virtual machine

You can create a complete clone of the virtual machine using Clone Virtual Machine Assistant. For details, see **Cloning a Virtual Machine** (p. 234).

Backing up your virtual machine using Time Machine

If you choose to back up your virtual machine with Time Machine, your virtual machine's PVM file will be automatically backed up together with other files stored in Mac OS. As a consequence, files stored on your virtual machine's hard disk will be also backed up, since the virtual hard disk file (HDD) is stored inside the virtual machine bundle file (PVM).

Warning: Time Machine backups can guarantee safety only if your Parallels virtual machines were stopped or suspended during the backup.

If you want to restore some of your Windows files, do the following:

- 1 Locate the backup copy of your virtual machine's file (PVM).

- 2 Right-click the file, and choose **Show Package Contents**.
- 3 In the virtual machine contents window, right-click the virtual hard disk file (HDD) that is usually named <VirtualMachine'sName>.hdd. and choose **Open With > Parallels Mounter**.
- 4 Using Parallels Mounter, browse the contents of your virtual machine's hard disk to find the files you need to restore.

For more information about Parallels Mounter, refer to **Using Parallels Mounter** (p. 267).

Using third-party backup utilities

You can use any third-party backup application you like. Registered users of Parallels Desktop can use Acronis True Image Home for free for backing up their virtual machines. You can download this application from Parallels Download Center (<http://www.parallels.com/en/download/>).

Compressing Virtual Hard Disks

If you use an expanding (p. 218) virtual hard disk in your virtual machine, its image file size on the physical hard disk increases as you add new data to the virtual hard disk. When you delete some data from this virtual hard disk, free unused space appears on the disk, but the amount of space your virtual machine occupies on the hard disk of your Mac does not reduce. To free the unused space back to Mac, you can compress the virtual hard disk. The hard disk image file size will be decreased and, as a result, there will be more free space on your Mac's hard disk.

You can compress virtual hard disks either *manually* or *automatically*:

- To compress the virtual hard disk manually at any time, select **Configure** from the **Virtual Machine** menu, click **Hardware**, open the hard disk setting (p. 208), and click the **Compress** button.
- To regularly free the unused space back to Mac, use the **AutoCompress** option. The virtual hard disk in an expanding format will be reviewed twice a day, and if the unused space occupies more than 50 percent of the hard disk image size, it will be compressed and the hard disk image file size will be decreased. The **AutoCompress** option can be enabled for all hard disks of a virtual machine in the **Optimization** pane (p. 174) of **Virtual Machine Configuration**.

Note: Compressing of virtual hard disks can be performed for Windows virtual machines without snapshots (p. 249) and with the Undo disks option (p. 192) disabled.

Managing Virtual Machines From iPhone

With the Parallels Mobile application, you can start, stop, and suspend your virtual machine or simply view its desktop right from your iPhone when your Mac is out of reach. All you need is to connect your iPhone to the Internet, launch the Parallels iPhone application, and establish a connection with your Mac.

Before you try to connect your iPhone to Parallels Desktop on your Mac:

- Enable the **Allow connections from iPhone** option in the **General** pane of the Parallels Desktop Preferences (p. 48).
- Contact your system administrator or Internet provider to learn the external IP address of your Mac.
- Check your short user name by entering the following command in Terminal:

```
whoami
```
- Make sure that the port 64001 is not blocked by firewall. (This action is optional, since firewall does not block port 64001 as usual.) Port 64001 is used by Parallels Desktop for external connections.

Installing Parallels Mobile

The Parallels Mobile application can be downloaded for free from the App Store and is installed like any other iPhone application. Just search for "Parallels Mobile" at the App Store.

Starting Parallels Mobile

You can start the Parallels Mobile application by clicking its icon on the iPhone Home screen.

Adding your Mac to the Hosts list

- 1 Start the Parallels Mobile application and click the add button .
- 2 Specify the IP address of your Mac, your user name, and the password.
 - **Host.** In this field, specify the external IP address of your Mac.

Note: Parallels Desktop uses port 64001 for external connections. This port shouldn't be blocked by firewall.

- **User Name.** In this field, specify your short user name.
- **Password.** In this field, type your password and specify if you want to save it for future connections.

When finished, click the **Save** button.

Note: The computer you are trying to connect to should be turned on and have a stable Internet connection.



- 3 When the connection to your Mac is established, it will be added to the Hosts list.

Viewing and managing your virtual machines

- 1 Select your Mac in the Hosts list. This will open a list of virtual machines available on your Mac.
- 2 The list of virtual machines displays the names of the virtual machines available on your Mac and the types of operating systems installed in them. The virtual machines that are currently running are indicated by this sign: 

Select a virtual machine from the list to see its console window.



- 3 The appearance of the virtual machine console window depends on its current state:
- If the virtual machine is running, you will see its live screen shot. To refresh the screen shot, click the refresh button .
 - If the virtual machine is stopped, its screen will be black.
 - If the virtual machine is suspended or paused, its screen will be dimmed.



For managing your virtual machine, use the toolbar buttons that correspond to the actions you want to perform with this virtual machine:

-  - Use this button to start the virtual machine if it is stopped or to shut down it if it is running.
-  - Use this button to reset the virtual machine.
-  - Use this button to suspend your virtual machine. When the virtual machine is suspended, this button changes its appearance to . Click this button to resume the virtual machine.
-  - Use this button to pause the virtual machine. When the virtual machine is paused, this button changes its appearance to . Click this button to resume the virtual machine.
-  - Use this button to refresh the virtual machine live screen shot.

When supervising applications and processes running in the virtual machine, you will need to use the Refresh button , since the virtual machine's screen can be refreshed only manually.

To go back to the list of virtual machines, click **Virtual Machines**.

Troubleshooting the Firewall and Network Problems

Editing Firewall Settings

The settings you may need to apply to the firewall application depend on the type of firewall you use:

- **Application Firewall** (on Mac OS X Leopard). Go to **General Preferences > Security > Firewall** and allow incoming connections to Parallels Desktop.
- **IPFW**. Check the firewall rules list and add a new rule that will allow TCP connections to your 64001 port from any locations.
- **Intego NetBarrier**. Create a new rule that will allow incoming connections from the Internet (Source) to Parallels Desktop (Service) on your Mac (Destination).

Please contact your system administrator before configuring the firewall.

Establishing a VPN connection from iPhone

If your computer is behind NAT and you have a VPN access to your LAN, you can learn how to establish a VPN connection from an iPhone using these online resources:

- <http://support.apple.com/kb/HT1424> (<http://support.apple.com/kb/HT1424>)
- <http://www.apple.com/iphone/enterprise/integration.html>
(<http://www.apple.com/iphone/enterprise/integration.html>)
- http://manuals.info.apple.com/en_US/iPhone_User_Guide.pdf
(http://manuals.info.apple.com/en_US/iPhone_User_Guide.pdf)

Forwarding TCP traffic to your Mac

If your computer is behind NAT and you don't have VPN access to your LAN, you should set port forwarding rules on your router to forward TCP traffic from certain port on your router to 64001 port on your Mac. If you want to access several Macs, you should create a separate port forwarding rule for each Mac.

Please contact your system administrator and read the router configuration guide before configuring the router.

CHAPTER 10

Working With Snapshots

A snapshot is a saved state of the virtual machine. Snapshots can be created manually or automatically when the virtual machine is running. After you make a snapshot, you can continue working with the virtual machine and revert to the created snapshot at any time of your work.

Snapshots are stored in the primary OS inside the virtual machine bundle (p. 14), in the **Snapshots** subfolder. Each snapshot has a number of files, including the `.sav` file that contains the virtual machine's state, the `.mem` file that contains the memory dump for the virtual machine, and other different files of the virtual hard disk.

Note: Snapshots are not backup copies or clones (p. 234) of your virtual machine. You cannot use them alone without your virtual machine or move them from the virtual machine bundle.

You may need to make snapshots in the following cases:

- If you are configuring a software that requires a lot of settings, you may want to explore the settings functions before selecting them. For testing the settings, create snapshots at branching points.
- If you want to mark milestones in the development process. If something goes wrong, you can always revert to the previous state or create a branch of snapshots starting with the particular milestone snapshot.

Note: Snapshots cannot be created for virtual machines that use the Boot Camp partition.

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Making Snapshots

Snapshots can be created manually or automatically using SmartGuard (p. 190).

Note: You cannot create a snapshot manually or automatically or revert to a snapshot when your virtual machine is paused.

To make a snapshot manually:

- 1 Make sure that you completed all operations of installing, downloading, or writing to external devices before taking a snapshot.

