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Parallels Software International, Inc.

# Parallels Desktop for Mac

## User Guide



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## CHAPTER 1

# Introduction

This chapter provides general information on the virtual machine technology used by Parallels® Desktop and presents the main characteristics of a virtual machine created by Parallels Desktop.

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## Virtual Machine Technology and Key Terms

Virtual machine (VM) technology makes it possible:

- to create a virtual machine, with a set of generic virtual hardware. An operating system and its applications are isolated inside such virtual machine and share physical hardware resources with Mac.
- to use multiple guest operating systems (OSes) and their applications running simultaneously on a single Mac
- to switch between different OSes without rebooting Mac
- to use USB devices which are not Mac-compatible via virtual machine
- to consolidate and virtualize a computing environment, what would result in reduced hardware costs, lower operating expenses, and increased productivity.

For more on virtual machine hardware refer to Inside a Virtual Machine (on page 11) and Understanding Virtual Machine Configuration (page 45) topics.

**Primary operating system (primary OS)** denotes the operating system that controls the I/O devices of the computer and that is loaded when the real computer is turned on.

**Guest operating system (guest OS)** is an operating system that runs under virtual machine control. One primary OS and multiple guest OSes can run at the same time on a single Mac.

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## About Parallels Desktop

Parallels® Desktop is the most powerful, easy-to-use, cost-effective desktop virtualization solution available today. It empowers any user, from experienced professional developers to sales executives and home users, with the ability to create completely networked, totally secure independent virtual machines on a single physical machine.

Parallels Desktop is powered by a lightweight hypervisor, a thin layer of software that is between part of the host computer's hardware and the primary operating system. The lightweight hypervisor controls some of the host computer's hardware resources, resulting in dramatically more stable, more secure, and higher-performing virtual machines.

Parallels Desktop's sophisticated virtualization engine enables each virtual machine to operate like to a stand-alone computer. Each virtual machine works as if it has its own processor, RAM, floppy, CD and DVD drives, I/O devices, and hard disk – everything a physical computer contains. See *Inside a Virtual Machine* (on page 11) for the full list of Parallels virtual machine devices.

Intel virtualization technology (VT-x) is fully supported by Parallels Desktop. See *Intel Virtualization Technology (VT-x) Support* (page 10).

Parallels Desktop has a set of special tools (utilities and drivers) that enhances the performance and functionality of your guest operating system (mouse synchronization tool, clipboard synchronization tool, etc.). See *Parallels Tools Overview* (page 72) for the full list of tools and their descriptions.



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# What's New in This Parallels Desktop Update

## **New Simple Look**

Now, the main window of Parallels Desktop for Mac has a new look. It opens with a list of recently used virtual machines. You have an opportunity to select and open one of recently used virtual machines, choose one of other machines or create a new one.

Parallels Desktop window is now resizable by dragging its right corner.

Improved full screen mode

While guest OS is in fullscreen, release mouse input by clicking Control/Alt keys to see Mac OS X Dock and Apple menu on top of it.

## **Drag and drop**

Easier data transfer between Mac OS X and a guest OS. Now you can **drag and drop** files between Mac OS X and your virtual machine.

Moreover, you can connect and disconnect CD/DVD-ROM discs, images of discs and floppy images at runtime by drag-and-drop. You also can drag and drop a Mac OS X folder on Shared folders icon to make this folder shared.

## **Assistants new features**

In the current version, OS Installation Assistant can perform unattended Windows XP, Windows Vista installation not only from CD/DVDs, but also from ISO images.

## **Easier navigation**

You always know where the virtual machine is located - simply click the virtual machine icon on the title bar while pressing the Command key. You'll see the complete path to the virtual machine configuration file on the pop-down pane.

Create an alias on the desktop for each of your virtual machines, just drag-and-drop its icon while pressing Command and Control keys, from the title bar to the desktop.

## **Coherence**

Available only for Windows 2000/2003/XP guest operating systems. Coherence Tool provides the possibility to seemingly integrate guest applications to Mac OS X. Coherence will make you forget that you are running Windows applications inside a virtual machine. On desktop of your Mac you will have Microsoft Windows applications along with Mac OS X applications, and you will be able to switch between them just pointing at the application windows and clicking in this window.

## **Boot Camp via Parallels Desktop**

If you already have **Boot Camp** with Windows XP installation, you don't have to re-install Windows in a virtual machine, you can create a virtual machine that would use the already existing Windows XP installation on your Mac's hard disk. And you can continue using this installation as always, via Boot Camp.

Of course, you can add Boot Camp Windows partition as a data disk to your Windows XP virtual machine for transferring data and running applications.

### **Parallels Transporter**

The most powerful new feature is Parallels Transporter. You don't need to re-install Windows XP and every Windows application in your virtual machine from scratch. Turn on your PC, install Parallels Transporter Agent on it, connect it by cable to your Mac, run Parallels Transporter, and get a new virtual machine which has Windows installed and all your stuff in it...

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## **Intel Virtualization Technology (VT-x) Support**

Intel Virtualization Technology (VT-x), which is incorporated in the newest Intel processors, provides enhancements implemented into processor architecture that are specially designed for platforms running multiple operating systems. VT-enabled processors facilitate more efficient virtual machine partitioning and more precise virtual processor simulation. An extended set of processor instructions performs on a hardware level tasks previously realized programmatically, thus reducing virtualization overhead and improving virtual machine performance, security and stability. To learn more about Virtualization Technology see the Intel web site <http://www.intel.com/technology/computing/vptech/>.

Intel Virtualization Technology is fully supported by Parallels Desktop. If Parallels Desktop detects a VT-enabled CPU, support is automatically turned on if it is not blocked in BIOS. VT-x support can be manually enabled or disabled through a virtual machine configuration setting available in the VM Flags (page 105) section of **General Options**. If you run a guest OS with VT-x enabled, the **Virtualization Mode** flag in the **About Parallels Desktop** screen shows *Intel VT-x*. See the **More Information** (page 42) section of the **About Parallels Desktop** screen.

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## Inside a Virtual Machine

As we mentioned earlier, virtual machines work just like a stand-alone computer. Each VM contains the following hardware:

- CPU Intel Pentium;
- A generic motherboard compatible with Intel i815 chipset;
- RAM up to 1500 MB;
- VGA and SVGA with VESA 3.0 support;
- 1.44 MB floppy drive mapped to an image file;
- Up to four IDE devices; each device may be either virtual hard drive (from 20 MB up to 128 GB each, mapped to image file), or CD/DVD-ROM drive (mapped to a physical drive or to an image file);
- Ethernet virtual network card compatible with RTL8029. Parallels Desktop for Mac supports bridging to wireless network adapters;
- Up to four serial (COM) ports (mapped to a socket or to output file);
- Up to three bi-directional parallel (LPT) ports (mapped to output file);
- 2-port USB 1.1 controller;
- AC'97-compatible sound card. Sound recording is supported;
- A generic PC keyboard;
- A PS/2 wheel mouse.

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# Supported Guest Operating Systems

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

## Microsoft Windows Guest Operating Systems:

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

## Linux Guest Operating Systems:

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

- Red Hat Linux 7.3
- Debian Linux 3.1
- Fedora Core Linux 4
- Fedora Core Linux 3
- SUSE Linux 10
- SUSE Linux 9.3
- SUSE Linux 9.2
- SUSE Linux 9.1
- SUSE Linux 9.0
- Mandriva Linux 10.1
- Mandriva Linux 10
- Mandriva Linux 9.2

#### FreeBSD Guest Operating Systems:

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

#### OS/2 and eComStation Guest Operating Systems:

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

#### Sun Solaris Guest Operating Systems:

- Solaris 10
- Solaris 9

#### MS-DOS Guest Operating Systems:

- MS-DOS 6.22

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## CHAPTER 2

# Installing Parallels Desktop

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

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## System Requirements

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**Note.** Before installing the product, please make sure your computer meets the hardware and software requirements described in this section.

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## Hardware Requirements

In order to install and successfully run Parallels Desktop you should have:

- An Intel-powered CoreDuo or CoreSolo Mac Mini, iMac, MacBook, MacBook Pro or Mac Pro.
- A minimum of 768MB of RAM. 1GB is recommended.
- 40,5MB of available hard drive space for Parallels Desktop installation, plus sufficient space to allocate virtual machines on the same boot volume or on any other volume. 15GB of hard drive space is recommended.

### Planning Parallels Desktop Installation

The current version of Parallels Desktop can be installed only on the Mac OS X booting volume. Parallels Desktop installation itself takes only 40.5MB on hard disk, while virtual machines created by it require MUCH more space. By default, Parallels Desktop is configured to place a new virtual machine into home folder of the user created it, which is also located on the booting volume. If you have other disk(s) or partition(s) on your Mac, you may select any of them to store virtual machines.

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**Note.** Using external USB drives to store virtual machines is not recommended. If, nevertheless, you decide to do it, make sure that the drive is formatted to native to Mac OS X file system.

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To specify another default destination for saving virtual machines (that is, virtual machine files) do the following:

- 1 Install Parallels Desktop.
- 2 With the application open, select in menu bar: Parallels Desktop->Preferences->Common.
- 3 On the Common (page 86) tab, in the **Default directory for storing virtual machines** field, specify other destination volume and folder for virtual machines. It will be used as the default location.

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**Note.** You can specify a folder for a virtual machine when creating it. An existing virtual machine can also be moved to a different folder after creation.

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## Software Requirements

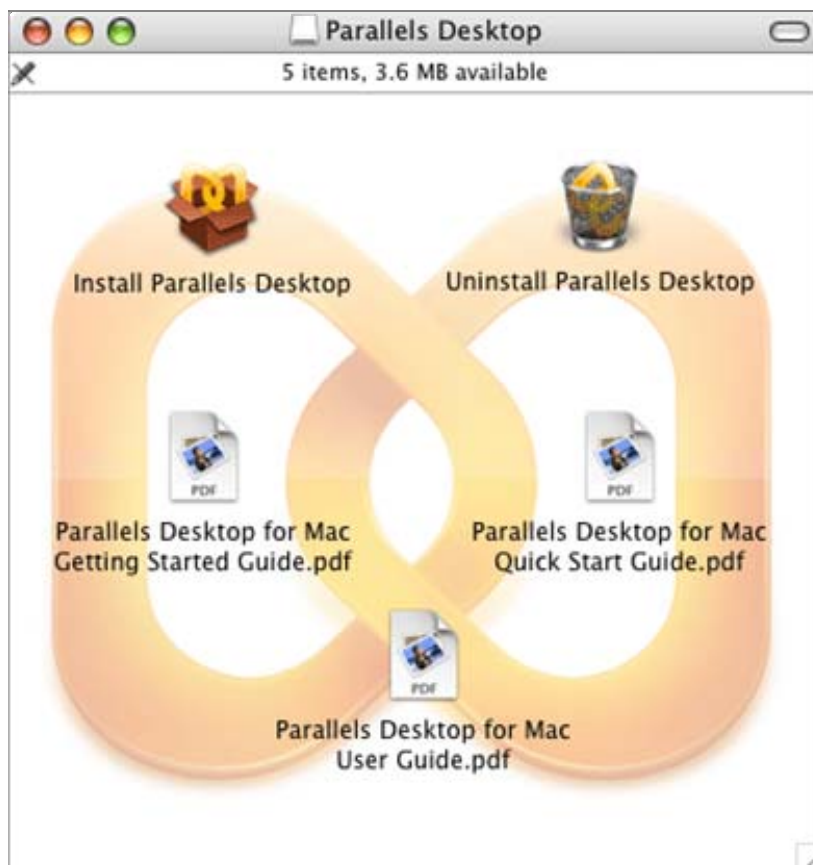
Parallels Desktop can be successfully installed if you are running Mac OS X 10.4.6 or higher as your operating system. To check your version of Mac OS X, go to the **Apple** menu in the menu bar, and click **About This Mac**.

Mac OS X 10.5 (Leopard) is supported experimentally.

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## Installing Parallels Desktop

- 1 First, download the the latest Parallels Desktop for Mac build available for the version you bought; for this, visit the Parallels Download Center <http://www.parallels.com/en/download/>. We recommend such updating, because Apple rapidly releases new hardware and new versions of Mac OS X, and Parallels developers answer the challenge.
- 2 When the download is completed, you'll see Parallels Desktop Installer icon.



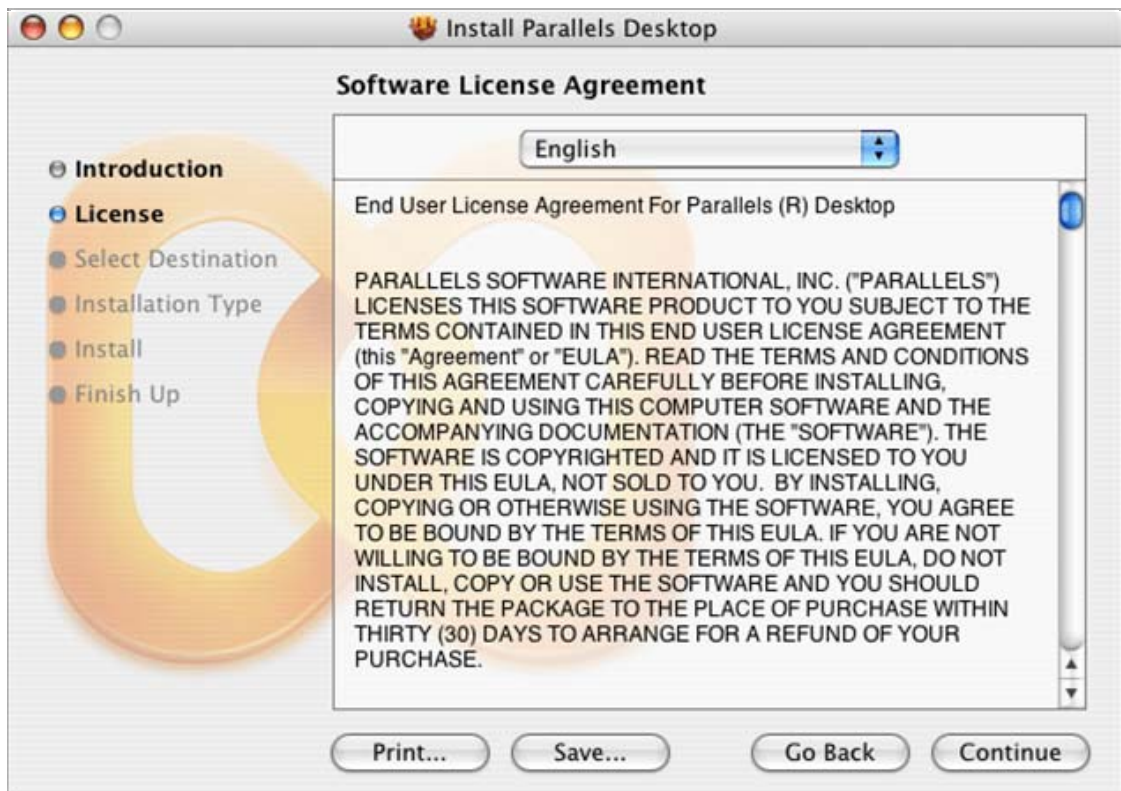
- 3 Double-click the **Install Parallels Desktop** option to start installing.



- 4 In the Introduction screen click the Continue button.



- 5 In the Software License Agreement screen use the scroll bar to read the entire agreement. We recommend printing the license agreement for your records using the Print button or save for future reading using the Save button. When you are ready, click the Continue button.



In the pop-up dialog, click the **Agree** button to continue installing.



- 6 Next you'll see the **Select a Destination** screen. Currently, you can install Parallels Desktop only on the boot volume, the same disk with Mac OS X, so select this disk. Other disks (if actually you have more than one) will be disabled for selection. Click **Continue**.



- 7 Click **Install** to start the Parallels Desktop installation, or click **Upgrade** if you are installing over the previous version of Parallels Desktop.

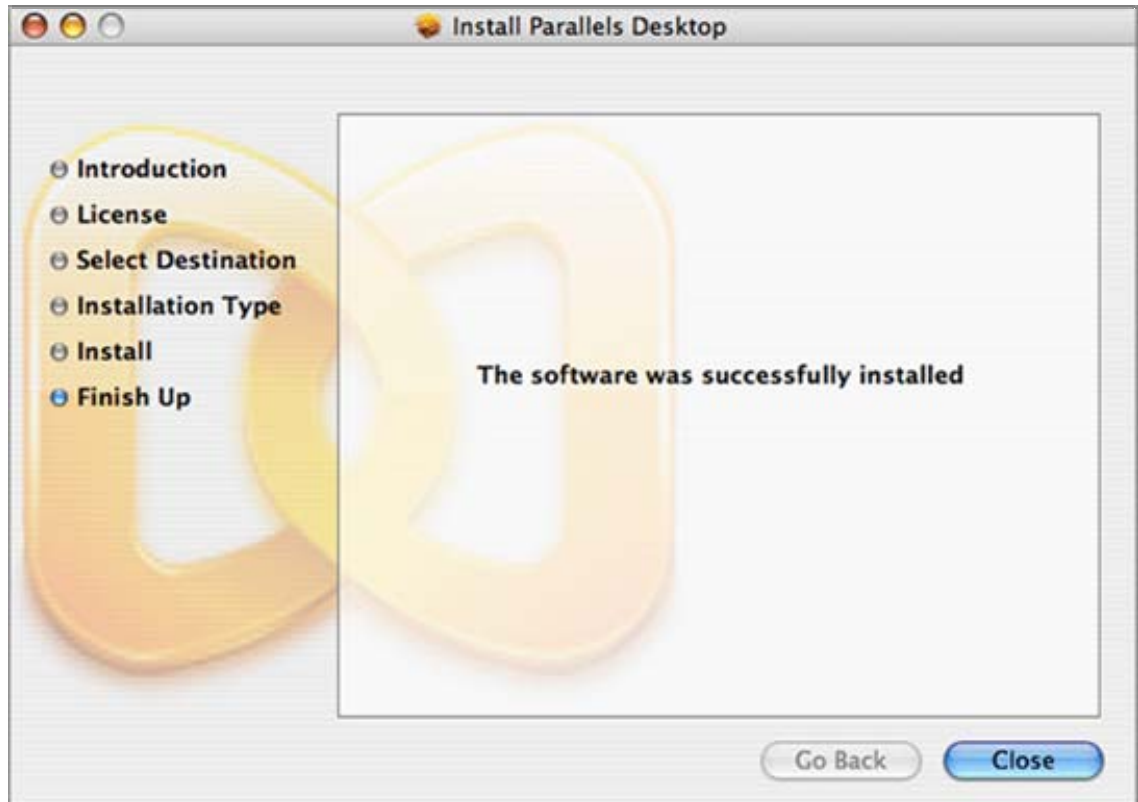
Note: Of course, you can return to the previous steps by clicking the **Go Back** button at any time.



- 8 Installation progress is shown in the Installing Parallels Desktop window.




- 9 When Parallels Desktop is installed, the wizard displays its final screen. To complete the installation, click Close. Yes, it was that easy!



---

## Starting Parallels Desktop

To start Parallels Desktop:

- In the Finder, open your Applications folder, and then double-click the orange Parallels icon  icon.

If you want to add Parallels Desktop to the Dock, just drag its icon from any Finder window and drop it on the Dock; you'll be able to open the application at any time by simply clicking its docked icon.

To remove this item from the Dock, just drag its icon off the Dock onto the desktop.

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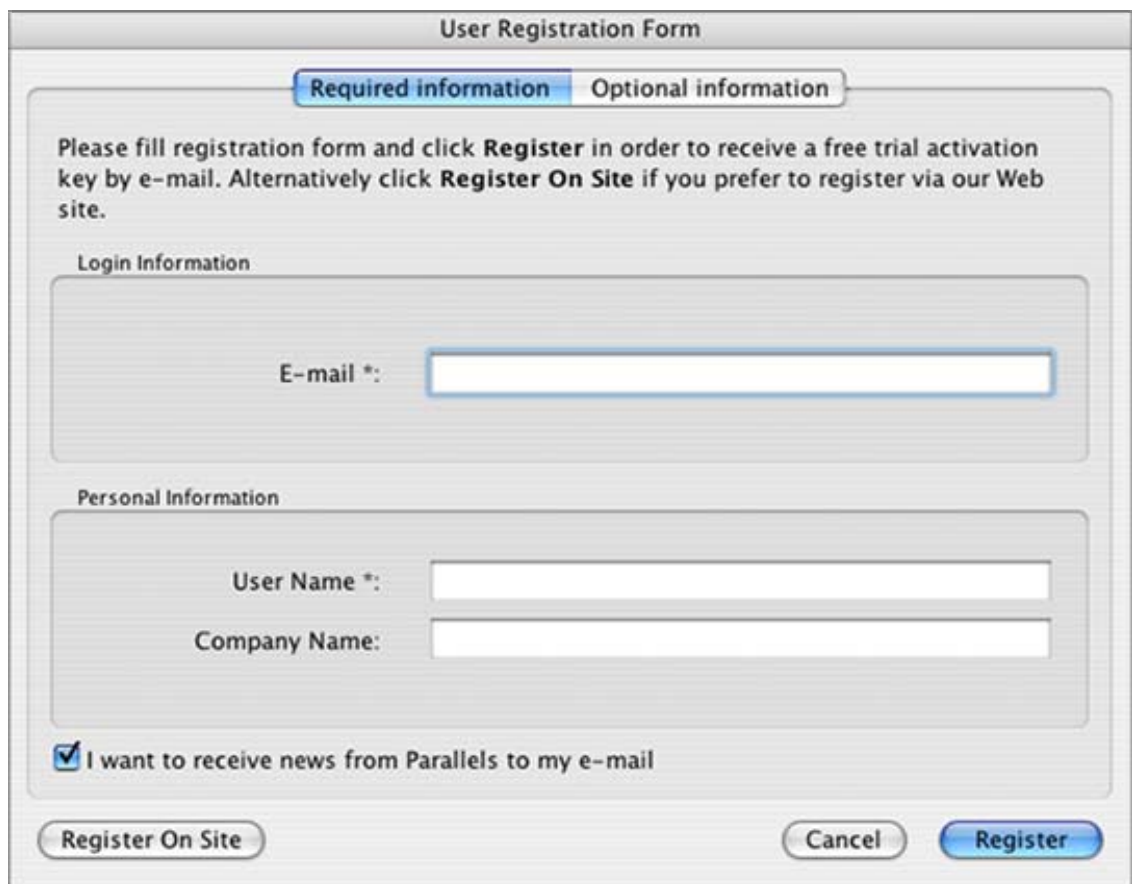
# Activating Parallels Desktop

## Getting an Activation Key

If you already have an activation key, skip this section and proceed to [Activating Your Copy of Parallels Desktop](#) below in this topic.

To get a free *trial activation* key:

- 1 Click **Help** in the menu and select **Activate Product**. This opens the **Activate Product** screen.
- 2 In the **Activate Product** screen, click the “**obtain a free trial activation key**” link in the **License Information** text to open the **User Registration Form**.
- 3 In the **User Registration Form**, specify your e-mail address and your name. Entering the name of your company is optional. Specify if you want news from Parallels to be sent to you through e-mail. We suggest allowing us to e-mail you in order for you to be informed of free software updates, new releases, and other Parallels-related news.



The screenshot shows a dialog box titled "User Registration Form". At the top, there are two tabs: "Required information" (which is selected) and "Optional information". Below the tabs, there is a paragraph of text: "Please fill registration form and click **Register** in order to receive a free trial activation key by e-mail. Alternatively click **Register On Site** if you prefer to register via our Web site." The form is divided into two sections: "Login Information" and "Personal Information". Under "Login Information", there is a label "E-mail \*:" followed by a text input field. Under "Personal Information", there are labels "User Name \*:" and "Company Name:" followed by two text input fields. At the bottom of the form, there is a checked checkbox with the text "I want to receive news from Parallels to my e-mail". At the very bottom of the dialog box, there are three buttons: "Register On Site", "Cancel", and "Register".

- 4 Finally, click the **Register** button to send this information to the Parallels Team. A free trial activation key will be sent immediately to the e-mail address you provided.

If you'd prefer, you may register online at the Parallels web site as well. Click the **Register On Site** button at any time register online. You will receive a free trial activation key by e-mail after you fill out and submit the online form.

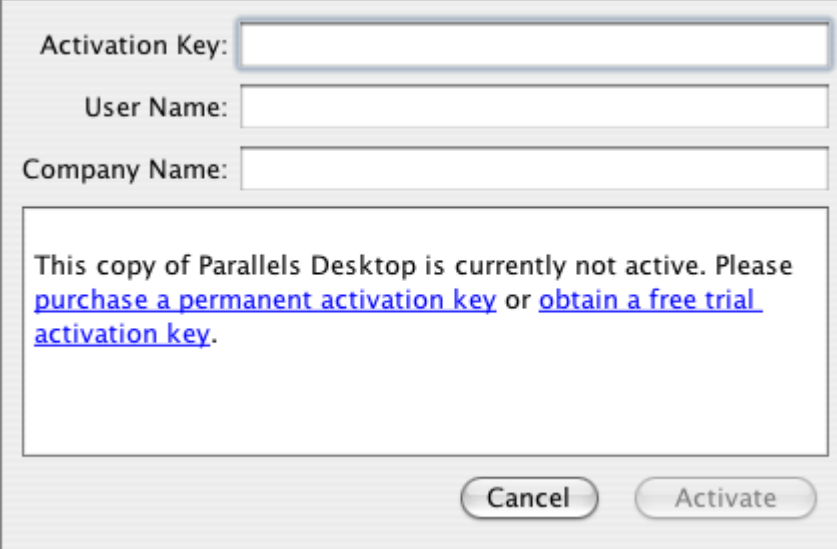
If your trial key has expired, you'll need a *permanent* activation key. Here's how to get one:

- 1 Click **Help** in the menu and select **Activate Product**. This opens the **Activate Product** screen.
- 2 In the **Activate Product** screen, click the “**purchase a permanent activation key**” hyperlink in **License Information** text to open the Parallels Online Store and purchase a permanent activation key. It's just that simple.

### Activating Your Copy of Parallels Desktop

To activate Parallels Desktop, follow these easy steps:

- 1 Click **Help** in the Parallels Desktop menu and select **Activate Product**.
- 2 In the **Activate Product** window, fill in the following fields:
  - In the **Activation Key** field type the key provided for you. When you fill in this field, the **Activate** button becomes active.
  - Specify your name and name of your company in the **User Name** and **Company Name** fields. Both of these fields are optional.



The screenshot shows a dialog box for activating Parallels Desktop. It contains three input fields: "Activation Key:", "User Name:", and "Company Name:". Below these fields is a text area with the message: "This copy of Parallels Desktop is currently not active. Please [purchase a permanent activation key](#) or [obtain a free trial activation key](#)." At the bottom of the dialog are two buttons: "Cancel" and "Activate".

After entering your activation key, click the **Activate** button. If you have entered a valid activation key, the following confirmation message will be displayed: "Parallels Desktop has been activated successfully. Thank you!" Now, that your copy of Parallels Desktop is active, you can build, configure, and run virtual machines, congratulations!

### If You Activated with a Permanent Key

After you have activated your copy of Parallels Desktop with a permanent activation key, you will be asked to register the next time you start Parallels Desktop. When you see the message shown below, click the **Register** button. The user registration online form will be opened in your Web browser. Please provide us your contact information which will be used only to send you notifications about our new updates and products.



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## Opening Parallels Desktop Help

To open this guide, select **Help->Parallels Desktop Help** in the menu bar

You can find the `.pdf` version of this guide in the "Parallels Desktop 2.5.XXXX Mac.dmg" file.

### Context-Sensitive Help

To access help topic that directly relates to the Parallels Desktop window you are currently working with, press **F1** on your keyboard.

Some windows, such as **Configuration Editor** and **Preferences**, contain **Help** buttons that open the related topics.

### Other Guides

There are two more guides accompanying Parallels Desktop:

**Parallels Desktop Quick Start Guide**, a small guide that describes how to create your very first virtual machine, available via **Help->Quick Start Guide** menu command and in the "Parallels Desktop 2.5.XXXX Mac.dmg" file.

**Parallels Desktop Getting Started Guide**, a little more extended one in comparison with Quick Start Guide, intended for novice users. This guide is available in the "Parallels Desktop 2.5.XXXX Mac.dmg" file.

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## Updating Parallels Desktop

Because Apple rapidly releases new hardware and new versions of OS X, 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 Mac is connected to the Internet.

Update checks can be initiated either *automatically* or *manually*:

- We recommend that you turn on *automatic* update checking in order to be notified when an update is available. Parallels Desktop will regularly check the Parallels server and will inform you only when an update is available.
- In addition to automatic checking, you may start the updater *manually* at any time.



## Automatic Checking for Updates

### System Requirements

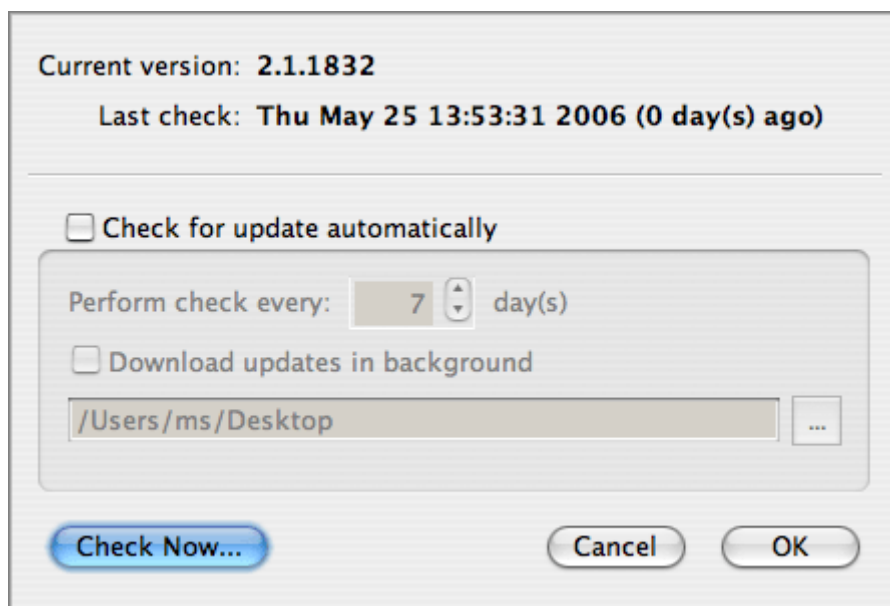
To use the automatic checking for updates feature, your Mac should have:

- A stable Internet connection without firewall and/or antivirus software preventing Parallels Desktop from accessing the Internet.

### Configuring Parallels Desktop

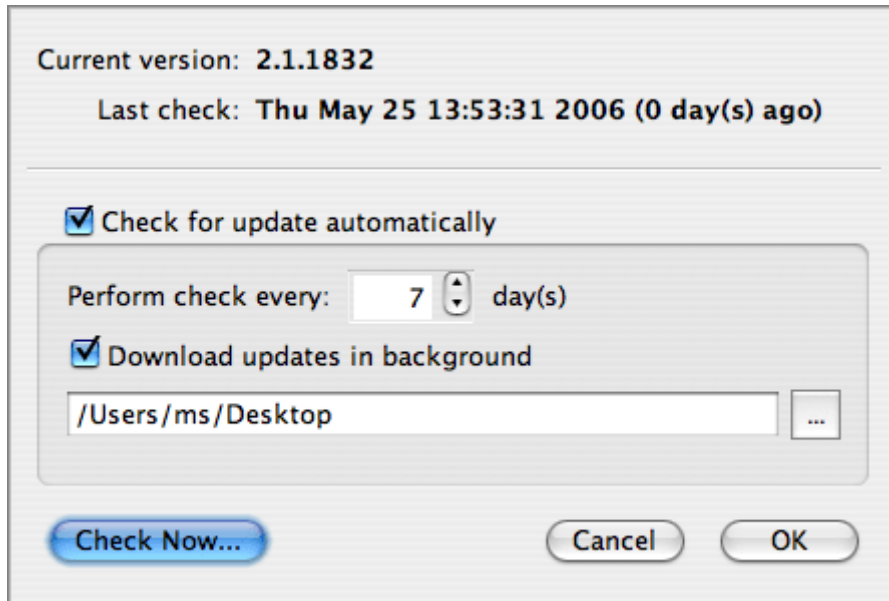
To configure Parallels Desktop:

- 1 Select Help -> Check for Update in the menu. You will see the following screen:



- 2 Select Check for update automatically.
- 3 Specify the frequency in the Perform check every day(s) field. With these options set, Parallels Desktop will access the Parallels server and notify you when an update is available.