Note: You can create a snapshot at any time. But it is recommended to complete all operations of installing, downloading, or writing to external devices before taking a snapshot. You should also complete or cancel any transactions performed via the virtual machine in external data bases.

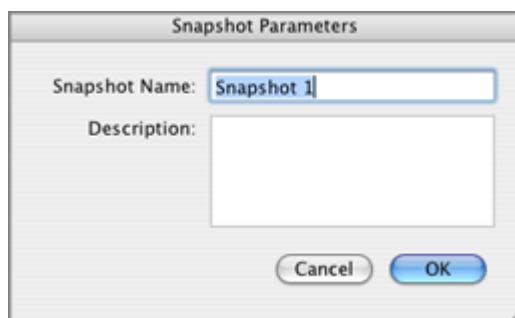
- 2 Choose Take Snapshot from the Virtual Machine menu or use the Take Snapshot button



on the toolbar of your virtual machine's window. If the toolbar does not contain this button, you can add it to the toolbar. For more information, refer to the **Customizing Toolbar** section (p. 47).

Note: To make a snapshot, you can also use Snapshot Manager. Just open the manager by choosing **Snapshot Manager** from the **Virtual Machine** menu and click the **New** button. A new snapshot will be created.

- 3 In the Snapshot Parameters window, you can provide a name and a short description for the snapshot. This information and the date of creation will be visible in Snapshot Manager when you hover the pointer over the snapshot icon.



- 4 Click OK to take a snapshot.

After the snapshot is created, you can continue working with your virtual machine's current state or use any of its snapshots.

To revert to a snapshot, open Snapshot Manager by choosing **Snapshot Manager** from the **Virtual**

Machine menu or by clicking the Snapshot Manager button  on the toolbar of the virtual machine window.

To create snapshots automatically, configure the **SmartGuard** settings (p. 190).

Managing Snapshots

You can use Snapshot Manager to revert to a specific snapshot, as well as to manage the snapshots. To open Snapshot Manager:

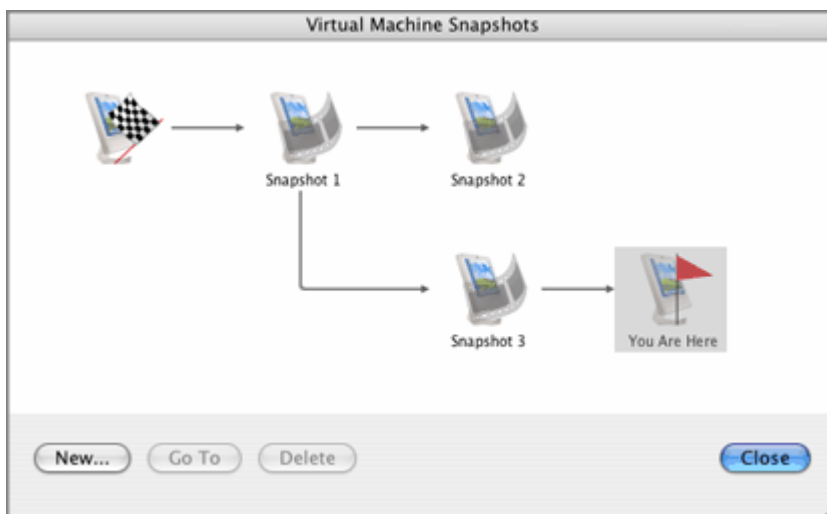
- Choose Snapshot Manager from the Virtual Machine menu, or
- Click the Snapshot Manager button  on the toolbar of the virtual machine window.

Note: To add this button in the toolbar, you should customize it. To learn how to do that, refer to the Customizing Toolbar section (p. 47).

Using Snapshot Manager, you can:

- create new snapshots and delete the unused ones
- view the snapshot tree of a particular virtual machine
- select a snapshot to revert to

Note: You cannot create a snapshot manually or automatically or revert to a snapshot when your virtual machine is paused.



The Virtual Machine Snapshots window consists of the following areas:

- The snapshots tree pane.
- The snapshots management pane.

Snapshots Tree Pane

Snapshot icons appear as screen shots of the guest OS window if the virtual machine was running at the time you created a snapshot.

The left icon with a flag is the *root* of the snapshots tree - it is the initial state of the virtual machine used as the reference point. You cannot delete the root icon. The root icon is visible if at least one snapshot exists. If you want to delete a snapshot which is parental for some other snapshots, you can decide whether to delete only this snapshot or delete it with all the subsequent snapshots.

All snapshots in the snapshots tree are descendants of the *root* state of the virtual machine. The first snapshot contains "differences" with respect to the root state. The second successive snapshot contains differences with respect to the first snapshot. You may want to return to one of the previous snapshots and work with it. If you then create a new snapshot, a new snapshots branch will be created.

An icon that represents the current state of the virtual machine is marked by a red flag.

When you hover the pointer over an item, you will see a tooltip message with a short description.

Snapshots Management Pane

The snapshots management pane includes the buttons necessary for managing the snapshots.

- The **New** button. Click this button to create a new snapshot for the present state of your virtual machine.
- The **Go To** button. Select the snapshot you want to go to in the snapshots tree and click this button to move from the present state of your virtual machine to the state saved in this snapshot.

Note: Before you go to a specific snapshot, decide what you want to do with the current state of the virtual machine - by default, it will not be saved. To retain the changes made since the last snapshot, make a new snapshot.

- The **Delete** button. Select the snapshot you want to delete and click this button. If you delete an intermediate snapshot, the information it contains will be merged into the subsequent snapshot.

Note: You cannot delete the *root* icon. It disappears only when you delete all snapshots in the tree.

You can also manage snapshots by right-clicking them in the tree:

- If you right-click the icon that shows the present state of the virtual machine, you can create a new snapshot for this state.
- If you right-click any other intermediate snapshot, you can choose to go to it, to delete it alone or with all the subsequent snapshots.

Going to a Snapshot

- 1 Launch Parallels Desktop and open a virtual machine.
- 2 Open Snapshot Manager by
 - choosing Snapshot Manager from the Virtual Machine menu, or
 - clicking the Snapshot Manager icon in the toolbar of the virtual machine main window.
- 3 In the Virtual Machine Snapshots window, choose the snapshot and click the **Go To** button. You can also right-click the snapshot and choose **Go to Snapshot** from the shortcut menu or just double-click the snapshot.

Note: If, after the Parallels Desktop update, you decided to revert to one of the snapshots made before the update, you will see the message that a new Parallels Tools update is available. We recommend you to install them to work effectively with the virtual machine.

- 4 If you revert to a snapshot from an unsaved state of the virtual machine, you will see the notification about that. Click **Yes** if you want to proceed without saving the state. Click **No** if you want to save the state and then go to the needed snapshot.

If you want to revert to the previous snapshot made on the same branch of snapshots, use the **Revert To Snapshot** option from the **Virtual Machine** menu or from the virtual machine main window toolbar. If you want to know to what exactly snapshot you will revert, you can always see your snapshots tree in Snapshot Manager (p. 251).

Note: If you revert to the previous snapshot from an unsaved state of the virtual machine, you will see the notification about that. Click **Yes** if you want to proceed without saving the state. Click **No** if you want to save the state and then revert to the snapshot.

After reverting to a snapshot, it is recommended to update Parallels Tools in the virtual machine.

Deleting a Snapshot

- 1 Launch Parallels Desktop and choose a virtual machine.
- 2 Open Snapshot Manager by
 - choosing Snapshot Manager from the Virtual Machine menu, or
 - clicking the Snapshot Manager button in the toolbar of the virtual machine window.
- 3 Select the snapshot you want to delete and click the **Delete** button if you want to delete only this snapshot. If you want to delete all the snapshots that come after it, right-click the snapshot and choose the **Delete Snapshot with children** option.

If you delete an intermediate snapshot, the information it contains will be merged into the snapshot that follows it.

Note: You cannot delete the root icon, but it gets automatically deleted after you delete all the other snapshots.

Merging Snapshots

Merging is performed automatically when you delete any snapshot except the last one in the branch. When you delete an intermediate snapshot, the information it contains is merged into the next snapshot of the same branch.

If you delete the snapshot belonging to two branches, the information is merged into the next snapshot of each branch.

Note: If you delete the snapshot that comes after the root icon and that belongs to two branches, the branches will start from the initial state icon directly.

The snapshots are also merged automatically if you manage the capacity of your virtual hard disk with the help of Parallels Image Tool. Before applying any changes to the virtual hard disk, Parallels Image Tool merges and deletes all the snapshots except for the last one. Unlike merging the snapshots in Snapshot Manager, the results of merging process via Parallels Image Tool are not reflected in the snapshots tree, and the icons of already deleted snapshots are still present in the tree.