- 4 If you want Parallels Desktop to automatically download the found update, select **Download updates in background** and specify the folder where updates will be placed.



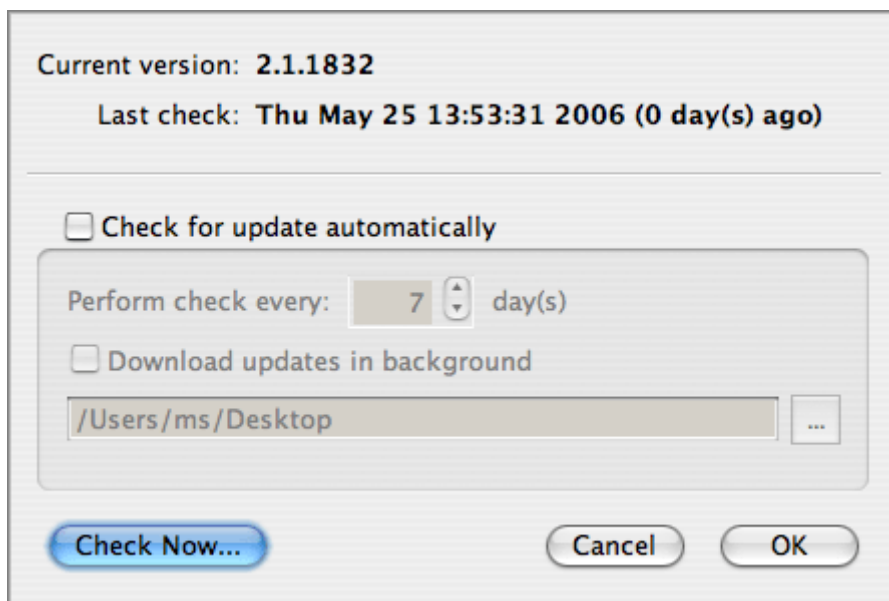
- 5 Click **OK** to close the screen and apply new settings.

After this:

- If you have not selected **Download updates in background**, you will be notified of an existing update by the screen shown in step 3 of Manual Updating (page 26). To complete updating, follow the rest of the steps in this section.
- If you have selected to **Download updates in background**, you will be notified of an update downloaded by the screen shown in step 4 of Manual Updating (page 26). To complete updating, follow the rest of the steps in this section.

## Manual Updating

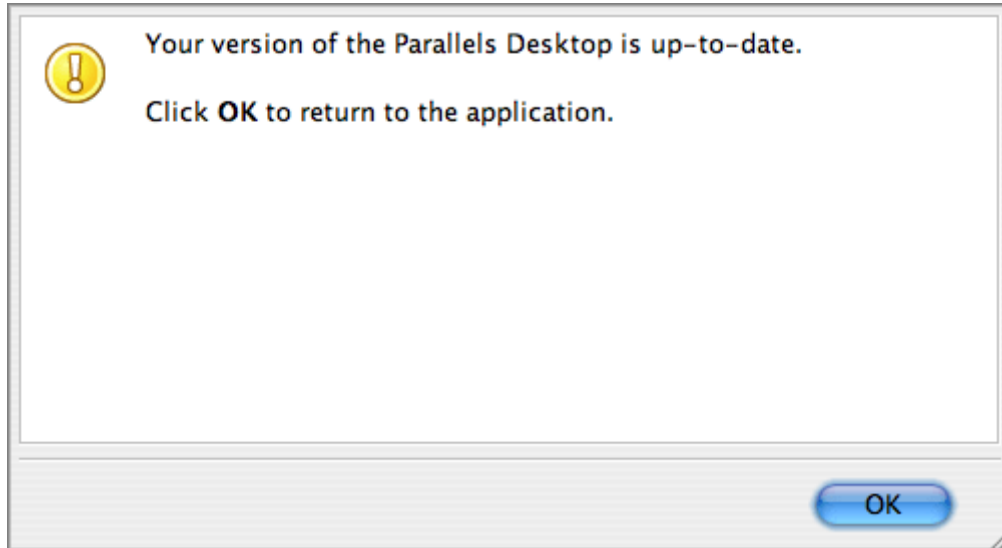
- 1 In the menu select **Help -> Check for Updates**. You will see the following screen:



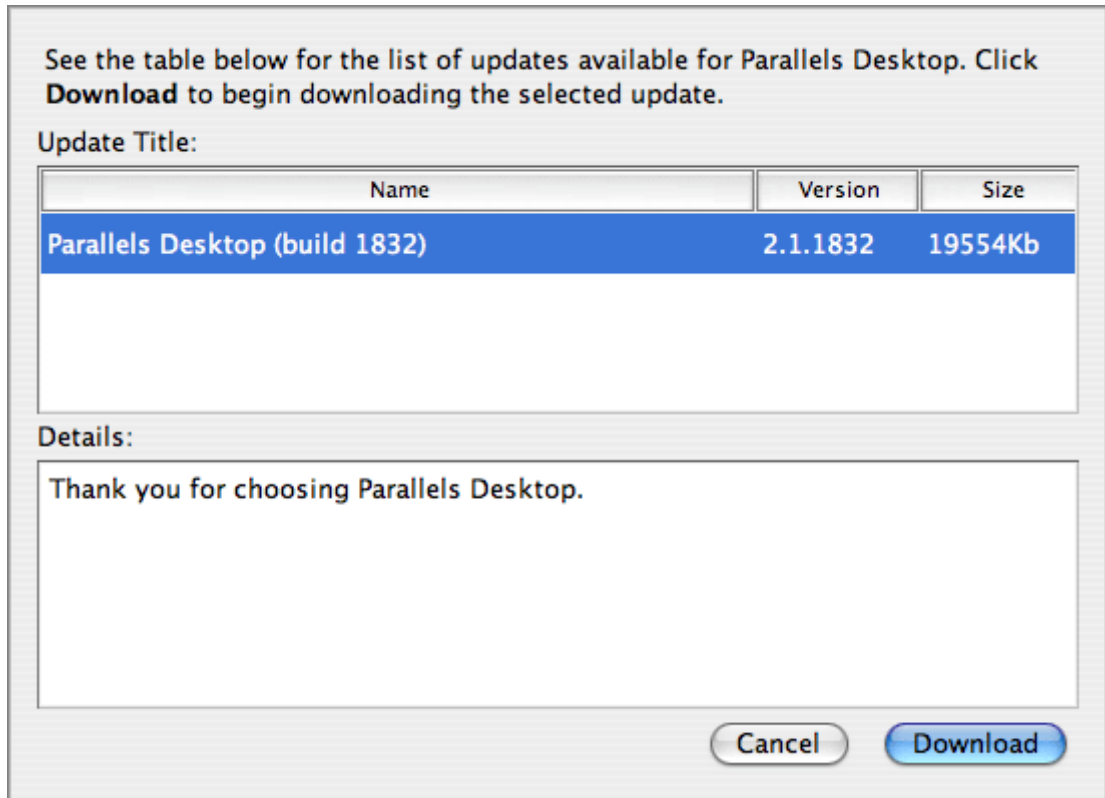
Settings on this screen are intended for auto-updating and are discussed in the previous topic, Auto-Updating Parallels Desktop (page 25).

To proceed with manual update click **Check Now**.

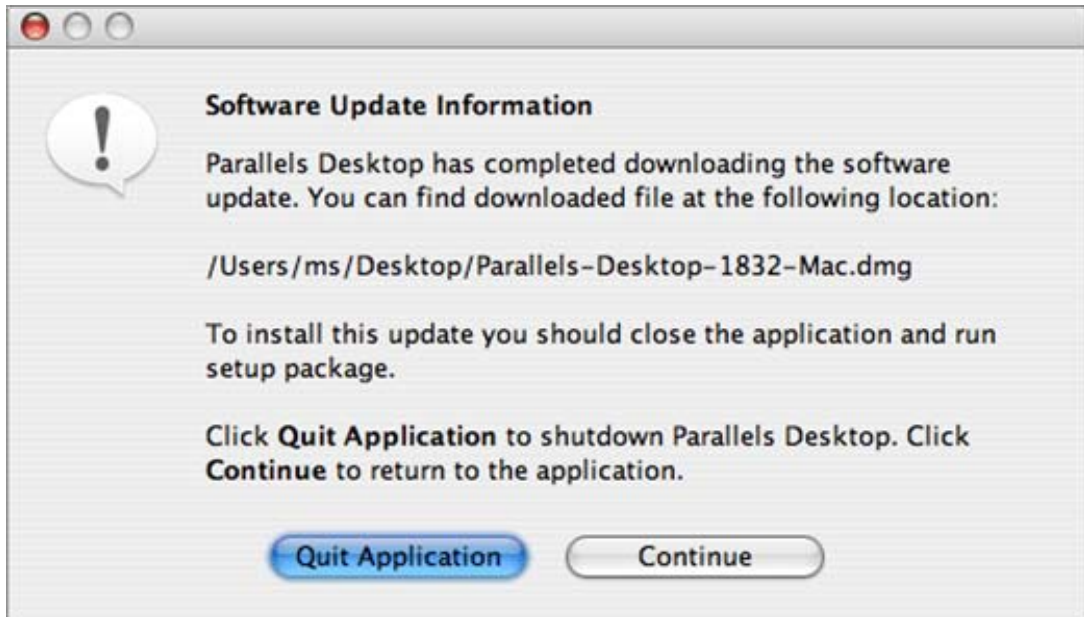
- 2 Updater accesses the server with Parallels Desktop updates and compares available updates with the installed version. If the wizard detects that the most recent version is installed, it shows the following screen:



- 3 If the wizard finds a more recent version, the number of the newest version is displayed in the following screen. Click the **Download** button to start downloading.



- 4 After the update is downloaded, you will see the following screen. To install the update, click **Quit Application** and follow the same steps as when Installing Parallels Desktop (on page 16).



## Uninstalling Parallels Desktop

To uninstall Parallels Desktop:

- 1 Open the "Parallels Desktop 2.5.XXXX Mac.dmg" file which you used to install Parallels Desktop. Click the **Uninstall Parallels Desktop** option.



- 2 In the next dialog click the **Continue** button.



In the next dialog click **Uninstall**.



- 3 Enter your password when prompted and press **Enter** on your keyboard.



- 4 Uninstaller removes Parallels Desktop from your computer. When finished, it displays the following dialog. Click the **Finish** button.



## CHAPTER 3

# Interface Basics

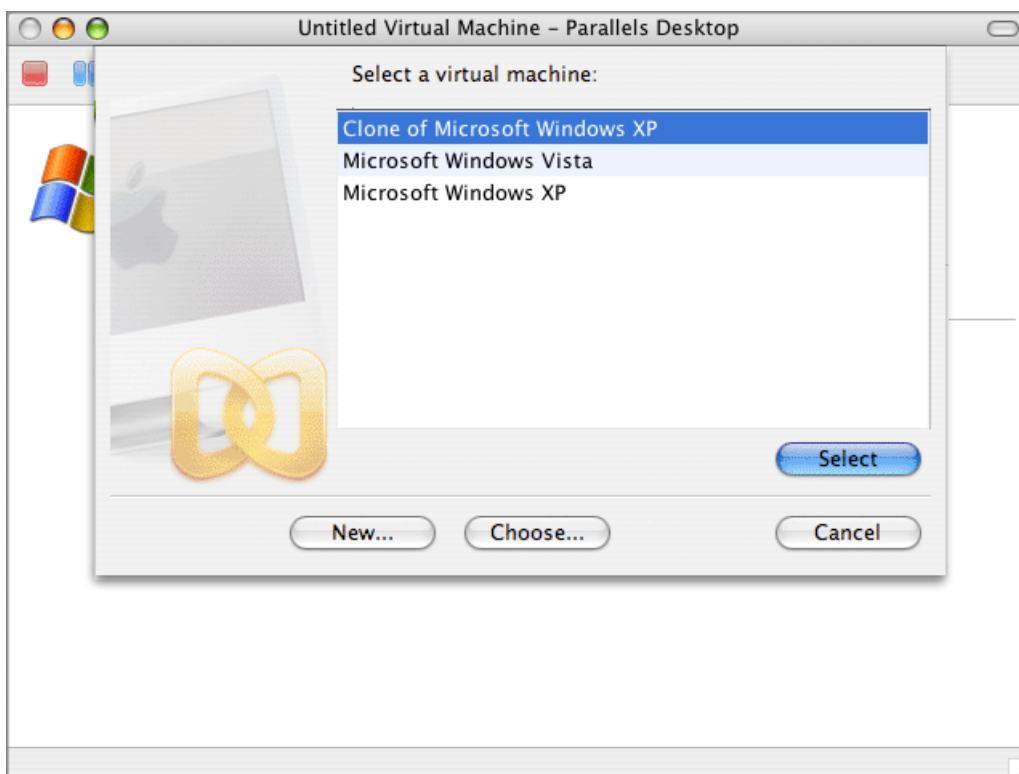
This chapter provides the information about Parallels Desktop main window and its controls including the Parallels Desktop menu.

## In This Chapter

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Menu .....	37
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Status Bar .....	39
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## Main Window



When you start Parallels Desktop, its main window displays a Catalog dialog with a list of recently used virtual machine. As a background, a Property Page for a new untitled virtual machine is opened.

Using the Catalog dialog you can do one of the following:

- Click the **New** button in the Catalog dialog to start OS Installation Assistant.
- Open the virtual machine you recently used by selecting it in the list and clicking the **Open** button.
- Click **Choose** to select and open another virtual machine (used some time ago or moved to other folder, or transferred from other computer).
- Click **Cancel** to exit Parallels Desktop.

When you create a new or select an existing virtual machine, Catalog dialog closes and the Property Page of the selected virtual machine is opened.

The main window for an open virtual machine can be in two major states:

- **Property Page view.** Displays opened virtual machine configuration, i.e. connected devices. See Property Page View (page 33) to learn more about this.
- **Console view.** When you start the virtual machine, Parallels Desktop windows changes to Console view (as in the screenshot above), and acts as the monitor of a real computer. Available only if the virtual machine is running.

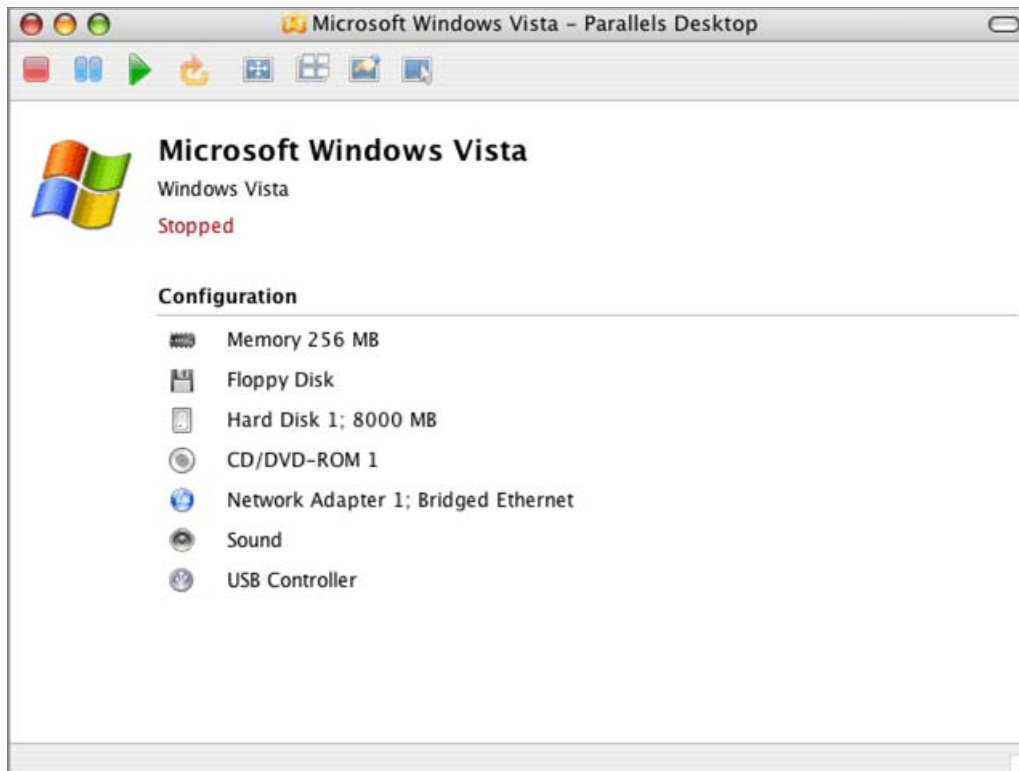
The main window in both states has the following visual controls:

- **Menu** (available when the Parallels Desktop windows is active); for more information, see Menu (page 37).
- **Title bar;** the uppermost bar of the Parallels Desktop windows; the proxy icon on the title bar lets you see the path to the currently open virtual machine and to create an alias (shortcut) to the current VM on the desktop or in the Dock.
- **Toolbar** (on the screenshot above, it's on the top of the Parallels Desktop window); for details, see Toolbar (page 38).
- **Status bar** at the bottom of the window; it indicates the status of virtual machine and status of its devices; see Status Bar.