CHAPTER 11

Using the Boot Camp Partition in a Virtual Machine

This chapter provides the necessary information on using the Boot Camp partition with the Windows XP, Windows Vista, or Windows 7 installation in a Parallels virtual machine.

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Overview

In the current version of Parallels Desktop, you can use your Boot Camp Windows Vista, Windows XP, or Windows 7 partition as a bootable disk or as a data disk in virtual machines.

Warning: If your Boot Camp partition does not have the Windows XP, Windows Vista, or Windows 7 operating system installed, you may damage the Boot Camp partition trying to use it via Parallels Desktop virtual machine.

Using the Boot Camp Partition as a Data Disk

To use the Boot Camp Windows partition as a data disk, add it as a hard disk to an existing Windows XP, Windows Vista, or Windows 7 virtual machine. The Windows operating system will automatically recognize it as a new disk. For detailed information on adding hard disks to Virtual Machine Configuration, see *Adding and Removing Devices* (p. 220).

Using the Boot Camp Partition as a Bootable Disk

If you install Parallels Desktop on a Mac computer with a Boot Camp Windows partition, and Parallels Desktop detects that there are no virtual machines on the computer, it automatically creates a new virtual machine for this Boot Camp partition and places it to the following location:

<Username>/Documents/Parallels/My Boot Camp

- If the Boot Camp partition is mounted to the Mac's desktop, Parallels Desktop attempts to recognize the operating system installed on the partition and creates an appropriate virtual machine for the recognized OS.
- If the Boot Camp partition is not mounted to the Mac's desktop, or if Parallels Desktop cannot recognize the operating system, it creates a virtual machine for Windows XP. If you have Windows Vista or Windows 7 installed on the Boot Camp partition, you just need to change the type of the guest OS for the virtual machine from Windows XP to Windows Vista or Windows 7 correspondingly in the *Virtual Machine Configuration* (p. 168) dialog.

You can create a virtual machine for Boot Camp with the help of New Virtual Machine Assistant. For detailed information, see *Creating a Virtual Machine for the Boot Camp Partition* (p. 258).

Alternatively, you can simply substitute the bootable virtual disk of an existing Windows virtual machine with the Boot Camp partition. To do that, add the Boot Camp partition as a hard disk to the virtual machine (p. 220) and change the boot order (p. 201) to make the virtual machine boot from the Boot Camp disk.

Note: It is important to specify the type of the guest OS in the virtual machine correctly, in accordance with the operating system installed on the Boot Camp partition.

When you boot into Boot Camp Windows through Parallels Desktop for the first time, Parallels Desktop installs Parallels Tools (p. 16).

Note: Using Boot Camp Windows via virtual machine may require to re-activate the guest operating system.

After that, you can use Boot Camp as usually to boot into the Windows partition, or you can boot into it via Parallels virtual machine, see the **Booting via Parallels Virtual Machine** section (p. 261).

Limitations for Parallels Virtual Machines Using the Boot Camp Partition

There is a number of limitations for a Parallels virtual machine that uses the Boot Camp Windows partition either as a bootable volume or as a data disk:

- it cannot be suspended or paused
- such a virtual machine cannot have snapshots and the **Safe Mode** feature (p. 126) cannot be enabled for it
- it cannot be compressed

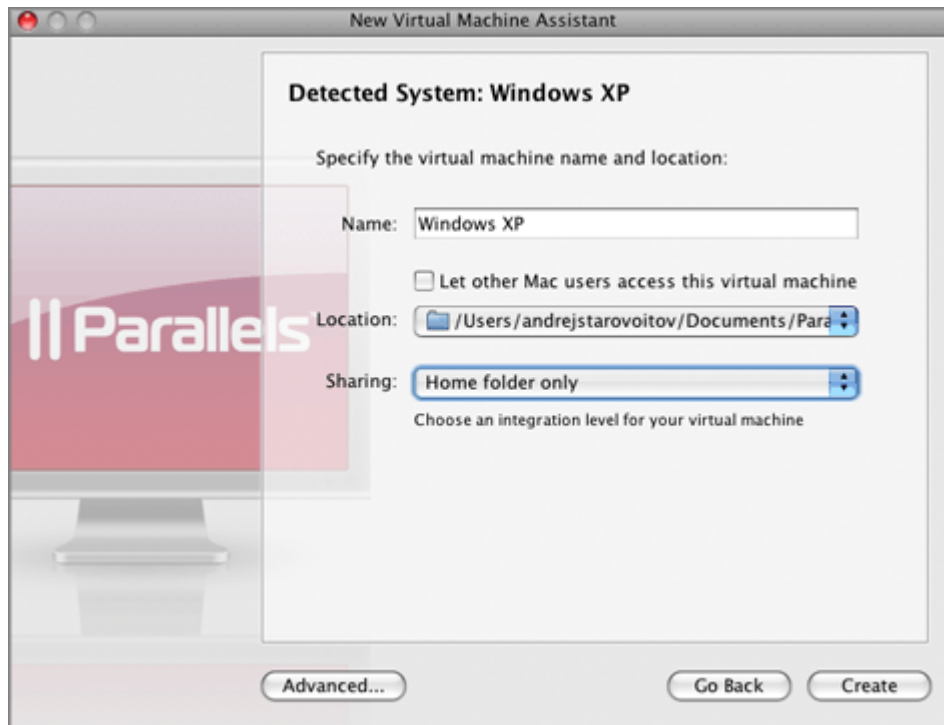
Note: There are no limitations on types of users who can access the Boot Camp Windows partition from a virtual machine. You can log into Windows even if you don't have administrator rights.

Creating a Virtual Machine for the Boot Camp Partition

To create a new virtual machine for using the Boot Camp Windows partition, do the following:

- 1** Boot into Mac OS X.
- 2** Start Parallels Desktop, and launch New Virtual Machine Assistant by clicking **New** in the **File** menu.
- 3** In the **Operating System Detection** window, select the **Boot Camp Partition** option, and click **Continue**.
- 4** In this step, define the main parameters for your virtual machine:
 - **Name.** Indicate the name to be assigned to the virtual machine. By default, the virtual machine gets the name of the operating system that you selected to be installed in this virtual machine. If a virtual machine with this name already exists, you will be prompted to specify another name. The name must not exceed 50 characters.
 - **Let other Mac users access this virtual machine.** Select this option if you want to share this virtual machine with other users of your Mac. In this case the virtual machine file (PVM file) will be saved in the `/Users/Shared` folder on your Mac.
 - **Location.** In this field, specify the virtual machine files location.
 - **Sharing.** Use this field to configure access to the disks and folders on the physical computer from inside the virtual machine. After the virtual machine creation, you can edit these settings in the **Shared Folders** pane (p. 180) of Virtual Machine Configuration.

Note: If your Boot Camp is divided into several partitions, only the bootable partition will be added to the virtual machine configuration. If you want to add the other partitions, you should add them as separate virtual hard disks (p. 220) to Virtual Machine Configuration. For detailed information, see **Boot Camp Configurations** (p. 260).



If you click the **Advanced** button, you can set the number of CPUs and the amount of RAM of your future virtual machine.

When finished, click **Create**.

The newly created virtual machine will be accessible through Parallels Virtual Machine List (p. 36) that allows you to easily manage your virtual machines. When you boot into Boot Camp Windows through Parallels Desktop for the first time, Parallels Desktop will install Parallels Tools (p. 16).

After that, you can use Boot Camp as usually to boot into the Windows partition (p. 262), or you can boot into it via the Parallels virtual machine (p. 261).

Boot Camp Configurations

When creating a Boot Camp virtual machine, you can set its configuration. There may be two types of Parallels Boot Camp configurations:

- default Boot Camp configuration and
- custom Boot Camp configuration

The default Boot Camp configuration allows using only one Boot Camp partition with Windows XP, Windows Vista, or Windows 7. The custom Boot Camp configuration allows using several physical partitions grouped as Boot Camp disks.

If your Boot Camp is divided into several partitions, you can customize the Boot Camp configuration. You can add one or more (up to total 4 disk drives) custom Boot Camp disks to your virtual machine. To do that, add the Boot Camp partitions you need as separate hard disks to Virtual Machine Configuration. For detailed information on adding devices to Virtual Machine Configuration, see [Adding and Removing Devices](#) (p. 220).

Partitioning Schemes

Parallels Boot Camp supports disks with GPT or MBR disk partitioning schemes, but handles them differently.

- GPT is the default disk partitioning scheme used on Mac computers. Parallels Desktop can connect partitions from such disks into a virtual machine configuration, converting this partitioning scheme to the MBR scheme. In the virtual machine, you will see only those partitions that were connected to the virtual machine. Other partitions will not be visible even if they are present on a real hard disk.

Windows XP and Windows Vista are supported as bootable OSs on GPT disks.

- MBR is the default partitioning scheme on personal computers. Parallels Desktop can connect partitions (including logical disks) from such disks into the virtual machine configuration. In the virtual machine, you will be able to see all the partitions on a real hard disk, but will have a read/write access only to the connected ones.

Booting via Parallels Virtual Machine

When you boot into the Boot Camp Windows partition for the first time, you may notice some problems with the mouse and keyboard. In this case, wait while Windows configures the driver settings to enable the devices. Follow the instructions on the first-time booting into Boot Camp partitions with Windows XP, Windows Vista, or Windows 7.

To boot into Boot Camp partition with Windows:

- 1 Start your Mac computer, and boot into Mac OS X.

Note: You may be prompted to authenticate using your Mac administrator account.

- 2 Launch Parallels Desktop, and start the virtual machine created for using the Boot Camp partition.
- 3 You may notice some problems with the mouse and keyboard; do nothing, just wait until they become enabled.

As soon as the mouse and keyboard are enabled, Parallels Desktop initiates the Parallels Tools installation.

- 4 When the installation is complete, the guest OS restarts automatically.
- 5 Upon booting, activate your Windows once again. You will have to reactivate it only once. Detailed information on how to activate Windows XP and Windows Vista can be found at <http://support.microsoft.com/kb/307890> and <http://support.microsoft.com/kb/940315> correspondingly.

Warning: In case you met an error not related to the guest OS while working with virtual machine using the Boot Camp Windows installation, restart this Parallels virtual machine before you try to boot via Boot Camp as usual.

Troubleshooting Windows XP That Misses Drivers

When booting into Boot Camp Windows XP via the virtual machine, you may get the message saying that Parallels Desktop cannot find necessary drivers. In this case, do the following:

- 1 Boot into Windows XP via Boot Camp.
- 2 Insert a Microsoft Windows installation disc that was used for this Windows installation.
- 3 Locate the folder `i368` on the disc and open it. Copy the following files: `driver.cab` and `sp2.cab` to `C:\Windows\Driver Cache\i386`.

Booting via Boot Camp

After you have installed Parallels Desktop and booted for the first time into the Boot Camp Windows partition via a virtual machine, you can continue booting into this partition as usual, via Boot Camp. The Parallels Tools installation does not affect the Windows operating system itself, it only helps you work with this operating system via the virtual machine.

To boot via the Boot Camp partition, start your Mac, and perform the usual actions required to boot into Boot Camp. You'll see Windows starting up.

Warning: Before booting into the partition via Boot Camp, make sure that the Boot Camp virtual machine is stopped.

Troubleshooting

When booting into Boot Camp, you may get a black screen with the choice of two configurations:

- Parallels
- Windows XP/Vista/7

You may get an error message about the computer disk hardware configuration problem.

To troubleshoot this problem:

- 1 Restart your Macintosh computer, and boot into Mac OS X.
- 2 Start Parallels Desktop. Start the virtual machine which uses the Boot Camp Windows installation as a bootable disk.
- 3 Wait while the guest OS is fully loaded and running. Shut it down.
- 4 Restart your Mac.
- 5 Try to boot via Boot Camp again. This time, booting must be successful.

Anyway, you can connect this partition as a data disk to any Windows XP/Vista/7 virtual machine.

CHAPTER 12

Using Parallels Add-ons

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Using Parallels Transporter

Parallels Transporter is an easy-to-use application which helps you migrate physical or virtual computers with the whole information they contain to Parallels virtual machines on your Mac. This chapter contains an overview of Parallels Transporter usage scenarios and working principles.

Parallels Transporter is provided as a Parallels Desktop utility and installed automatically during the Parallels Desktop installation.

For the detailed information, see *Parallels Transporter Help*.

Parallels Transporter Working Principles

Parallels Transporter enables you to migrate physical and virtual computers or any of their volumes into Parallels virtual machines and Parallels virtual disks.

The Parallels Transporter package includes two applications: Parallels Transporter and Parallels Transporter Agent.

- Parallels Transporter is installed on the computer that will host the resulting virtual machine or virtual hard disk (the *host computer*). This application receives data from Parallels Transporter Agent and transfers it to Parallels virtual machines or virtual disks. It also converts third-party virtual machines into Parallels virtual machines.
- Parallels Transporter Agent is installed on the remote physical computer you are planning to migrate (the *source computer*). It collects essential system data on the source computer and transfers it to Parallels Transporter using network or an external storage device.

Migration Scenarios

Parallels Transporter offers you several typical migration scenarios depending on the purpose of migration. After you make up your mind and choose the scenario, you can refer to *Parallels Transporter Help* for further instructions on the selected scenario of migration.

Using Parallels Transporter, you can migrate:

- from a remote computer
- from a third-party virtual machine

When migrating from a remote computer, you can use one of the following ways of transferring information:

- Using the Parallels USB cable. The cable is sold separately from Parallels Desktop. This is the easiest way to perform the migration but the source computer and your Mac should be located near each other.
- Over Network. During the remote migration over network, your source and host computers should be connected to the same network. You can also connect your computers using the FireWire cable.
- Using an external storage device. This process requires more time than migrating over network or using the Parallels USB cable but can be useful when there is no way to connect your source and host computers.

When migrating data from a remote Windows or Linux computer, Parallels Transporter transfers data from the specified volume(s) of the source computer to a newly created Parallels virtual hard disk (.hdd) and creates a virtual machine configuration file (.pvs). These two files constitute a ready-to-use virtual machine. During the remote migration, only the *active volume* (the source computer boot volume) is made bootable, and the resulting virtual machine has the same operating system that was active during the migration. If Parallels Transporter is unable to identify the source operating system, all source volumes are migrated as data disks.

Migrating Using the Parallels USB Cable

This is the easiest and fastest way of migration. Before starting the migration, you connect your host and source computers with the help of the Parallels USB cable. The Parallels USB cable is sold separately from Parallels Desktop. To use this migration scenario, you should buy this cable. On the source computer, you have Parallels Transporter Agent installed, while the host computer has Parallels Transporter installed.

Before you start the migration, you need to start Parallels Transporter Agent on the source computer and Parallels Transporter on the host computer. Parallels Transporter connects to Parallels Transporter Agent. Transporter Agent collects data on the source computer and transfers it to Parallels Transporter. Parallels Transporter saves the source computer data in a Parallels virtual machine or virtual disk on the host computer.

Note: This migration scenario is available for Windows Vista, Windows XP, and Windows 7 (supported experimentally) source physical computers only.

Migrating Over Network

Migrating over network assumes that your source computer and your Mac are connected to the same network. On the source computer, you have Parallels Transporter Agent installed, while your Mac has Parallels Transporter installed.

Before you start the migration, you need to start Parallels Transporter Agent on the source computer and Parallels Transporter on your Mac. Parallels Transporter connects to Parallels Transporter Agent. Transporter Agent collects data on the source computer and transfers it to Parallels Transporter.

Migrating Using the FireWire Cable

For migrating the Windows XP source computers, you can also use the FireWire connection. You can try to migrate a source computer with Linux or other Windows operating system using FireWire, but it may require additional drivers installation or setting some parameters. For migrating using FireWire, you should have the FireWire cable and FireWire ports in your source and host computers. The procedure for migrating using FireWire is the same as for migrating over network.

Migrating From a Remote Computer Using an External Storage Device

In this type of migration, Parallels Transporter Agent migrates data from your physical Windows or Linux computer to a virtual machine whose files are saved on a USB drive or other removable storage device connected to the source computer. Then you connect this storage device to your Mac and launch Parallels Transporter. Parallels Transporter migrates your resulting virtual machine or virtual disk to your Mac. After that, you open the virtual machine files in Parallels Desktop and work with your virtual machine or connect the resulting virtual disk to an existing virtual machine. This process requires more time than migrating over network, but can be useful when there is no way to connect your source computer to your Mac.

Migrating From a Third-party Virtual Machine

With Parallels Transporter, you can easily migrate data from a Microsoft Virtual PC (including Virtual PCs with preinstalled trial Windows Vista or Windows XP), VMware, or VirtualBox virtual machine or virtual hard disk to a bootable Parallels virtual machine or Parallels virtual hard disk. Parallels Transporter converts the third-party virtual machine files into the Parallels format, leaving the applications and data intact. During the migration, Parallels Transporter creates a virtual machine configuration file (.pvs) and virtual hard disk file (.hdd). These files constitute a ready-to-use virtual machine.