---

## Property Page View



When you open an existing virtual machine or create a new one, its property page is displayed. The upper part of the page, displays the virtual machine name, type of the guest operating system (regardless whether or not it is installed), and virtual machine status (Running, Stopped, Paused).

## Configuration

The lower part of the main window titled **Configuration**, provides the information about virtual machine configuration: memory, hard disk and other devices connected to the VM.

To edit the virtual machine configuration or view it in detail, open Configuration Editor (page 102).

Configuration Editor is available only when virtual machine is not running.

To open Configuration Editor do one of the following:

- click the **Configuration** link (**General Options** page will be open) or select **Edit --> Configuration...** from the menu;
- click any of the devices in the list (the Editor will be opened on the appropriate device page) or select one of the devices which options you want to change from the **Devices** menu.

---

**Note.** The name of the virtual machine can be changed on the **General Options** (page 103) tab.

---

The command button panel in the bottom of the property page contains buttons for creating a new virtual machine (page 44), browsing hard disk for a virtual machine to open, editing virtual machine configuration (page 102), and also saving an opened virtual machine configuration.

## When a Guest OS is Running


The Property Page is available when a guest OS is running. You may open it to view the VM basic configuration. However, editing of the configuration is not allowed, and the appropriate menu commands are disabled.

# Console View




You interact with a running virtual machine via its console which is opened when you start the virtual machine (page 147). If you have a guest operating system installed it will be displayed on the console exactly as the primary OS is displayed in a real monitor. All toolbar buttons and many of the menu commands become active.

When a guest operating system is running, you can switch between the console and the property page. To switch to the property page while in the console view, do one of the following:

- click **Property Page View**  on the toolbar,
- select **Console View** in the **View** menu.

To return to console view while in the property page, do one of the following:

- click **Console View**  button,
- select **Console View** in the **View** menu.

### Fullscreen Mode

Guest operating systems can be executed in fullscreen mode, when the Parallels Desktop menu, toolbar, and status bar are hidden. For detailed information see [Switching Virtual Machine to Fullscreen Mode](#) (page 150).

### Console Screenshots

You can make screenshots of the console while the virtual machine is active. See [Making Screenshots](#) (page 43) for details.

---

## Menu

Menu bar for active Parallels Desktop (or when Parallels Desktop is the frontmost application) contains all the controls available for Parallels Desktop and its virtual machines.









The menu includes the following submenus:


- **Parallels Desktop** submenu displays the **About...** dialog, lets you activate the product, check for updates and set Preferences.
- **File** submenu lets you perform operations with virtual machine, such as create a new VM, locate and open/delete/clone one of already existing virtual machines.
- **Edit** submenu lets you open Configuration Editor and perform operations with Clipboard (shared by virtual machine and the primary OS for some of guest OSes).
- **View** submenu contains controls over modes of displaying the guest OS and its applications, switches VM to fullscreen or to window mode, displays the Parallels Desktop main window as Console or Property Sheet.
- **Actions** submenu includes basic VM starting / stopping commands, command for installing Parallels Tools and command for launching built-in utilities, such as Compressor.
- **Devices** submenu allows connecting / disconnecting devices, changing their options. Some of options are available when VM is running.
- **Help** submenu opens Parallels Desktop online help or Quick Start Guide

## Toolbar

Toolbar buttons are used to control virtual machine. Most of the toolbar buttons become active only when you start the virtual machine.

The following buttons are available on the Toolbar:

-  - Power On button, starts opened virtual machine.
-  - Stop button, forces stopping virtual machine. It is recommended to stop virtual machine by shutting down the guest OS, not by using this button.
-  - Pause button; suspends virtual machine, saves its state at the moment the button is clicked.
-  - Reset button; forces restarting of the virtual machine in special cases. In most cases it is recommended that you restart the VM by an appropriate command of the guest OS.
-  - Console View button, switches the Parallels Desktop window to Console view.
-  - Fullscreen Mode button; switches the virtual machine to the fullscreen mode, so that no Mac OS X controls are present on the screen.
-  - Property Page button; switches the Parallels Desktop window to Property Page view.
-  - Coherence icon; switches Parallels Desktop window to coherence and back to normal view.

When the virtual machine is stopped, only the Power On Virtual Machine  button is active letting you start the machine. If you click a toolbar button, it becomes visibly pressed reflecting the current virtual machine's state.

### Toolbar Position

By default, the toolbar is located at the top of the Parallels Desktop window. You may place it to the left or to the right of the window if you'd like. Parallels Desktop will keep this toolbar position next time you launch the system.

To change a toolbar position:

- 1 In the menu, select Parallels Desktop->Preferences to open the Preferences dialog.
- 2 In the Preferences dialog, select the Appearance tab (see the User Interface (page 90) topic).
- 3 Select the preferred position in the Toolbar placement field.
- 4 Click OK to activate the new settings.

If you don't see the toolbar in the Parallels Desktop window, do one of the following:

- Select **View->Toolbar** in menu. When toolbar is visible, this option is checked.



- Click the following button in the upper right corner of the Parallels Desktop window.

---








## Status Bar

The status bar displays information when virtual machine is running. Left part of the status bar displays prompts on the menu item currently pointed by cursor.



Each device (except memory) connected to the virtual machine is presented as an icon on the right side of the status bar.



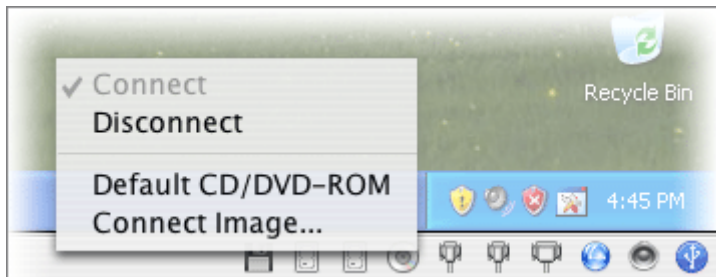
The following devices have icons onto the status bar:

- hard disk ,
- CD/DVD-ROM ,
- floppy disk drive ,
- network adapter ,
- serial port ,
- parallel port ,
- sound device ,
- USB controller .

When a device is involved in the current process, it is indicated by circle on its icon:

- green circle  when reading is being performed,
- orange circle  when writing is being performed.

If a device can be connected/disconnected when running a guest OS (actually most of the devices can be), these operations are executed using the device contextual menu. Click the device icon to display its contextual menu and select the command you need. The picture below shows the contextual menu of the CD/DVD-ROM drive.



For more on this, please refer to the Working with Devices When Running a Virtual Machine (page 154) section.

If you don't see the status bar in the Parallels Desktop window:

- select **View->Status Bar** in the menu. When status bar is visible, this menu item is selected.



---

## About Parallels Desktop Screen



The upper part of the **About Parallels Desktop** screen provides information on the number of the build you are using, the full name of the vendor and link to its site, and copyright and trademark information as well.

#### Licensing Information

- shows your type of activation and other activation information (to whom this copy is licensed).

#### Support Information

- contains the contact information of the Parallels technical support group.

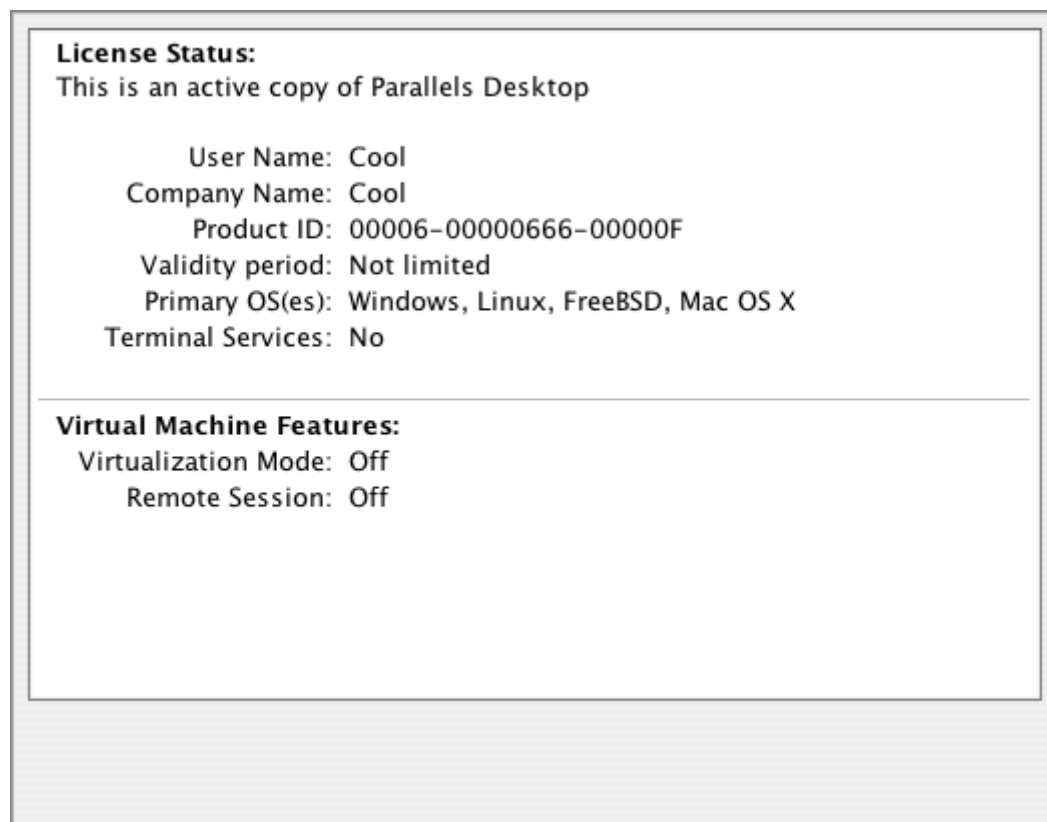
#### Buy Online and/or Evaluate buttons

- are provided if you have a trial activation or did not activate your copy at all. If you have activated the program with a permanent activation key, these buttons are not displayed. See *Activating Parallels Desktop* (page 21) for further information.

#### More Info button

- opens the screen with details of your license and set of indicators.

#### More Information



**License Status:**  
This is an active copy of Parallels Desktop

User Name: Cool  
Company Name: Cool  
Product ID: 00006-00000666-00000F  
Validity period: Not limited  
Primary OS(es): Windows, Linux, FreeBSD, Mac OS X  
Terminal Services: No

---

**Virtual Machine Features:**  
Virtualization Mode: Off  
Remote Session: Off

#### License Status:

- **User Name and Company Name** contain information about your name and the name of your company that you entered in the **Activate Product** window.
- **Product ID** displays the identification number of your copy of Parallels Desktop as well as the following information: the version of the Parallels Desktop, license number, and the abilities covered by your license that are displayed in the **Primary OSes** and **Terminal Services** fields.
- **Validity period** shows the date until your license is valid.
- **Primary OS** indicates that only Mac OS X as a primary operating system is allowed by your license.
- **Terminal Services** displays what primary operating systems are able to access Parallels Desktop remotely.

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**Note:** The same license information is displayed in the **Activate Product** window. See **Activating Parallels Desktop** (page 21).

---

#### Virtual Machine Features:

This group contains indicators that are active only when the guest OS is running. Otherwise they are off.

- **Virtualization Mode** shows *Intel VT-x* if you work on an Intel VT-enabled processor and Virtualization Technology is activated through the virtual machine configuration setting available on the VM Flags (page 105) tab of the **General Options**. See **Intel Virtualization Technology (VT-x) Support** (page 10) for a full description of VT-x.

If you are running without Virtualization Technology, the virtualization mode indicates the acceleration level. All guest OSes, besides Windows NT/2000/XP/2003, run in *Software mode 0*. Windows NT/2000/XP/2003 starts with *Software mode 0*, then switch to *Software mode 1* and *Software mode 2* in case the **Acceleration Level** setting (on the VM Flags (page 105) tab of the **General Options**) is set to *High*.

- **Remote Session** indicates if Parallels Desktop is executed on a remote server.

---

## Making Screenshots

Parallels Desktop allows you to make screenshots of the guest operating system window when guest OS is running. Click **Make Screenshot** in the **Actions** menu. Type or select a name and a directory to store the screenshot file. Parallels Desktop saves screenshots as `.png` files in MAC primary OS.

## CHAPTER 4

# Creating a Virtual Machine

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

## In This Chapter

Overview of the Process.....	44
Understanding Virtual Machine Configuration.....	45
OS Installation Assistant.....	46
Installing Guest OS .....	68
Installing Parallels Tools.....	71

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## Overview of the Process

The process of creating a virtual machine consists of several steps. Here they are:

- 1** *Creating a virtual machine configuration.* It's like building a real computer hardware. This step is performed using OS Installation Assistant (page 47).
- 2** *Installing a guest operating system.* When you have got the computer's hardware, you need an operating system to control this hardware. For Windows XP and Vista virtual machines OS Installation Assistant creates a virtual machine configuration and installs an operating system for you automatically. For other guests OS Installation Assistant creates a VM and starts the installation that you continue by yourself. For how to install the guest OS in other cases see our notes on Installing Guest OS (page 68).
- 3** *Installing the Parallels Tools in the guest OS.* Tools are available for most of the Windows OSes and also for Solaris, OS/2, and eComStation. See Installing Parallels Tools (page 71).

After performing these steps you may proceed with "fine tuning" of the virtual machine such as setting up shared folders, adjusting screen resolution if needed, and installing applications.

# Understanding Virtual Machine Configuration

Hardware configuration for each virtual machine is defined in a special configuration file with the `.pvs` extension. It contains all the information about virtual devices used by the virtual machine and files connected to those devices. Two files can make up a virtual machine, a configuration file and a hard disk image file (in general, a virtual machine may have more files: a file for each additional virtual hard disk, output files for virtual ports).

The following table explains all types of files related to a virtual machine:

<code>.pvs</code>	<p>This is a virtual machine configuration file. One configuration file defines one virtual machine. Configuration file is generated when OS Installation Assistant (page 47) creates a new VM.</p> <p>One instance of Parallels Desktop can run only one configuration file, i.e. only one virtual machine. To run several virtual machines, you should launch several instances of Parallels Desktop.</p>
<code>.sav</code>	<p>Such file is created when you suspend or pause a virtual machine. It contains the state of the guest OS and its applications at the moment when suspend was invoked.</p> <p>See Suspending/Resuming Virtual Machine (page 152) for more information.</p>
<code>.hdd</code>	<p>This is a virtual hard disk of a Parallels Desktop virtual machine. A new virtual hard disk is created along with a new virtual machine. You can add an existing file to the virtual machine</p> <p>When you create a new virtual machine, the OS Installation Assistant prompts you to place a new virtual hard disk and <code>.pvs</code> configuration file into the same directory, however you may store these files in different folders. You may also attach an existing virtual hard disk to different virtual machines.</p> <p>More information about virtual hard disks can be found in the Hard Disk Images (page 94) topic.</p>
<code>.iso</code>	<p>This is a CD or DVD-ROM image file. <code>.iso</code> image files are treated by an operating system as real CD/DVD discs.</p> <p>More information about <code>.iso</code> images is given in the CD/DVD Real Discs and Images (page 100) topic.</p>
<code>.fdd</code>	<p>This is a floppy disk image file. <code>.fdd</code> image files are treated by an operating system as real floppy disks.</p> <p>More information about <code>.fdd</code> images is given in the Floppy Disk Images (page 101) topic.</p>

.txt	Serial and parallel ports can be emulated via output .txt files. See Serial Port Options (page 118) and Parallel Port Options. (page 119)
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## OS Installation Assistant

This section describes how to use the main tool for creating a virtual machine - OS Installation Assistant.