You can also migrate a Microsoft Virtual PC, VMware, or VirtualBox virtual hard disk to a bootable Parallels virtual machine if the disk has an operating system installed.

Migrating From a Boot Camp Partition

With Parallels Transporter, you can migrate your Boot Camp partition to a bootable Parallels virtual machine or Parallels virtual hard disk for using in Parallels Desktop for Mac. There are three methods you can use when migrating from a Boot Camp partition:

- migrating within the Boot Camp partition (using an external storage device), or
- migrating via the Boot Camp virtual machine, or
- migrating from the Boot Camp partition of a remote Mac (the standard remote migration procedure using the Parallels USB cable, or an external storage device, or over network).

Starting Parallels Transporter

Starting Parallels Transporter

To start Parallels Transporter on your Mac:

- choose **Import** from the **Parallels Desktop File** menu
- or click the down arrow button  at the lower left corner of the **Parallels Virtual Machines** list, and select **Import** from the menu.

Starting Parallels Transporter Agent

To start Parallels Transporter Agent on the source computer:

- In Windows, click the Windows **Start** menu and choose **All Programs > Parallels > Parallels Transporter Agent**.
- In Linux, click the **Applications** menu and choose **System Tools > Parallels Transporter Agent**.

Using Parallels Mounter

Parallels Mounter – is a specially designed utility for browsing your Parallels or third-party (VMware, VirtualBox, Virtual PC) virtual machines and virtual hard disks directly in Finder. With the help of Parallels Mounter, you can manage the virtual machine content without starting the virtual machine. Parallels Mounter is provided as a part of the Parallels Desktop package and does not require separate installation.

Using Parallels Mounter

- 1 Browse the virtual machine files in Finder. For Parallels virtual machines, right-click the virtual machine name in the Parallels Virtual Machines list, and select **Show in Finder** from the context menu.

The default paths for storing Parallels virtual machines are `/Users/<UserName>/Documents/Parallels/` and `/Users/Shared/`.

- 2 To mount the hard disk of a particular virtual machine, right-click this virtual machine's file, and choose **Open With > Parallels Mounter** or **Open With > Other > Library > Parallels > Parallels Mounter** from the shortcut menu. You can mount the following virtual machines and hard disks:

- Parallels bundle (`.pvm`) or configuration file (`.pvs`) or virtual hard disk file (`.hdd`).
- VMware configuration file (`.vmx`, `.vmwarevm`) or virtual hard disk file (`.vmdk`).
- Virtual PC configuration file (`.vmc`, `.vpc7`) or virtual hard disk file (`.vhd`).
- VirtualBox configuration file (`.xml`) or virtual hard disk file (`.vdi`).

If you choose the PVM file of a Parallels virtual machine or the configuration file of a third-party virtual machine that has several virtual hard disks, all its volumes will appear as mounted in Finder.

If you want to mount a single virtual hard disk, double-click the virtual hard disk file to mount it with Parallels Mounter. The icon for the selected hard disk appears in the sidebar of the Finder window, together with other Mac OS X icons.

- 3 To browse the contents of a volume, click its icon in the sidebar of the Finder window.

You can manage the virtual machine files just as you manage your Mac OS X files in Finder windows.

Note: If you are browsing the contents of a suspended virtual machine in Finder, you cannot delete, move, or otherwise modify its files.

- 4 To unmount the volume, use the **Eject** button  next to the disk icon.

Note: If a hard disk that has several volumes was mounted, and you want to open it or the virtual machine using it in Parallels Desktop, you should disconnect its volumes one by one by clicking the **Eject** button.

Using Parallels Image Tool

Virtual machines use virtual hard disks that are actually hard disk image files. After using your virtual machine for some time, you may find that your virtual machine hard disk does not fit your needs anymore, and you want to increase its capacity or change its type and properties. Parallels designed a special utility for increasing the virtual hard disk capacity and managing its properties - Parallels Image Tool.

Note: The virtual hard disk image file can be found inside the virtual machine's PVM bundle. In Mac OS X PVM bundles are stored in the /Users/<Username>/Documents/Parallels/ folder or the /Users/Shared folder by default. To locate the virtual machine bundle, right-click its name in the **Parallels Virtual Machines** list, and select **Show in Fider** from the context menu.

Parallels Image Tool is installed automatically during the Parallels Desktop installation.

Starting Parallels Image Tool

By default, Parallels Image Tool is installed in the following folder: /Applications/Parallels. To launch the application, go to **Applications > Parallels** in the Finder, and double-click the **Parallels Image Tool** icon.

Increasing the Virtual Hard Disk Capacity

If you find that the capacity of your virtual machine's hard disk does not fit your needs anymore, you can increase it using Parallels Image Tool.

To increase the capacity of the virtual hard disk:

- 1 Start Parallels Image Tool (p. 268).
- 2 In the **Introduction** window, click **Continue**.
- 3 Specify the source virtual disk image file with the `.hdd` extension in the **Source Virtual Disk** window. You may type the path and file name or use the **Choose** button to locate the file. The virtual hard disk image file can be found inside the virtual machine's PVM bundle. PVM bundles are stored by default:
 - in the `/<Username>/Documents/Parallels/` folder or in the `/Users/Shared` folder in Mac OS X.
 - in the `C:\Documents and Settings\<Username>\My Documents\Parallels\` folder in the Windows primary OS.
 - in the `/<username>/parallels` directory in the Linux primary OS.

Note: The virtual machine using this virtual hard disk should be stopped before proceeding.

- 4 Select the **Increase the disk capacity** option in the **Select Action** window.
- 5 Specify the new capacity for the disk. The **Add the unallocated space to the last volume** check box, which is selected by default, means that the additional disk space will be added to the last volume. If you clear it, the added space will appear as unallocated space. To allocate this space, you can either create a new partition or expand an existing partition. For instructions on allocating the added space, see the **Using the Added Space** section (p. 222).

Note: If you choose a hard disk used by a virtual machine that has snapshots, all snapshots, except the last one, will be deleted.

To start the process of increasing the disk capacity, click **Start**. You can view the operation progress in the **Processing the File** window. Clicking **Cancel** terminates the operation.

- 6 After the disk image has been successfully modified, the **Execution is Completed** window appears. Click **Finish** to close Parallels Image Tool.

Managing the Virtual Hard Disk Properties

With Parallels Image Tool, you can manage the properties of your virtual machine hard disk. You can change the virtual hard disk type from *plain* to *expanding* and vice versa, split or merge the disk parts, or merge snapshots of the virtual machine that uses this virtual hard disk.

To change the type of the virtual hard disk:

- 1 Start Parallels Image Tool (p. 268).
- 2 In the **Introduction** window, click **Continue**.
- 3 Specify the source virtual disk image file with the `.hdd` extension in the **Source Virtual Disk** window. You may type the path and file name or use the **Choose** button to locate the file. The virtual hard disk image file can be found inside the virtual machine's PVM bundle. PVM bundles are stored by default:
 - in the `/<Username>/Documents/Parallels/` folder in Mac OS X.
 - in the `C:\Documents and Settings\<Username>\My Documents\Parallels\` folder in the Windows primary OS.
 - in the `/<username>/parallels` directory in the Linux primary OS.

Note: The virtual machine using this virtual hard disk should be stopped before proceeding.

- 4 Select the **Manage disk properties** option in the **Select Action** window.
- 5 In the **Select Operations** window, choose one or several of the following operations to perform on the disk and click **Start**:

Note: The operations with the virtual hard disk are irreversible.

- If the virtual hard disk image you specified is an *expanding* virtual hard disk, the **Split virtual hard disk image file** option is selected by default.
- If it is an *expanding* disk, you can select the **Convert to Plain** option.
- If it is a *plain* disk, the **Convert to Expanding** option is selected by default.
- If the hard disk image you selected has snapshots, the **Merge snapshots** option is selected by default. You cannot clear this option.

Note: The merging process deletes all the snapshots, except the last one.

Parallels Image Tool needs to merge all the snapshots of the current virtual hard disk before performing any actions with it. The information from all the snapshots will be merged to the last one, and all the other snapshots will be deleted. Parallels Image Tool does not change the snapshots tree in Snapshot Manager, so if you attempt to revert to any snapshot of the tree, it will be no longer accessible, and you can remove it manually.

You can view the operation progress in the **Processing the File** window. Clicking **Cancel** terminates the operation.

- 6 After the disk image has been successfully modified, the **Execution is Completed** window appears. Click **Finish** to close Parallels Image Tool.

CHAPTER 13

Troubleshooting and Limitations

This chapter describes how to troubleshoot known issues.

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Getting Technical Support

If you have problems using Parallels Desktop, please first view Parallels Desktop FAQs <http://www.parallels.com/en/support/faq/>.

Our friendly technical support team is ready to help. Describe your problem and submit a free support request to the Parallels support team <http://www.parallels.com/en/support/desktop/>.

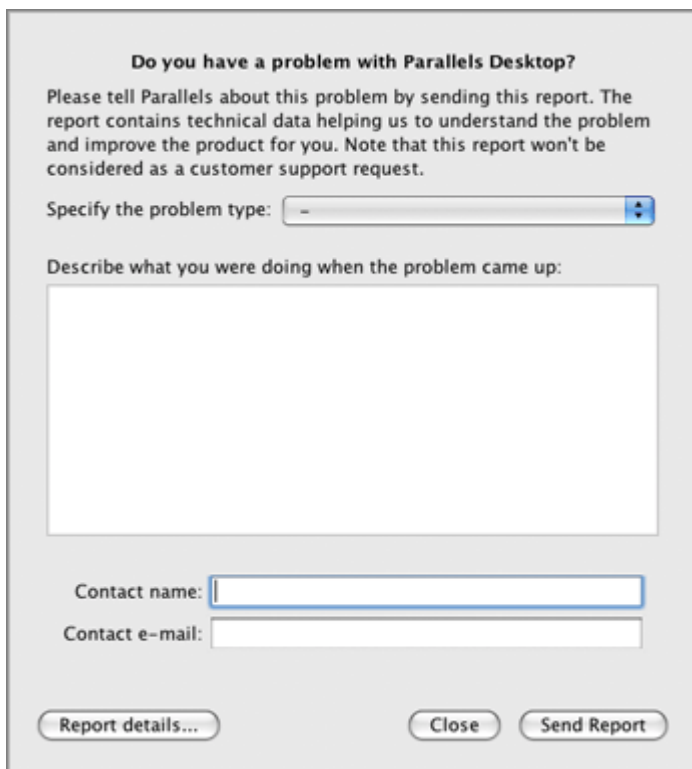
To find solutions for common problems, explore Parallels Knowledge Base (<http://kb.parallels.com/>). This online resource comprises valuable articles about using Parallels Desktop.

Telephone support is available on a per incident fee basis. For more information please, visit the page of the Parallels support team <http://www.parallels.com/en/support/desktop/>.

Reporting a Problem to Parallels Team

To help improve the quality of Parallels Desktop, you can send problem reports to Parallels support team. If a fatal error occurs in a virtual machine, Parallels Desktop automatically opens the **Parallels Problem Report** window prompting you to send a report. If you notice an unusual virtual machine behavior, you can create a report manually by choosing **Report a Problem** from the **Help** menu and filling out the form. Parallels Desktop will create a status report and make a screen shot of the running virtual machine.

Note: Parallels team collects error reports and uses them for identifying performance issues, but does not respond to them. If you need assistance in resolving the issue, visit Parallels forum or Support page, or log us a support call.



The screenshot shows a dialog box titled "Do you have a problem with Parallels Desktop?". The text inside reads: "Please tell Parallels about this problem by sending this report. The report contains technical data helping us to understand the problem and improve the product for you. Note that this report won't be considered as a customer support request." Below this is a dropdown menu labeled "Specify the problem type:" with a minus sign and a blue arrow button. Underneath is a text area labeled "Describe what you were doing when the problem came up:". At the bottom, there are two input fields: "Contact name:" and "Contact e-mail:". At the very bottom, there are three buttons: "Report details...", "Close", and "Send Report".

In the **Specify the problem type** field, you can select the type of your problem from the list. In the next field, you can add a short problem description. These two fields are optional.

The **Technical Data** option includes the `.txt` status report file that has been generated for the error. The status report contains the product version and activation data, primary and guest OSs information, virtual machine configuration and system data information, processor status, etc. Click the **Technical Data** icon to view the `.txt` file and to choose the sections that will be added to the report. The file is saved on your Mac. If you want to locate it, click the **Go To File** button.

The **Guest OS Screenshot** option includes the session screen shot of the guest OS in a `.png` format. This option is available if you create a problem report during the virtual machine session. Click the **Guest OS Screenshot** icon to see the screen shot and the path to its location on your Mac.

The **Primary OS Screenshot** option includes the session screen shot of the primary OS in a `.png` format. This screen shot is made and put on the primary OS desktop whenever you create a problem report. Click the **Primary OS Screenshot** icon to see the screen shot.

In the **Contact Name** and **Contact e-mail** fields, type your name and e-mail. This information will be used by the Parallels support team to address you for more technical details if needed.

Sending a Report

After you revise the problem report components, click **Send Report**. The report will receive its unique id number and will be sent to the Parallels support team.

Checking the Build Number

If you are not sure what version and build of the Parallels Desktop software you are using, you may check it on the **About Parallels Desktop** dialog.

To check your version and the build number:

- 1 Choose **About Parallels Desktop** from the **Parallels Desktop** menu.
- 2 The **About Parallels Desktop** window opens. See your version and the build number In the upper part of the dialog.

Note: The **About Parallels Desktop** dialog can also provide you with the useful information about your copy of Parallels Desktop, including the licensing information and a link to the Parallels support web page.

Installing Windows 98 as a Guest OS

All Windows 95 and some of Windows 98 installation packages include a bootable floppy (a startup floppy disk). The floppy is used to perform disk partitioning and formatting by means of MS-DOS. Since modern Macs have no floppy drives, you will need an external USB floppy drive or an image of a bootable floppy disk. Such an image can be created using third-party tools.

If you have a bootable CD with Windows 98 installation, you may use it as is or create an ISO image of it.

Below we describe the installation procedure for Windows 98, for the case when you have a startup floppy image and a CD with the installation files. The installation of Windows 95 is similar to that.

Preparing a Virtual Machine for Windows 95/98 Installation

We recommend that you use a virtual machine created with a configuration typical for Windows 98 (128MB RAM and 6GB hard disk). If you created a custom configuration, check that virtual machine's RAM and hard disk size meet particular OS's requirements.

Note. For Windows 95 do not create virtual hard disks with more than 2 Gb, they are not supported by the system.

If you have a bootable floppy image, perform the following operations:

- 1 Create a typical Windows 98 virtual machine using New Virtual Machine Assistant (p. 88). Be sure to click **Done** in the last step.
- 2 Right-click the virtual machine in the virtual machines list and choose **Configure** from the context menu.
- 3 Click **Hardware > Boot Order**, and set the boot sequence to **Floppy Disk, Hard disk, CD/DVD**.
- 4 Click **Floppy Disk** in the **Hardware** tab to open the virtual floppy disk drive settings.
- 5 Make sure that the **Connected** option is selected. Specify the floppy image in the **Source** section of the tab.
- 6 Click **OK** to save the virtual machine configuration.

Initial Partitioning and Formatting

- 1 Start the virtual machine. You will see the black screen and messages indicating the process of booting to MS DOS.
- 2 When prompted, enter the following command:

```
fdisk
```

Fdisk, which is an MS-DOS utility, is used to partition hard disks and floppy disks.

- 3 The **Fdisk** options will be listed. Choose the operation to perform, the default choice is 1, and press Return (Enter) to continue.

- 4 Fdisk prompts you to create a partition. Select the **Create Primary DOS Partition** option if you are going to have only one partition or less than four, and enter:

1

Other choices are for the case when you want to create more than four partitions.

- 5 Then Fdisk prompts you to define the size of the primary partition. Press Return (Enter) if you wish to create a partition of the maximum size available.

To define other size type N and press Return (Enter). You will be prompted to specify the size.

- 6 Fdisk creates the partition and then prompts you to restart the computer (virtual machine).

- 7 Reboot the virtual machine using the same image of the boot floppy disk. That is, press Ctrl+Alt keys to release the keyboard input and then click the **Shut Down** button to stop the virtual machine. Then click the **Start** button.

- 8 When the booting is complete, you should format the system drive C:.

Enter the following command:

format c:

Confirm that you want to format the disk C: when prompted. Type y and press Return(Enter).

You may be prompted to choose how exactly to format your disk. Windows 95/98 supports FAT16 and FAT32 file systems.