To start OS installation Assistant do one of the following:

- choose the **New** command from the **File** menu in the menu bar,
- click the **New** button in the VM Catalog dialog that opens on Parallels Desktop startup.

## Overview

The assistant offers several installation modes. You can choose the mode that better fits your current needs or your experience with Parallels Desktop. Regardless of what method is selected, you will be able to change the configuration of a virtual machine later using the Configuration Editor (page 102).

### Express Installation

This installation mode is available only for two guest operating systems: Windows XP and Windows Vista. **OS Installation Assistant** not only creates a virtual machine configuration, it automatically installs the chosen guest OS. It is the easiest way to get a new virtual machine. You only need to insert an installation disc with Windows XP or Vista. See Express Installation (page 48).

After the guest operating system is installed, **OS Installation Assistant** proceeds right to installing Parallels Tools (page 71), also unattended.

In this mode, virtual machines are created with typical configurations (see Typical Configurations (page 67) for details).

### Typical Installation

Typical method is designed for new users and for fast virtual machine creation. When this method is chosen, you only need to specify a type/version of the guest operating system that will be installed, and where to store the virtual machine configuration file. **OS Installation Assistant** creates a virtual machine configuration and starts installation of the guest OS. See Typical Installation (page 52).

A virtual machine for the selected guest operating system is created as a typical one (see Typical Configurations (page 67) for details).

### Custom Installation

Custom installation is intended for experienced users only. It allows user to create configurations other than typical ones. In this installation mode, the user is asked to specify the amount of RAM, select a size and format of a virtual hard disk and choose networking options. Additional devices are added according to the same rules as in typical installation (see Typical Configurations (page 67) for details). After the **OS Installation Assistant** creates a virtual machine configuration, it starts installing the guest OS. See Custom Installation (page 56).

## Windows Express Installation

- 1 Start Parallels Desktop. Select New OS Installation in the File menu. The OS Installation Assistant's Welcome screen appears. Click the Next button.



- 2 In this step select the Windows Express installation option. Click the Next button to continue.





- 3 Select Windows XP or Windows Vista. Only for these two operating systems unattended installation is available.



- 4 By default, the virtual machine gets its name by name of the operating system which will be installed. If such virtual machine already exists, you will be prompted to specify another name. A name should be no longer than 50 characters.
- 5 When prompted, specify your Windows product key and personal information required for the operating system installation.



The screenshot shows a dialog box titled "OS Installation Assistant" with a sub-header "Windows Express Installation". On the left is a vertical image of a computer tower and a yellow Windows logo. The main area contains the text "Specify Windows Product Key, your Name and your Organization:". Below this is a checked checkbox labeled "Windows Product Key:" followed by five input boxes separated by hyphens. Underneath are three more input boxes labeled "Name:", "Organization (optional):", and another empty box. At the bottom are three buttons: "< Back", "Next >" (highlighted in blue), and "Cancel".

- 6 Now, If you have an installation disc with the selected Windows OS, insert it into the CD/DVD-ROM drive of your Mac.

If you have an ISO image of installation disc, click the **More Options** triangle button to open the list of available options. Select the ISO image option and click **Choose** to specify the pathname for the image file.



- 7 Click **Finish** and leave the Parallels Desktop for a while. It will create a new virtual machine for you and install the guest OS. Parallels Desktop installs the guest OS, and right after that, it installs Parallels Tools.
- 8 During unattended installation Parallels Desktop creates an administrator account with a blank password. When the guest Windows installation is complete, we recommend that you change the password in order to protect the safety of your data.

**To change the administrator password in Windows XP:**

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

**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**.

## Typical Installation

- 1 Start Parallels Desktop. Select New OS Installation in the File menu. OS Installation Assistant welcomes you. Click the Next button.



- 2 Select the Typical OS installation mode. Click the Next button to continue.



- 3 In the next screen specify the type and the version of the guest operating system you want to install on a new virtual machine. When the guest operating system is specified, click Next.



- 4 After that, specify a descriptive name for the virtual machine. Name is needed for identification of the VM and is important if you plan to create several VMs running the same operating system. The name should be no longer than 50 characters. Both virtual machine configuration file and hard disk file will be placed to the same default folder. To set a new default destination folder open **Parallels Desktop -->Preferences-->Common** in menu. Please refer to the **Common (page 86)** topic in the **Setting Parallels Desktop Preferences** section.



- 5 If you have the installation files of the selected operating system on a CD/DVD, then insert the disc in the CD/DVD-ROM drive and click **Finish** to proceed with the installation.  
If you have the installation files of the OS on the ISO image file/files, click the triangular button to the left of the **More Options**. Select the ISO image option and choose the image file. Click **Finish** to start installation immediately.

However, if you don't want to install the guest OS right now, clear the check box for the **Start <guest OS> installation** option. To learn how to start the installation later refer to the **Installing Guest OS** (page 68) section.



When the installation is complete, install Parallels Tools if they are available for your guest OS. Refer to the **Installing Parallels Tools** (page 71) section.

## Custom Installation

- 1 Start Parallels Desktop. Select **New OS Installation** in the **File** menu. The **OS Installation Assistant's** **Welcome** screen appears. Click the **Next** button.





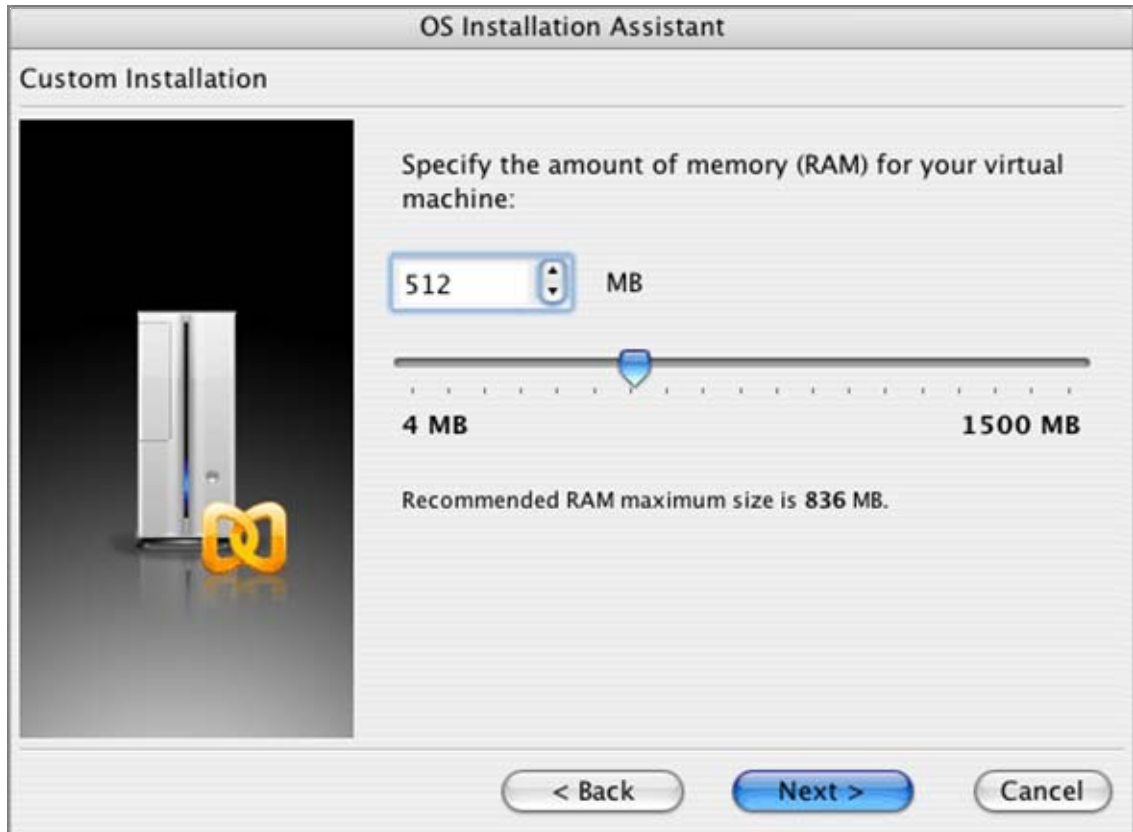
- 2 In the OS Installation screen select the third option, Custom OS installation mode. Click Next.



- 3 On the Select guest OS screen you should specify the type and version of the guest operating system you want to install on a new virtual machine. When done, click **Next** to move to the next step.



- 4 In the next screen you can set the amount of RAM for a new virtual machine. You can choose any value from 4 to 1500 MB. We strongly recommend that you allocate no more than the half of the physical RAM installed on your computer. Use multiples of 4 MB to specify the amount of memory. Click Next.



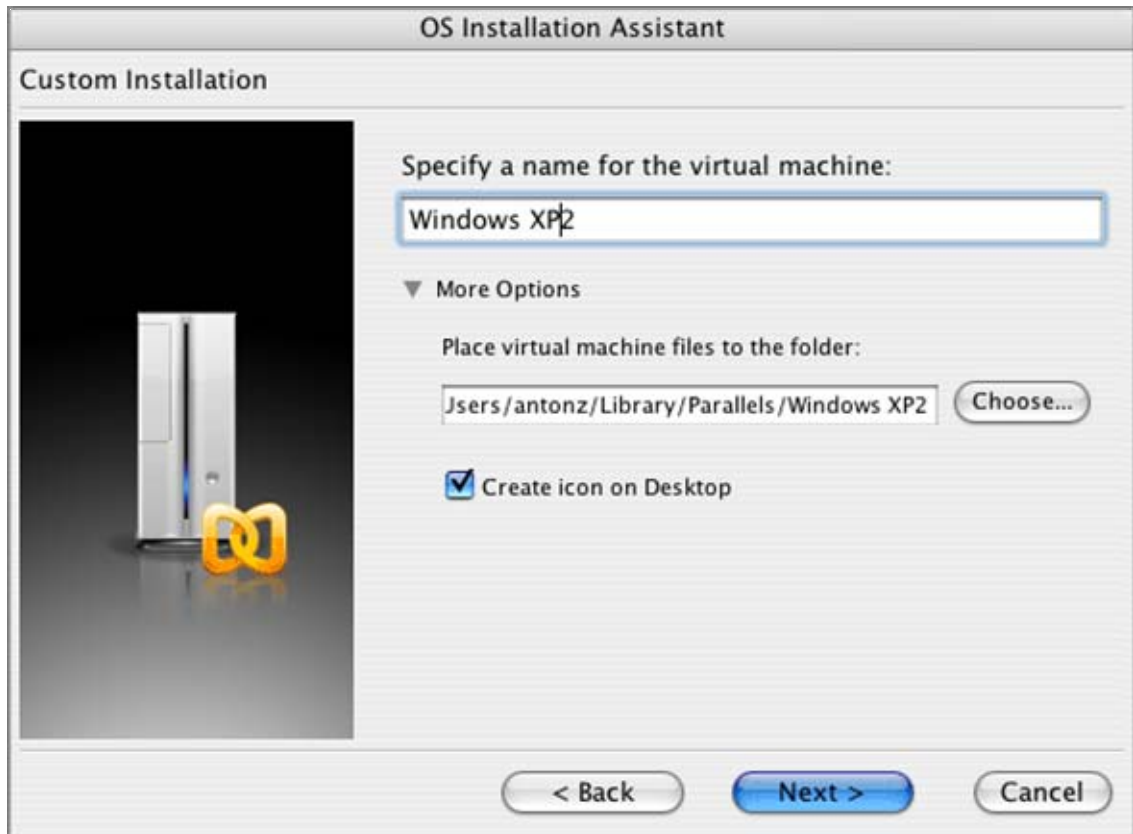
- 5 Then you have to decide whether you want to create a new virtual hard disk, attach an existing one, Use Boot Camp partition or even not to add any disk at all. If you have selected to use an existing hard disk image, go directly to step 8. If you have decided not to add a disk at all, proceed to step 9. For how to use Boot Camp partition refer to the Using Boot Camp Partition (page 172) chapter.



- 6 If you selected to create a new virtual disk on the previous step, specify its size and format. Disk formats options are briefly explained here, on the screen, but a more detailed description is available in the Format of The Virtual Disk (page 95) topic. Click Next.

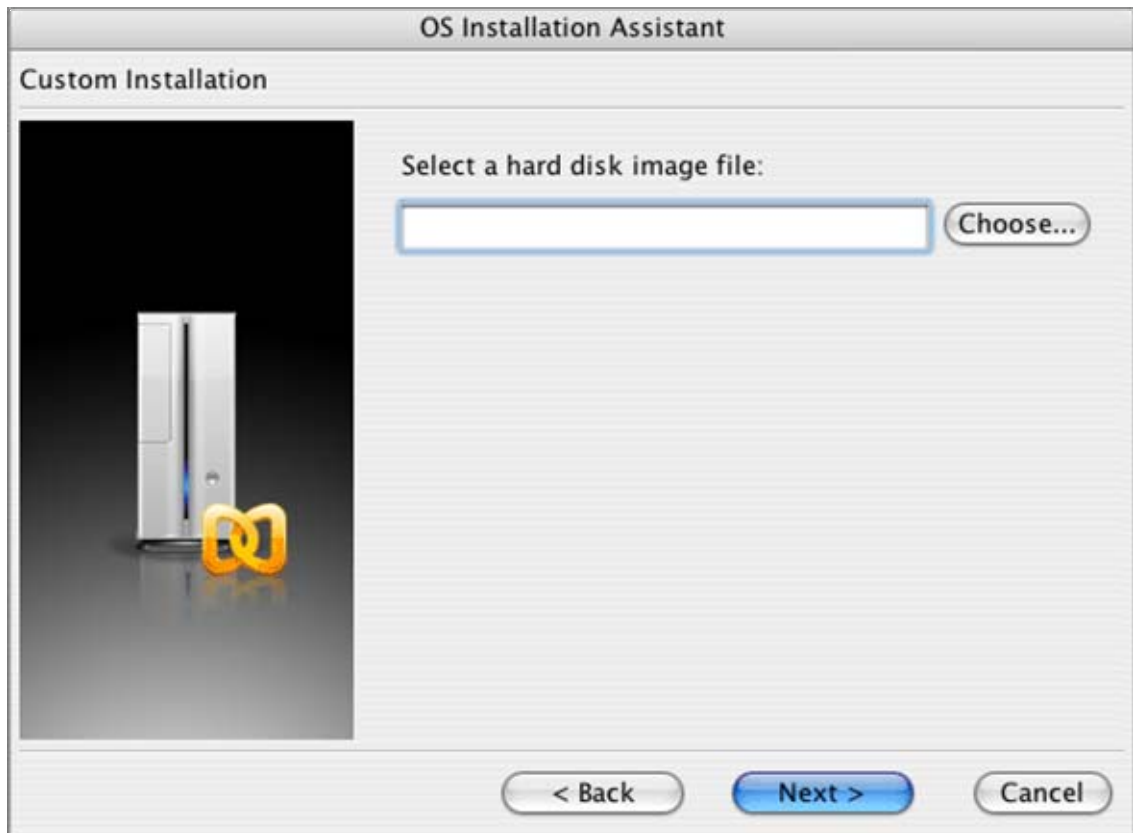


- 7 Specify a name for the virtual machine. All the files created for this virtual machine will be saved in a new folder in the default location. The default location is specified on the Common tab (page 86) in the Preferences. A new folder for the virtual machine will be named according to the following rule: <guest OS>.<number of the machine of the same version - 1>. For example, the first Windows XP virtual machine will be saved in the \winxp\ folder. For the second Windows XP, the VM \winXP.1\ folder will be used, and so on. If you don't like the default name or path, you may rename the virtual machine files and move them to other location later.