FAT16 partition can not be greater than 2 GB. Larger disks can be formatted with FAT32. But do not use larger disks if you are going to run legacy applications.

The program starts formatting the disk C:.

Format other disks too (if you created more than one primary partition or if you created a custom virtual machine with more than one disk). Use E:, F: drive letters.

- 9 Enter a label for each disk (11 character string). The label is optional, you can press Return (Enter) to skip this step.

- 10 Shut down the virtual machine.

Now you are ready to start the installation of the WIndows 98 operating system.

General steps of Windows 98 installation

- 1 Start the virtual machine using the same bootable floppy image.
- 2 Insert the Windows 98 installation CD, or connect an ISO image of the installation disc choosing **CD/DVD > Connect Image** from the **Devices** menu.
- 3 If you created only one primary partition (disk C:), by default, your CD/DVD drive will have the drive letter D:. Type the command:

D:\setup.exe

and press Return(Enter). The installation starts, and the files are copied from the CD to the virtual hard disk.

- 4 Follow the on-screen instructions of the Setup. Note that you can add or remove some options later.
- 5 Read and accept the **License Agreement**. Enter the license key.
- 6 Confirm the default system directory or specify another one.

- 7 In the Setup options dialog choose the type of installation. *Typical* is recommended.
- 8 (only for Windows 98) If you are going to use networking, select the network card when prompted.
- 9 Turn off the virtual machine.
- 10 Eject the installation CD or disconnect the ISO image.
- 11 Choose **Configure** from the Virtual Machine menu, go to **Hardware > Boot Order**, and set the boot sequence to **Hard Disk**, **Floppy Disk**, **CD/DVD**. Click **OK** to save the configuration.
- 12 Restart the virtual machine. This time, it will boot from the hard disk.

Using the F8 Key in Windows Virtual Machines on Mac OS X

If you have Mac OS X Leopard as a primary operating system, you may encounter problems when trying to use the F8 key or Ctrl+Arrow keys combinations in a Windows virtual machine. It happens, because in Mac OS X Leopard, the F8 key and Ctrl+arrow key combinations are reserved for the Spaces utility.

Possible solutions:

- Click the **Keyboard** icon on the virtual machine's status bar and choose **F8**.
- Change the **Spaces** utility hotkeys settings. To learn how to do it, refer to Mac OS X Leopard documentation.

Upgrading or Installing Parallels Tools in Text Mode in a Linux Guest OS

After upgrading to Parallels Desktop 4 or 5, the X Server may fail to start in Linux virtual machines. To fix the problem, you need to install Parallels Tools in text mode.

- 1 Start the virtual machine.
- 2 When you see a message about X Server that failed to start, switch to another virtual console using Ctrl+Alt+F1 and enter your login details.
- 3 Choose **Install Parallels Tools** from the **Virtual Machine** menu to connect the Parallels Tools ISO image to your virtual machine.

Note: If the **Install Parallels Tools** option is grayed out, make sure that Parallels Tools can be installed in your guest operating system. To see the list of guest OSs supported by Parallels Tools, refer to the **Parallels Tools Overview** section in *Parallels Desktop User's Guide*.

The `prl-tools-lin.iso` image file will be connected to the virtual machine's CD/DVD drive.

- 4 In the virtual machine console, type the following command to gain the `root` privileges:

```
su
```

- 5 Check if the Parallels Tools CD image is mounted by entering

```
mount | grep iso9660
```

If this command does not return anything, proceed to the next step.

If this command returns anything like

```
/dev/cdrom on /media/cdrom type iso9660 (ro,exec,nosuid,nodev,uid=0),
```

skip the next step and proceed to the following one.

If this command returns anything like

```
/dev/cdrom on /media/cdrom type iso9660 (ro,noexec,nosuid,nodev,uid=0)
```

with the `noexec` option present in parentheses, you need to unmount the disc using the following command and then proceed to the next step:

```
umount /dev/cdrom
```

- 6 To mount the Parallels Tools installation disc image, enter the following:

```
mount -o exec /dev/cdrom /media/cdrom
```

Note: `/dev/cdrom` is the virtual machine's CD/DVD drive and `/media/cdrom` is the mount point for this device. In some of the Linux operating systems the virtual CD/DVD drive may appear as `/dev/hdb` and the mount point `/mnt/cdrom`. Some Linux OSs do not have the CD/DVD drive mount point. In this case, you should create the mount point directory manually.

- 7 When the installation disc image is mounted, change the directory to the CD/DVD drive directory using

```
cd /media/cdrom/
```

- 8 In the CD/DVD drive directory, enter the following to launch Parallels Tools installation:

```
./install
```

Note: You must have the `root` privileges to run this command.

9 Follow the Parallels Tools Installer instructions to complete the installation.

10 When the installation of Parallels Tools is complete, restart your virtual machine.

For general information about installing Parallels Tools in Linux, refer to *Installing Parallels Tools in a Linux Guest OS* (p. 103).

Installing the GCC package and kernel sources in Linux

When installing or upgrading Parallels Tools in a Linux virtual machine, you may need to install the `gcc` package and kernel sources in your Linux guest OS. Kernel sources can be either downloaded from the Internet, or installed from Linux distribution disks.

To install the `gcc` package and kernel sources in the RHEL/Fedora/CentOS Linux distribution, enter the following command in a terminal:

```
yum install gcc kernel-devel  
make
```

To install the `gcc` package and kernel sources in the Debian/Ubuntu Linux distribution, enter the following command in a terminal:

```
apt-get install gcc make linux-headers-$(uname -r)
```

For information how to install the `gcc` package and kernel sources in other Linux distributions, refer to the corresponding Linux distribution documentation.

If you still experiencing problems, try to find a solution in Parallels Knowledge Base (<http://kb.parallels.com/>) or refer to the Parallels support team <http://www.parallels.com/en/support/desktop/>.

Memory Usage Problems

The amount of the host computer physical memory required for each virtual machine operation can be represented as follows:

Virtual Machine Memory = *Guest OS Memory* + *Video Memory* + *Virtual Machine Monitor Memory*

- *Guest OS Memory* is the amount of RAM available to your guest OS. You can configure the guest OS memory amount in the **Memory** pane (p. 169) of Virtual Machine Configuration.
- *Video Memory* is the amount of physical memory available to the virtual machine's video card. You can adjust the video memory amount in the **Video** pane (p. 203) of Virtual Machine Configuration.
- *Virtual Machine Monitor* is the module responsible for the guest operating system virtualization. It consumes memory to perform operations of guest virtual devices and handle virtual paging emulation. The amount of memory required for the Virtual Machine Monitor operation depends on the guest OS and varies from 50 MB to 200 MB.

You can configure the whole amount of physical memory available for all running virtual machines in the **Memory** tab (p. 63) of the application Preferences.

Memory Overcommitment

If you have several virtual machines running at a time, and you are trying to start one more virtual machine, you can come across the memory over commit. The application will inform you with the corresponding message. This means that all your running virtual machines require more memory that is configured in the **Memory** tab (p. 63) of the application Preferences. If you start one more virtual machine, this may significantly slow down all your virtual machines. To solve this problem, you can:

- stop one or several of your running virtual machines, or
- edit your virtual machines' configurations to make them consume less memory, or
- edit the application memory preferences to allocate more memory to your virtual machines.

Configuring Network in Linux

When setting up network in Linux, you may need to configure the DHCP client to send the virtual machine's ID in DHCP requests. For information on how to configure your DHCP client, refer to the DHCP client documentation.

For example, in Red Hat Linux guest OSs, you need to edit the DHCP client configuration file.

1 Open the `dhclient.conf` file and make sure that the following lines are present.

```
interface "eth0" {  
    send dhcp-client-identifier 1:<MAC address>;  
}
```

2 If there are no such lines, add them manually to the file and save it.

When the `dhclient.conf` file contains these lines, DHCP client sends the virtual machine's ID to the DHCP server. The DHCP server sends an IP address in response.

Tip

To locate the `dhclient.conf` file, in a terminal, enter:

```
strings /sbin/dhclient | grep etc | grep dhclient.conf
```

or:

```
rpm -ql dhclient
```

Suspending a Boot Camp Virtual Machine

By default, you cannot suspend your Boot Camp virtual machine. Booting the operating system of a suspended Boot Camp virtual machine natively (not through the Boot Camp virtual machine) will seriously damage the Boot Camp partition, making it unusable. As a result, all data on your Boot Camp partition may be lost.