Continue to the step 9.

- 8 Since you decided to use an existing image file (in step 5) as a hard disk for the virtual machine, you have to specify where this disk image is stored. Use the **Choose** button to locate it or type the file name with its path directly into the field.



- 9 In the next screen specify the type of networking for the new virtual machine. **Shared Networking** is recommended: you can access the Internet but don't want your VM to be accessible from outside of your Mac. (See *Networking in Virtual Machine* (page 124) for more detailed information about different types of networking.) If you do not have a physical network interface card or do not need a network access in this virtual machine, select the **Networking is not required** option.

Click Next. If you have selected Host-only Networking, Shared Networking, or Networking is not required proceed to the step 11 of the current instructions.



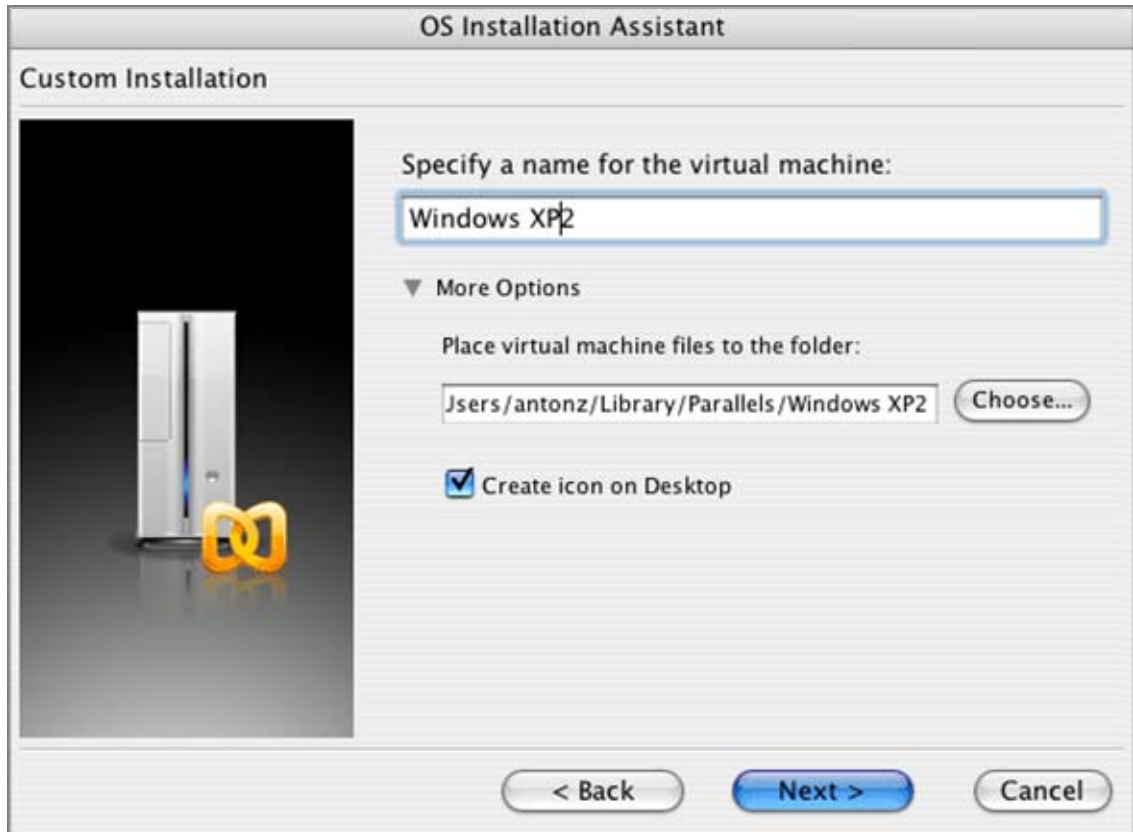


- 10** If you have selected Bridged Ethernet networking for the new VM, on this screen specify what real adapter must be connected to the virtual one. Select one in the list and click **Next**.



- 11** Specify a descriptive name for the virtual machine. Name is needed for identification of the VM. Name is important if you plan to create several VMs running the same operating system. The name should be no longer than 50 characters.

If you want to place the virtual machine files to a particular location, open **More Options**. In the input field the default path and name for the configuration file are shown. (The default folder for Parallels virtual machines is specified in the Preferences->Common (page 86) window). You edit the pathname directly in the field.



**12** At last, the assistant prompts you to proceed to installation of the selected guest OS.

Insert the installation CD for the selected guest OS and click **Finish**.

If you have your guest OS installation on ISO image files, open **More Options** by clicking the triangular icon to the left, and select the ISO image option. Use the **Choose** button to locate the file.

However, you may skip installation of the guest OS if you have selected to use an existing virtual disk or just want to perform installation later. Clear the check box for the **Start <guest OS> installation** option. If later you want to learn how to start the installation, refer to the **Installing Guest OS** (page 68) section.



After the installation is complete, install Parallels Tools if they are available for your guest OS. Refer to the **Installing Parallels Tools** (page 71) section.

## Typical Configurations

A typical virtual machine includes the following:

- memory
- hard disk drive
- floppy drive
- CD/DVD-ROM drive
- network adapter
- sound device (except for FreeBSD and MS-DOS configurations)
- USB controller (in Windows 98/ME/2000/XP/2003/Vista and all of the Linux typical configurations)

OS/2 typical configuration includes a serial port.

Amounts of memory and hard disk sizes vary for different guest OSes. Refer to the table below for the memory amount and the hard disk size that a typical virtual machine will have for a particular guest operating system. The virtual hard disk for typical virtual machines is always created in expanding format.

	RAM, MB	HDD size, MB
<b>Windows Vista</b>	512	32000
<b>Windows 2003</b>	384	32000
<b>Windows XP/98/ME/2000</b>	256	8000
<b>Windows NT</b>	128	6000
<b>Windows 95</b>	128	2000
<b>Windows 3.11</b>	64	2000
<b>Linux</b>	256	8000
<b>FreeBSD</b>	256	8000
<b>OS/2 Warp 3 and 4</b>	128	2000
<b>OS/2 Warp eComStation 4.5</b>	256	6000
<b>OS/2 other</b>	128	6000
<b>Solaris</b>	256	12000
<b>MS-DOS</b>	32	2000
<b>Other guest OSes</b>	256	8000

---

## Installing Guest OS

This section discusses how to install an operating system in a virtual machine.

## Installing a Guest Operating System

### Installation Media

When installing a guest OS, you have a few options. You can install directly from a CD or DVD, or install the OS from an image files. Some operating systems are available on ISO images. Sometimes, installation cannot be performed from a real CD/DVD because of disc reading problem. In such a case we also recommend that you try to install from an ISO image of this disc. CD/DVD images can be made using the Parallels Image Tool installed along with Parallels Desktop, see the Using Parallels Image Tool (page 215) chapter.

Some operating systems are installed from floppy disks. Most of Intel based Macs do not have native floppy drives. Nevertheless, you can install such OSes using images of installation floppies. How to create an image of a floppy disk is discussed in the Floppy Disk Images (page 101) topic.

### General Steps:

- 1 Start Parallels Desktop.
- 2 Start OS Installation Assistant. Choose Express installation if you are going to install Windows XP or Windows Vista. Choose Typical or Custom Installation for other guest OSes. Specify the guest OS correctly, it will affect the performance of your virtual machine.

### To Install from a Physical CD/DVD or CD/DVD .iso Image:

- 1 Insert the disc into the CD/DVD-ROM drive.

On the virtual machine Property Page (page 33) click on the desired CD/DVD-ROM drive to open its CD/DVD-ROM Options (page 114) in **Configuration Editor**. Make sure that the **Enabled** and the **Connect at startup** options are selected.

- 2 Connect the CD/DVD-ROM drive to the guest OS distribution.


If you install from a real CD/DVD:

Select the **Use CD/DVD-ROM** and specify which real drive to connect to the virtual device in the **CD/DVD-ROM Drive** list.

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

If you install from an `.iso` image file:

Check the **Use image file** option and specify the path to the `.iso` distribution file in the **Image File** field.

- 3 Specify the IDE channel for the virtual CD/DVD-ROM. In the **Connect to** list select `0:1`.
- 4 Save the virtual machine configuration. See the Saving Virtual Machine Configuration subtopic in the **Editing Virtual Machine Configuration** section.
- 5 Start your virtual machine by clicking **Power On**  on the toolbar. Follow the installation instructions for the operating system.

---

**Note.** When installing a Windows guest OS, you may need to press F8 or other functional keys in a virtual machine. If you use MacBook and MacBook Pro keyboard, you have to press Fn+F8 combination instead. You can configure you Mac in such a way that you will not have to press the Fn key. Please refer to [How to Press F1-F12 and Other Functional Keys in MacBook and MacBook Pro](#) in the [Keyboard Shortcuts in a Virtual Machine](#) (page 133) topic.


---

### To Install from a Floppy Image:

- 1 Select the floppy drive and open its options tab.

On the virtual machine Property Page (page 33) click the **Floppy** link to open Floppy Options (page 110) in the **Configuration Editor**. In the **Floppy Options** tab, make sure that the **Enabled** and the **Connect at startup** options are selected.

Specify the path to the floppy image file with the OS installation in the **Image File** field.

- 2 Start the virtual machine clicking **Power On**  on the toolbar. Follow the installation instructions for the operating system.

### Re-Installing the Guest OS

First of all, with virtual machines, you don't have to re-install the guest OS, just create a new virtual machine, install the guest OS and delete the old machine after moving all the necessary data to the new one.

If, nevertheless, you want to re-install a guest OS in an old VM, Please **DO NOT** install a guest OS other than the one installed before. You can re-install only the **SAME** guest OS that was installed previously.

If you install a guest operating system onto a virtual hard disk where the guest OS was previously installed, you have to change the boot sequence:

- Open Configuration Editor by clicking any device link on the Property Page. Then open the **Bootling Options** tab of the **General Options** (page 103),
- set the boot sequence to [CD-ROM, Hard Disk, Floppy] or [Floppy, Hard Disk, CD-ROM], if you installed from a CD/DVD or a floppy disk respectively.

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

- When the virtual machine is off, set the [Hard Disk, CD-ROM, Floppy] sequence, and start the guest OS.

## Configuring X Window System in FreeBSD Guest OS

If you want to use the X Window System graphic shell in a FreeBSD guest OS, you should configure it manually. Running automatic configuration command `X -probeonly` or `X -configure` may not work. The X Window System can be configured using `xorgconfig` text utility or `xorgcfg` graphical utility. You need `root` privileges to run them.

To start manual configuration:

- 1 Issue one of the following commands in the command line:

```
su -l root -c xorgconfig
```

or

```
su -l root -c xorgcfg
```

2 Enter the `root` password when you are asked for it.

When configuring set the following:

- 1 Select *Generic VESA compatible* video card.
- 2 Select *4096K* of video memory.
- 3 Select screen resolution for a color depth. You may specify single resolution for any color depth. For instance, specify 640x480 resolution for 8-bit color, 800x600 resolution for 16-bit color, and so on. Do not specify several resolutions for a color depth, because upon startup, X window will select the greatest one.

You may set a single resolution for a particular color depth (for instance, if you are going to work with 16-bit color only, select any single resolution for it), and later select only this color depth for your configuration .

- 4 Select preferred color depth for your configuration.

---

## Installing Parallels Tools

Parallels Desktop includes specially developed tools that help you use your virtual machines in the most comfortable and efficient way. The current version of Parallels Desktop is supplied with tools for the following guest operating systems:

- Windows versions 95, 98, ME, NT, 2000, XP, 2003, Vista;
- OS/2 and eComStation;
- Solaris.

We provide PRL8029 driver for Solaris guest OS that should be installed if you want the Solaris virtual machine to support networking.

- For other guest operating systems we provide PRL8029 network adapter driver.

Most of the tools are located on the CD image `VMTOOLS.ISO`, however, OS/2 network drivers are also located on the floppy disk image `VMTOOLS.FDD`. Both CD and floppy images can be found in the directory: `/Library/Parallels/Tools`.

## Parallels Tools Overview

Here is the list of Parallels Tools available in Parallels Desktop for Mac, version 2.5.

### Clipboard Synchronization Tool

The Clipboard Synchronization Tool syncs the guest OS clipboard and the primary OS clipboard, making the exchange of texts and pictures via clipboard possible. Currently, you can transfer only text and .bmp pictures up to 128KB in size.

In you enable the Clipboard Synchronization Tool in all of your guest OSes, all of them will share the same clipboard with the primary OS.

In all the Windows guest OSes, this tool is installed automatically when you perform Parallels Tools installation. In OS/2 and eComStation you must install it manually.

### Time Synchronization Tool

The Time Synchronization Tool allows the guest OS to keep the same system time as the primary OS. Without this tool the guest OS system time may differ from that of the primary OS.

This tool also allows you to maintain a constant difference in time between the guest and primary OSes. You may configure this tool while the guest OS is running. See Time Synchronization Tool Options (page 161).

**Note.** Before starting the Parallels Time Synchronization Tool, all other time synchronization services must be stopped in order to avoid potential conflicts.

### Video Driver

The best graphical mode available in Windows NT and 2000 guest operating systems without this driver is 16-color VGA with 640x480 resolution. The video driver allows Parallels Desktop to use SVGA graphical modes in guest OS monitors.

In Windows XP/2003 the video driver is required for the mouse tool and is chosen automatically when you select the mouse tool installation.

**Note.** If you install the video driver, you will not be able to use VGA modes. To return to VGA, you must uninstall the Parallels Tools.

### Mouse Synchronization Tool

The Mouse Synchronization Tool enables the mouse to be captured and released without a special hot key combination defined in the Hot Key Combinations (page 92) tab of the Preferences window. This tool makes mouse movements smoother and improves the system's reaction to the mouse.

### Coherence Tool

Available only for Windows 2000/2003/XP guest OSes. Coherence Tool provides the possibility to seemingly integrate guest applications to the primary operating system.



## Resolution Changing Tool

Resolution Changing Tool allows you to work with dynamic resolution.

## Scripting Tool

Scripting Tool allows you to create custom scripts that will be automatically executed on such events as startup or shutdown of the virtual machine.

## Drag-and-Drop Tool

Drag-and-Drop Tool supports copying files between the guest operating systems and Mac OS X by drag-and-drop method. It also allows connecting CD/DVD discs or images of discs to virtual machine CD/DVD-ROM drive or connecting a floppy image to VM floppy drive in the following way: you can drag and drop the required image file to the icon of CD/DVD-ROM drive on the Parallels Desktop status bar or to the **Devices** menu on the Apple menu bar.

## Sound Driver

Parallels Tools pack includes an AC'97 sound driver for those guest operating systems that do not have a standard AC'97 driver.

Sound drivers for Windows XP/2003 are not included in the Parallels Tools pack, since these operating systems have sound drivers in their installations.

## Shared Folders Tool

This tool is needed for a guest OS to view shared folders. Without it, the guest OS can not use the shared folders although they may be set up in your virtual machine configuration. To learn more about shared folders see [Using Shared Folders](#) (page 126).

## Disk Compacting Tool

Parallels Desktop uses virtual hard disks of two types: plain and expanding. Expanding virtual disks grow in size as you work with them. The Disk Compacting Tool reduces the size of expanding virtual hard disks by cleaning up unused disk space. See [Compacting Virtual Disk](#) (page 167) for guidelines on using this tool.

This tool does not reduce the size of plain virtual disks.

## Network Adapters and Drivers

Parallels Tools provides the following adapters:

### **Parallels Network Adapter**

This Ethernet driver for the RTL8029 adapter is specially developed for Parallels Desktop to improve network performance. We recommend that you install this driver whenever possible.

RTL8029

TCD with Parallels Tools includes native Realtek (all except for Solaris driver) drivers for the RTL8029 network adapter for many different operating systems. They are located in the Drivers\Network\RTL8029 directory of the vmtools.iso CD image.

Some guest operating systems such as Windows 2000, contain an RTL8029 driver in their distributions, whereas others like Windows 2003 and OS/2 do not include this driver at all.

**Note.** Unlike other guest OSes, a Solaris guest OS requires an RTL8029-compatible driver to support networking. Otherwise, networking will not be possible.

An RTL8029-compatible driver for Solaris has been created by an independent developer and is distributed under the terms of BSD license. A slightly modified version of this driver is included into the Parallels Desktop distribution.

## Windows Tools Installation

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

- 1 Make sure that the virtual machine configuration includes a CD/DVD-ROM drive, and it is enabled (the **Enabled** check box is selected). See CD/DVD-ROM Options (page 114).
- 2 Start your guest operating system and log in.
- 3 Select **Install Parallel Tools** in the **Actions** menu.
- 4 The following message appears: "You can install the Parallels Tools only if the guest operating system is running and you are logged in. If you are not logged in now, select **Cancel** and run Parallels Tools installation later." If you are logged in, click **OK** to start installing.
- 5 Parallels Tools Setup program starts and greets you. Click **Next**.
- 6 In the **Choose Destination Location** screen click **Next** to install Tools to the default directory. Use the **Change** button to specify other location. Then click **Next**.
- 7 On the **Setup Type** screen you should choose between the *complete* setup and a *custom* one. The complete setup installs all of the tools available for your guest OS. If you select custom setup, the **Select Components** screen prompts you to select the desired tools from the list of tools available for your guest OS.
- 8 Choose the program folder in the **Select Program Folder** screen.
- 9 The **Check Setup Information** screen displays the options selected. If they are correct, click **Next** to start the installation. Wait while the wizard copies files.
- 10 The **Installation Completed** screen prompts you to restart the computer now. For all of the Windows guest OSes, except 98 and NT, you must restart the virtual machine after Tools installation. Click **Finish**, and the virtual machine will be restarted and ready for work with the tools installed.

**Notes:** 1. In a Windows 98 guest OS, you have to manually install the Sound Driver. Please refer to Windows 98 Sound Driver Installation (page 75).

2. For how to complete tools setup in a Windows NT guest OS, please refer to Windows NT Tools Installation (page 76).

---

### Troubleshooting when installing Tools

If installation of Parallels Tools doesn't start automatically, follow the steps:

- 1 Make sure that the file `vmtools.iso` is connected to the virtual machine CD-ROM drive.
- 2 Start Tools installation manually. For this, open the contents of the `vmtools.iso` in Windows Explorer, find `PrlTools.exe` file, and start it.

## Windows 98 Sound Driver Installation

The Sound Driver for a Windows 98 guest OS requires additional steps after the general Parallels Tools installation described in Windows Tools Installation (page 74).

To install AC'97 Sound Driver in Windows 98:

- 1 Open the Control Panel. To do this, click the Start system menu, select the Settings item, and then Control Panel.
- 2 Double-click the System icon to open the System Properties window. In the System Properties window select the Device Manager tab.
- 3 Locate the PCI Multimedia Audio Device in the hardware list. Select it and click the Properties button.
- 4 In the PCI Multimedia Audio Device Properties window click the Reinstall Driver button.
- 5 In the Update Device Driver Wizard select the Sound, video, and game controllers item and click the Next button.
- 6 In the second wizard screen select the second option: Display a list of all the drivers in a specific location, so you can select the driver you want, and click Next.
- 7 On the screen asking you to select the type of device click the Next button.
- 8 In the next wizard screen click the Have Disk button. The Install From Disk window is opened, in the Copy manufacturer's file from: field type the following path "C:\Program Files\Parallels\Parallels Tools\Sound" and click OK.
- 9 In the Select Device window select the AC'97 Audio and click OK.
- 10 In the Update Device Driver Wizard click the Next button. When the wizard asks, insert disc (or connect CD-ROM image file) with your Win98 distribution and type path to it in the field Copy files from. Click OK button. After wizard finishes copying files, click Finish button in its window.
- 11 Close the windows with AC'97 audio properties and system properties.
- 12 Restart the virtual machine if the wizard asks you to do so for the new settings to take effect.

## Windows NT Tools Installation

To install Parallels Tools in Windows NT:

- Perform the installation procedure described in the Windows Tools Installation (page 74) topic. It is enough to install such tools as Clipboard Synchronization and Mouse Synchronization Tools.
- Perform these specific steps for installing the Video Driver and Sound Driver:

### Video Driver Installation

To install the Video Driver do the following:

- 1 Open the Control Panel. For this click the **Start** system menu, select the **Settings** item, and then **Control Panel**.
- 2 Double-click the **Display** icon to open the **Display Properties** window.
- 3 In the **Display Properties** window select the **Settings** tab. Then click the **Display Type** button.
- 4 In the **Display Type** window select the **Change** button.
- 5 In the **Change Display** window select the **Manufacturers --> Parallels** and **Display --> Parallels Video Driver**. Click **OK**.
- 6 In the **Third-party Drivers** window click **Yes**.
- 7 The **Installing Driver** window informs you of the completed installation. Click **OK**.
- 8 Click the **Close** button in the **Display Type** window.
- 9 Click the **Close** button in the **Display Properties** window.
- 10 Click the **Yes** button in the **System Settings Change** window to restart the guest OS.

---

**Note:** You must restart the virtual machine after this setup procedure.

---

### AC'97 Sound Driver Installation

To install the AC'97 Sound Driver do the following:

- 1 Open the Control Panel. Click the **Start** button in the system menu. Then select the **Settings** item, and then **Control Panel**.
- 2 Double-click the **Multimedia** icon to open the **Multimedia Properties** window.
- 3 In the **Multimedia Properties** window select the **Devices** tab. Then select **Audio Devices** from **Multimedia devices: tree**. Click **Add** button.
- 4 In the **Add** window select the **Unlisted or Updated Driver** from **List of Drivers**. Click **OK**.
- 5 In the **Install Driver** window click the **Browse** button and select the sound driver path.

If you have installed Parallels Tools to the default location, select `C:\Program Files\Parallels\Parallels Tools\Sound`.

If you have installed Parallels Tools to another directory, you should locate this directory. Click **OK**. Then click **OK** in the **Install Driver** window.

- 6 In the **Third-party Drivers** window click **Yes**.

- 7 The **Add Unlisted or Updated Driver** window informs you that you are about to install the AC'97 Audio Driver. Click **OK**.
- 8 Click **OK** in the **About AC97 Audio Driver** window.
- 9 Click **OK** in the **System Settings Change** window.
- 10 Click **Close** button in the **Display Type** window.

---

**Note:** You must restart the virtual machine after this setup procedure.

---

## OS/2 and eComStation Tools Installation

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

Before starting the installation you should connect the CD-ROM image with Parallels Tools to your virtual machine CD-ROM drive. Do the following:

- Select **Install Parallels Tools** in the **Parallels Desktop VM** menu.

### Mouse Synchronization Tool Installation

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

---

**Note:** To install the Mouse Synchronization Tool you should have a VESA video driver installed, such as `SDD` or `GENGRADD`. For instructions on how to do this refer to OS/2 documentation.

---

To install the mouse tool:

- 1 Click the **Drives** icon on the system panel. Select the CD-ROM drive and `Drivers\Mouse\OS2` directory on it.
- 2 Launch the `INSTALL.COMD` batch file. The `INSTALL.COMD` copies files and make necessary modifications to the `CONFIG.SYS` file.
- 3 Restart the guest OS/2 operating system.

---

**Note:** The Mouse Synchronization Tool increases performance of the guest OS/2 operating system under Citrix.

---

### Clipboard Synchronization Tool Installation

In OS/2 and eComStation you must launch the Clipboard Synchronization Tool manually. This tool is not a tool itself but an ordinary application, and should be treated as such. If you want the Clipboard Synchronization tool to start automatically when your guest operating system is started:

- include the tool file `PrlClip.exe` into autostart group (`startup.cmd` or another file as it is done in your operating system).

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

### Sound Driver Installation

---

**Note:** Before installing the Sound Driver you should have multimedia support installed in OS/2 guest OS.

---

To install the Sound Driver:

- 1 Click the **System Setup** icon on the system panel.
- 2 Select the **Install/Remove** line, and then select **Multimedia Application Install**.
- 3 In the **IBM Multimedia Presentation Manager/2 - Installation** window choose CD-ROM drive, then `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

Below we consider the installation of the Realtek RTL8029 driver inside the OS/2 Warp version 4.0.

- 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 **Configure** window that opens, click **Configure** again to open the **Adapter and Protocol Configuration** window.
- 5 Click the **Other adapters** button below the **Network Adapters** section of the window to open the **Copy Additional Network Adapter Drivers** window.
- 6 Specify the path to the Parallels driver on CD-ROM disc image. The path should be:  
`<CD-ROM drive>\Drivers\Network\RTL8029\NDIS2OS2`
- 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 change the current network adapter into 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 driver properties, 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.

## Solaris Network Driver Installation

Unlike other guest OSes Solaris does not support the RTL8029 network driver emulated in virtual machines. To add RTL8029 support to a Solaris virtual machine you need to install the RTL8029 network adapter driver. We have created the special `network.sh` script that helps you to do this, or you may install and configure the driver manually. Both ways are described below.

### Before Installing the Driver

Before installing the driver perform the following steps:

- 1 Make sure that the virtual machine configuration includes a CD/DVD-ROM drive and it is enabled. See **CD/DVD-ROM Options** (page 114).
- 2 Start your guest operating system.
- 3 Connect the CD image with tools, `vmtoolsd.iso`, to the CD/DVD-ROM drive of the virtual machine:
  - right-click the CD/DVD-ROM icon on the status bar and select the **Connect image** menu item (instead you may select **Devices->CD/DVD-ROM <number>->Connect Image** in the **Parallels Desktop** menu);
  - browse for `vmtoolsd.iso` in the folder where you installed **Parallels Desktop**.

Proceed to installing the RTL8029 network driver using the `network.sh` script or manually.

### To install the RTL8029 network driver using `network.sh` script:

- 1 In the shell, run the  

```
cd /cdrom/PRLTOOLS/Drivers/Network/RTL8029/SOLARIS/
```

command to move to the respective directory.
- 2 Issue the following command to begin installing the driver  

```
./network.sh
```
- 3 You are sequentially informed that the driver is being extracted, compiled, and installed. When it is finished, you are asked "Will you receive IP addresses from DHCP server?" If IP addresses on your network are managed by DHCP server proceed to step 4, otherwise proceed to step 5.

- 4 If IP addresses on your network are managed by DHCP server, type "Y" and the script will configure the DHCP client. Proceed to step 6.
- 5 If IP addresses on your network are NOT managed by DHCP server, type "N" and then specify an IP address for your virtual machine, network address, network mask, and default gateway IP address when you are asked for them.
- 6 Restart the guest operating system by issuing the command
 

```
init 6
```

To install the RTL8029 network driver manually:

- 1 In the shell, issue the following command to get root privileges:

```
su
```

Enter the password to the root account when you are asked for it.

- 2 As a root run the following commands:

```
cd /tmp
gzcat /cdrom/PRLTOOLS/Drivers/Network/RTL8029/SOLARIS/ni0.8.11.tgz | tar
xf -
cd ni-0.8.11
/usr/ccs/bin/make install
./addni.sh
```

- 3 If IP addresses on your network are managed by DHCP server issue the following commands:

```
touch /etc/hostname.ni0
touch /etc/dhcp.ni0
```

If IP addresses on your network are NOT managed by DHCP server, see the Solaris System Administration Guide.

- 4 Leave the root account by running the command

```
exit
```

- 5 Restart the guest operating system by issuing the command

```
init 6
```

## Upgrading Parallels Tools

If you have upgraded Parallels Desktop, you may have virtual machines created by a previous version of Parallels Desktop with Parallels Tools installed. Please upgrade Parallels Tools to use all the capabilities of Parallels Tools Center.

To upgrade Parallels Tools:

- 1 Make sure that the virtual machine configuration includes a CD/DVD-ROM drive and it is enabled (the Enabled check box is selected). See the CD/DVD-ROM Options (page 114).
- 2 Start your guest operating system and log in. In order to install tools properly do not begin the installation until OS completes its startup and you log in.
- 3 Select the **Install Parallel Tools** command from the **Actions** menu.
- 4 You will get the following message: "You can install the Parallels Tools only if the guest operating system is running and you are logged in. If you are not logged in now, select Cancel and run Parallels Tools installation later." If you are logged in, click **OK** to start installing.



- 5 Parallels Tools Setup wizard starts and informs you that you have the Parallels Tools already installed in your virtual machine and that they will be updated. Click **Next**.
- 6 In the **Setup Type** screen you should choose between the *complete* setup and a *custom* one. The complete setup installs all of the tools available for your guest OS. If you select custom setup, **Select Components** screen prompts you to select desired tools from the list of tools available for your guest OS.
- 7 In the **Ready to Install the Program** screen click **Back** to review the installation settings. When you are ready, start installation by clicking the **Install** button.
- 8 If your Windows guest system is configured to warn you every time an unsigned driver is installed, you will receive the following message: "Parallels Tools installation contains a number of unsigned drivers. These drivers are required for proper functioning of Parallels Tools. Currently your system is configured to warn you every time an unsigned driver is installed. Do you want to receive these warnings during Parallels Tools installation?" Click **OK** to disable warnings during Parallels Tools installation. They will be re-enabled later when the installation will be complete.  
  
If your system is configured to block the unsigned drivers installation, you will receive the similar message prompting you to allow installation of these drivers. Click **OK**, otherwise, Parallels Tools will not be installed.
- 9 The assistant copies tools. When finished, **Update Completed** screen prompts you to restart the virtual machine now. Click **Finish**.

Note that the virtual machine should be restarted for proper functioning of Parallels Tools.

## Uninstalling Parallels Tools in Windows Guest OSes

To uninstall Parallels Tools in all Windows guest operating systems except Windows NT, you should activate the same Parallels Tools Installer as when installing. Do the following:

- 1 Select **Install Parallel Tools** in the **Actions** menu.
- 2 Parallels Tools Setup assistant performs the diagnostics of the operating system and asks "Do you want to completely remove the selected application and all of its components?" Click **Yes** to start the process.
- 3 After the assistant removes the tools, the **Uninstallation Completed** dialog prompts you to restart the computer now. Click **Finish**. The virtual machine will be restarted.
- 4 After the OS is started up, the **System Settings Change** screen asks "Do you want to restart your computer now?". Click **Yes**. When the virtual machine is restarted once more, the tools are completely uninstalled.

---

**Note:** After uninstalling Parallels Tools and restarting the virtual machine, the guest operating system may display a warning that it should be restarted once more. In this case restart the guest operating system one more time to ensure its correct functioning.

---

### Uninstalling Tools in Windows NT

In Windows NT Parallels Tools can be uninstalled using general program removing procedure.

## CHAPTER 5

# Managing Virtual Machines

This chapter discusses multiple ways to change a virtual machine configuration, provides information on setting user preferences, and using virtual disks.

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## Selecting and Opening a Virtual Machine

If you have only one virtual machine, its configuration will be loaded whenever you start Parallels Desktop.

If you have several virtual machines, Parallels Desktop opens and, by default, pre-loads the last used virtual machine. Over the Property Page of this machine, it displays the VM Catalog dialog.

Catalog dialog contains the following:

- List of existing virtual machines The list contains only names of virtual machines not their pathnames. Already opened virtual machines are marked
- The **Open** button. Click it to open the selected ( in the list) virtual machine
- The **New** button. Click it to start OS Installation Assistant.
- The **Browse** button. Click it to locate a virtual machine that is not the list ( moved to other folders, transferred from other computer).