If you still want to be able to suspend your Boot Camp virtual machine, do the following:

- 1 Open the virtual machine configuration (for example, by choosing **Virtual Machine > Configure**), click the **Hardware** button at the top of the Virtual Machine Configuration dialog, and click **Boot Order** in the sidebar.
- 2 Type the following in the **Boot flags** field:
`disp.allow_to_suspend_bootcamp_vm=1`
- 3 Click **OK** to save the settings.

With this system flag in the virtual machine configuration, you will be able to suspend your Boot Camp virtual machine.

Warning! Be sure not to use your Windows Boot Camp partition natively when your Boot Camp virtual machine is suspended: this may damage the Boot Camp partition.

If you want to disable this option, modify the boot flag as follows:

```
disp.allow_to_suspend_bootcamp_vm=0
```

Problems With Setting Up Network

After the creation of a Parallels virtual machine, you can connect it to the internet or set up the desired mode of the network. You can do that using the **Virtual Machine Configuration** dialog (p. 168). You can also refer to the **Networking in a Virtual Machine** section (p. 228) for more details.

However, if you meet difficulties with setting up the desired mode or just unable to access the Internet, you can refer to the Parallels support team <http://www.parallels.com/en/support/desktop/> for a qualified assistance.

Problems With Antivirus Software

Because of the close integration with the host operating system, some actions performed by the Parallels Desktop processes may be detected as malicious by the antivirus software installed on your Mac.

However, such actions are necessary to ensure the proper functioning of Parallels Desktop. That is why you should prevent the antivirus software from blocking them. If you do not want the alerts to appear in future, perform a full system scan using the antivirus software and add these processes to the list of trusted ones if no viruses are detected. To find out how to do it, refer to your antivirus software Help.

Note: The names of Parallels Desktop processes usually start with `prl` or `parallels`.

Glossary

This glossary defines terms and spells out abbreviations used in Parallels Desktop documentation. References to terms defined elsewhere in the glossary appear in *italics*.

Administrator. A user with administrative privileges.

Activation key. A unique set of symbols that activates the Parallels Desktop application on your Mac and lets you use the Parallels Desktop functionality to its full extent.

Active operating system. The operating system where Parallels Transporter Agent is launched.

Active volume: The volume of the physical source computer that is used as a *boot volume* for the active operating system.

Bootable hard disk. A disk used by the operating system to boot from, usually a disk that has an operating system installed.

Boot Volume. A hard disk partition from which the operating system boots.

Boot Camp partition. A partition on the hard disk of your Mac that can be used for installing a Windows operating system on it (for Mac host computers only).

Bridged networking. Virtual machine network connection mode that enables the virtual machine to appear as any other computer on the network, with its own IP address and network name.

Configuration file. A file specifies the virtual machine's hardware configuration, the devices it uses, and other settings. It is created automatically when you create a new virtual machine. See also *PVS file*.

CPU. Stands for central processing unit. It is an internal part of the computer. See also *Processor*.

Disks in the old format. Disks of virtual machines that were created in Parallels Desktop 2.5 and earlier or Parallels Workstation 2.2.

Disks in the new format. Disks of virtual machines that were created or used in Parallels hardware virtualization products starting from version 3.0.

Expanding format. A virtual hard disk format. An expanding virtual hard disk image file resides on your host computer and is small initially. Its size grows as you add applications and data to the *virtual machine*.

FireWire connection. A wired connection that enables a high-speed data transmission between computers.

Guest operating system (guest OS). An operating system installed inside your virtual machine.

Host computer. The computer that is used to run virtual machines. In case of Parallels Desktop for Mac, it is your Mac. In case of Parallels Desktop for Windows or Parallels Desktop for Linux, it is the Windows- or Linux-based physical computer where Parallels Desktop is installed. In the Parallels Transporter documentation, this term may define the computer that hosts the result of *migration*.

Hot key. A user-defined key or combination of keys that provides quick access to applications and commands. See also *Shortcut*.

HDD file. During the creation, the *virtual machine* acquires a virtual hard disk file with the `.hdd` extension. See also *virtual hard disk file*.

Host-only networking. Virtual machine network connection mode that creates a private network between the host computer and its virtual machines, which makes the virtual machines available from the host computer only.

ISO Image. A special file that contains the entire contents of a CD or DVD disc commonly used to install an operating system.

Image file. A single file containing the complete contents and structure of a data storage medium or device, such as a hard disk drive, CD, or DVD.

IP address. A unique address that is assigned to a physical computer or a virtual machine that participates in computer networking.

Linux computer. A physical computer that has a Linux operating system installed.

Merged disk. A *split* disk whose parts were merged into a single disk.

Migration. The process of transferring data from a physical computer or a third-party virtual machine into a Parallels virtual machine or virtual disk.

OS. An operating system.

Parallels Desktop for Mac. An application that enables you to create, manage, and use *virtual machines* on your Mac.

Parallels Desktop for Windows. An application that enables you to create, manage, and use *virtual machines* on a Windows-based physical computer.

Parallels Desktop for Linux. An application that enables you to create, manage, and use *virtual machines* on a Linux-based physical computer.

Parallels Explorer. An application that enables you to browse and manage the contents of your *virtual machines* without starting them.

Parallels Image Tool. An application that enables you to manage the capacity and properties of your *virtual machine's* hard disk.

Parallels Mounter. An application that enables you to to browse the contents of your *virtual machines* and *virtual hard disks* directly in Mac OS X Finder.

Parallels Tools. A set of Parallels utilities that ensures a high level of integration between the *primary* and the *guest* operating systems.

Parallels Transporter. An application that uses data of a physical or virtual computer for creating a Parallels virtual clone of this physical or virtual computer. The resulting virtual machines can be used with Parallels Desktop.

Parallels Transporter Agent. An application that collects data on a physical computer and transfers it to Parallels Transporter installed on your Mac.

Parallels Desktop. An application that enables you to create, manage, and use *virtual machines* on a Windows or Linux computer.

PCIe device. A video or network adapter corresponding to the PCI Express computer expansion card standard introduced by Intel in 2004.

Plain format. A virtual hard disk format. A plain virtual hard disk image file resides on the *host computer* and has a fixed size that cannot be changed.

Preboot Execution Environment (PXE). An environment to boot computers using a network interface independently of available data storage devices (like hard disks) or installed operating systems.

Primary operating system (primary OS). Operating system that controls the I/O devices of the computer and that is loaded when the physical computer is turned on. It is the operating system of the physical computer where the Parallels Desktop application is installed.

Processor. The central processing unit, or *CPU*. It is an internal part of the computer.

PVS file. A virtual machine *configuration file* that contains information about the virtual machine resources, devices and other settings.

Shared networking. Virtual machine network connection mode that allows the *virtual machine* to use the *host computer* network connections. In this mode, the virtual machine is invisible to other computers on the network the host computer belongs to.

Shortcut. A user-defined key or combination of keys that provides quick access to applications and commands. See also *Hot key*.

Snapshot. A copy of the virtual machine state at a particular point of time. The files related to snapshots are stored in a special subfolder in the virtual machine's folder.

Source computer or source operating system: The computer that you are going to migrate data from. On physical source computers, Parallels Transporter Agent should be installed.

System disk. A floppy disk that allows your computer to load the operating system.

Split disk. A split disk is cut into 2 GB pieces, but is stored as a single *HDD file*. Split disks allow you to transfer the data stored on a split disk piece by piece using a USB drive or other media that have limited space and cannot store a large virtual hard disk image file.

Terminal. In Mac OS and GNU/Linux operating systems, a utility that enables you to access the command line.

Virtual hard disk (virtual disk). A file or group of files that emulates the virtual machine's hard disk.

Virtual machine. The computer emulated using Parallels Desktop. A virtual machine has its own virtual hardware and requires an operating system to control its hardware. The installed operating system and its applications are isolated inside the virtual machine and share physical hardware resources of the *host computer*.

Third-party virtual machine. A virtual machine created in a third-party virtualization product, that can be converted to Parallels virtual machines with the help of Parallels Transporter.

Virtual Machine Configuration. Like any physical computer, a *virtual machine* has its own configuration which is set during the creation and can be later modified. The virtual machine configuration settings are stored in a *PVS file*.

Virtual machine files. Files stored in a *virtual machine* folder. A virtual machine has at least two files: *configuration file* and *virtual hard disk file*.

Virtual hard disk file. During the creation, the *virtual machine* acquires a virtual hard disk file with the *.hdd* extension. This file performs the functions of a real hard disk. See also *HDD file*.

Virtual machine template. A virtual machine that can be cloned to multiple virtual machines that will have the same configuration and data that the virtual machine template had.

VM. See *Virtual Machine*.

Windows computer. A physical computer that has a Windows operating system installed.

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