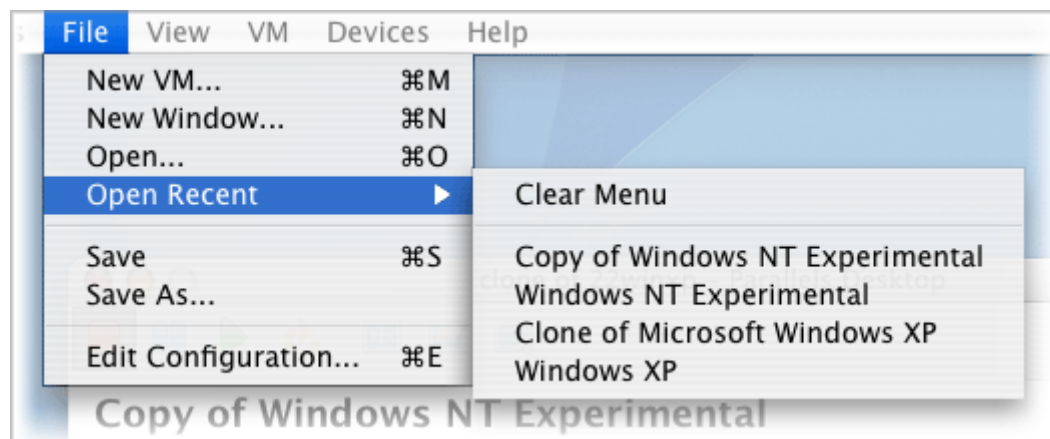
This option is controlled by the **Load recently used VM at startup** setting on the Common tab (page 86) of the Preferences window. You may turn this option off, to start Parallels Desktop with the **Startup Options** dialog, which is discussed in the Startup Options Dialog (page 84) topic, or with blank virtual machine. In these cases, the last used virtual machine can be opened via the recently used list.

You may also create aliases to virtual machines on the desktop or on the Dock. To create an alias, just click the title bar of Parallels Desktop window with open virtual machine and drag the title to the desktop or to the Dock.

### Opening Recently Used Virtual Machines

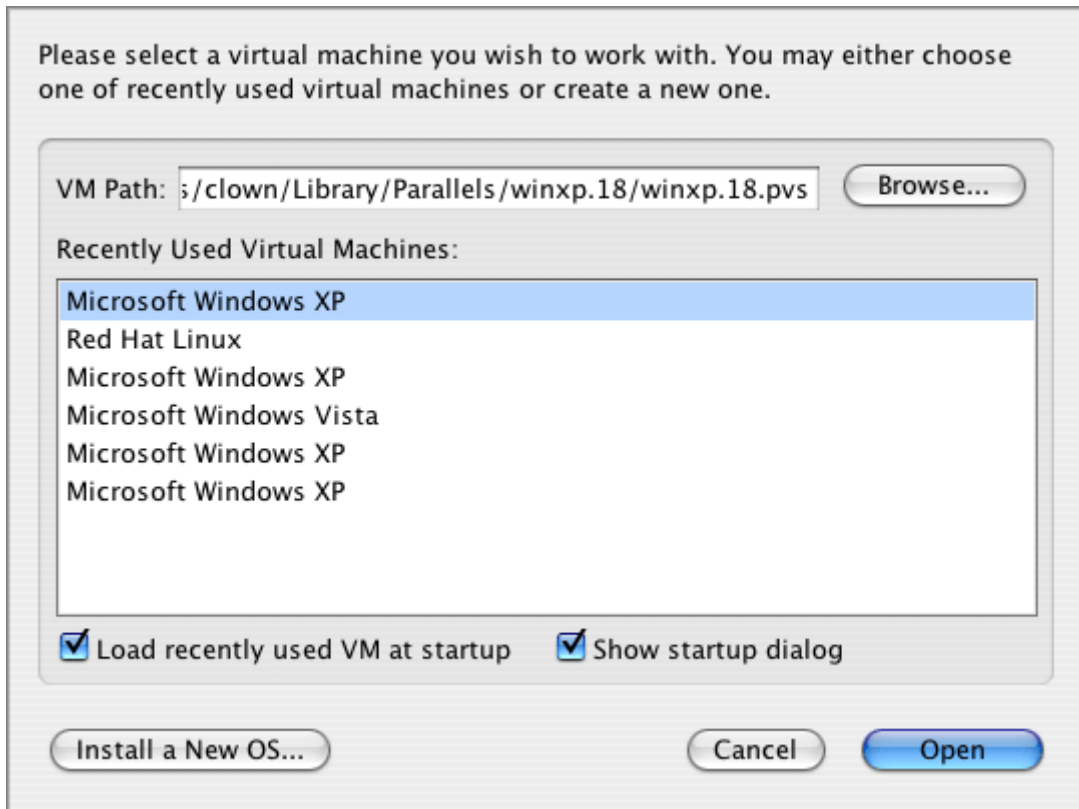
The **Open Recent** list in the File menu displays the names of the six last used virtual machines. Use this method to open a virtual machine you recently worked with.

If the required virtual machine is not shown in the recently used list, you may find it browsing the hard disk for its configuration file manually.



## Startup Options Dialog

This dialog is displayed upon Parallels Desktop startup to assist you in easily opening a virtual machine or proceeding to creation of a new one. The first time you launch Parallels Desktop this dialog is opened automatically.



### Opening Recently Used Virtual Machines

To open one of the recently used virtual machines:

- 1 Select the name of the machine in the **Recently Used Virtual Machines** list. The **VM Path** will show the respective configuration file.
- 2 Click **Open**.

The list of the recently used virtual machines is empty if you launch Parallels Desktop for the first time.

### Browsing Hard Disk for a Configuration

To open an existing virtual machine that is not in the recently used list:

- Click **Browse** button and locate the desired configuration file.

### Creating a New Virtual Machine

To create new virtual machine:

- Click the **Install a New OS** button and follow the New OS Installation Assistant (page 47).

Also, you may close this dialog by clicking the **Cancel** button; a blank virtual machine will be opened and you may start creating a new virtual machine manually.

### What to Open on Parallels Desktop Startup

The **Load recently used VM at startup** and **Show startup dialog** options control what happens when Parallels Desktop is started. The same options are in the **Common** tab (page 86) of **Preferences** window and are described in the respective topic. Whenever you check/uncheck these options in one of these screens, they are automatically changed in the second one.

## Opening a Virtual Machine When Another VM Is Running

When a virtual machine is running, you can not open another instance of Parallels Desktop via the Dock and Finder. If you want to open another virtual machine, use menu commands:

- **Open...** to open one of the recently used virtual machines. See **Opening Recently Used Virtual Machines** in the **Selecting and Opening a Virtual Machine** (page 83) topic.
- to open any virtual machine located anywhere on your disk(s). See **Opening a Virtual Machine in a New Window** in the **Selecting and Opening a Virtual Machine** (page 83) topic.
- or **New...** to create a new virtual machine.

---

## Setting Parallels Desktop Preferences

Settings that affect more than one virtual machine are contained under a single menu entry. To edit general preferences click **Preferences** in the **Parallels Desktop** menu.

**Common**, **User Interface**, and **Hot Key** preferences are assigned for each user. **Memory** and **DHCP** preferences affects all users that work on a particular computer and all virtual machines they launch.

## Common




Settings on this tab can be different for each user of your computer.

### Workspace:

- **Default folder for virtual machines.** A default location (directory) where Parallels Desktop saves files of a new virtual machine. Note that it is possible to choose another location for a new VM when using OS Installation Assistant in *Custom* mode..

### VM Behaviour upon Parallels Desktop Shutdown :

Options of this group control what happens when you select the **Parallels Desktop -> Quit Parallels Desktop** in menu or click the Macintosh close button  for the Parallels Desktop window.

- If you want all virtual machines to be suspended in this case, select the **Suspend virtual machine** option.
- If you want all virtual machines to be stopped in this case, select the **Power off virtual machine** option.
- When you are unsure if you want to stop or suspend virtual machines, select the **Ask me what to do** option.

See the **Suspending/Resuming Virtual Machine** (page 152) topic to learn about suspending/resuming virtual machines.

## Memory



On this tab, you can adjust the maximum amount of physical memory (RAM) the system reserves to all simultaneously running virtual machines on your Mac. This value will work for all users of your computer.

If you select **Automatically**, Parallels Desktop will calculate the reserved memory taking into account the following factors:

- the total amount of memory your Mac has,
- how much memory your Mac OS X requires in average,
- how many virtual machines are running at the moment.

The resulting amount of memory will be shared between all simultaneously running virtual machines. Memory for a particular virtual machine is set on the Memory tab (page 109) in the Configuration Editor.

If you select **Manually**, you can set the amount of memory reserved for virtual machines. Memory amount should be in multiples of 4. To set an appropriate memory amount you may use the slider or the spin buttons in the **Reserved memory limit** field, or type a value directly into the field.

## Network

**Preferences**

Common | Memory | **Network** | Appearance | Hot Keys

DHCP Scope for Host-only Networking

Scope start address: 10 . 37 . 129 . 1

Scope end address: 10 . 37 . 129 . 254

Scope mask: 255 . 255 . 255 . 0

DHCP Scope for Shared Networking

Scope start address: 10 . 211 . 55 . 1

Scope end address: 10 . 211 . 55 . 254

Scope mask: 255 . 255 . 255 . 0



Parallels Desktop provides several types of networking in a virtual machine, particularly, host-only networking and shared networking (NAT). The DHCP tab is intended for specifying ranges of IP addresses to be assigned to virtual machines and primary OS in these two types of networking:

- **DHCP Scope for Host-only Networking** contains a range of IP addresses assigned by Parallels DHCP server for virtual machines running in the host-only network. Methods of configuring different types of host-only network are discussed in the [Creating Host-Only Network](#) (page 126) topic.
- **DHCP scope for NAT Networking** contains a range of IP addresses assigned by Parallels DHCP server for virtual machines in the shared networking (NAT) mode. Configuring of the shared networking is discussed in the [Shared Networking \(NAT\)](#) (page 125) topic.

---


**Note.** These two scopes must not contain the same IP addresses.

---

Particular fields contain the following:

- The **Scope start address** and **Scope end address** values determine the first and the last IP addresses. First address of this scope DHCP server usually assigns to itself. The second address is usually given to the primary system. Others are assigned to virtual machines. **Scope start address** and **Scope end address** should belong to the same subnet.
- Subnet mask should be set in the **Scope mask** field.

---

**Note.** Before changing any of the DHCP scopes in this tab make sure that there is no virtual machine running in host-only networking mode. To check the networking mode of a running virtual machine: point the mouse cursor to the network adapter icon  in the status bar and select the **Mode** from the contextual menu.

---

## Appearance



User interface preferences can be different for each user of your computer.

#### Look and Feel:

- **Toolbar placement** option controls the position of the toolbar. By default, the toolbar is located at the top of the Parallels Desktop window.
- **Show tooltips for command buttons** option controls tooltips for the toolbar buttons and the command buttons on the Property Page (see Property Page (page 33)). By default, this option is selected, and an appropriate tooltip will pop up whenever you move the cursor over any of these buttons.
- **Show tooltips for devices on status bar** option controls tooltips for devices connected to the virtual machine when it is running. By default, this option is selected.

#### Fullscreen Options:

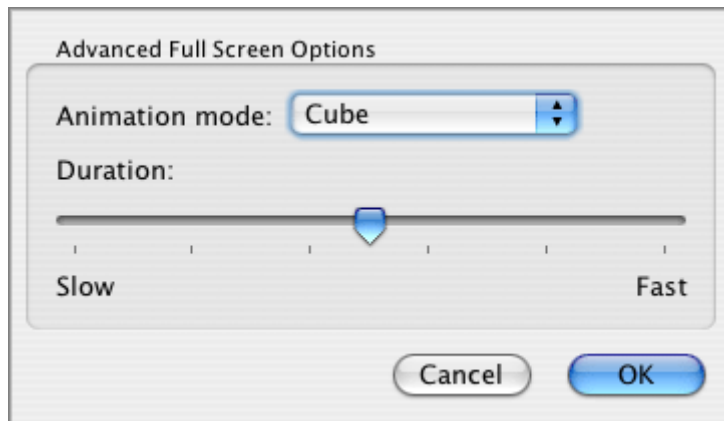
- **Allow to change guest screen resolution.** If this option is selected, a virtual machine switched to fullscreen mode tries to change its screen resolution to the Mac OS X screen resolution. This can be done when the video driver from Parallels Tools (page 71) is installed in your guest OS.
- **Allow to change Mac OS X screen resolution.** If this option is selected, resolution of your Mac monitor is changed to the resolution of the guest OS when a virtual machine is switched to fullscreen mode. Note that this option has lower priority than the previous one, so if both are selected this option is active only when the **Allow to change guest screen resolution** option can not be applied.
- **Advanced** button opens the **Advanced Fullscreen Options** dialog described below in this topic.

#### Restore Hidden Messages:

- Parallels Desktop informs users about certain operations or situation by displaying appropriate messages. As a rule, a message dialog has message text and the **Do not show this message again** check box. If you mark this check box, in the same situation the message will not be displayed. **Restore hidden messages** button on this tab allows you to reactivate all suppressed messages.

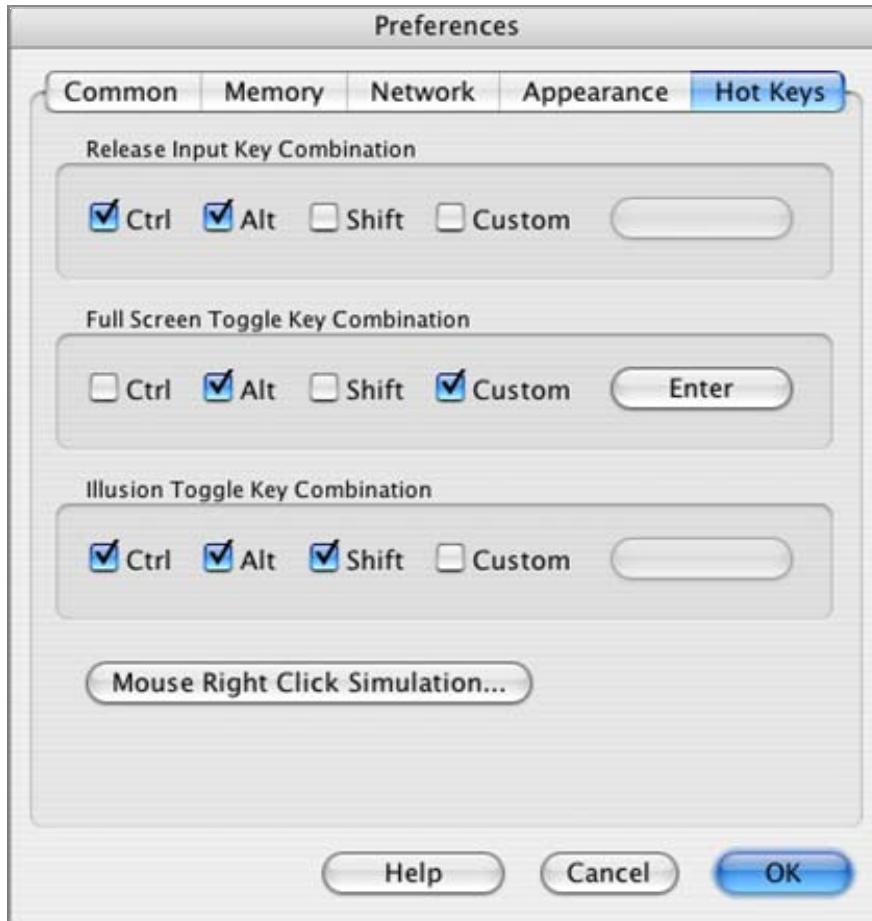
The system does not allow you to suppress messages reporting potentially dangerous situations.

#### Advanced Fullscreen Options



Animation mode contains the list of animations that are displayed when you switch a virtual machine to fullscreen mode. Duration slider allows you to select the speed of this animation.

## Hot Keys



Hot key combinations can be different for each user of your computer.

### Release Input Key Combination

This key combination is used for releasing the keyboard and mouse input when it is captured in the virtual machine screen. The default hot keys are: `Ctrl+Option(Alt)`.

---

**Note.** You can release the mouse and the keyboard input from the virtual machine without pressing the hot key combination if you install the Parallels Tools. See [Installing Parallels Tools \(page 71\)](#) section to learn if this package is available for your guest operating system.

---

### Fullscreen Toggle Key Combination

This combination is used to switch a virtual machine to the fullscreen mode and back. The default hot key is `Option(Alt)+Enter`.

---

**Note.** See [Switching a Virtual Machine to Fullscreen Mode \(page 150\)](#) for information on running virtual machine in fullscreen mode.

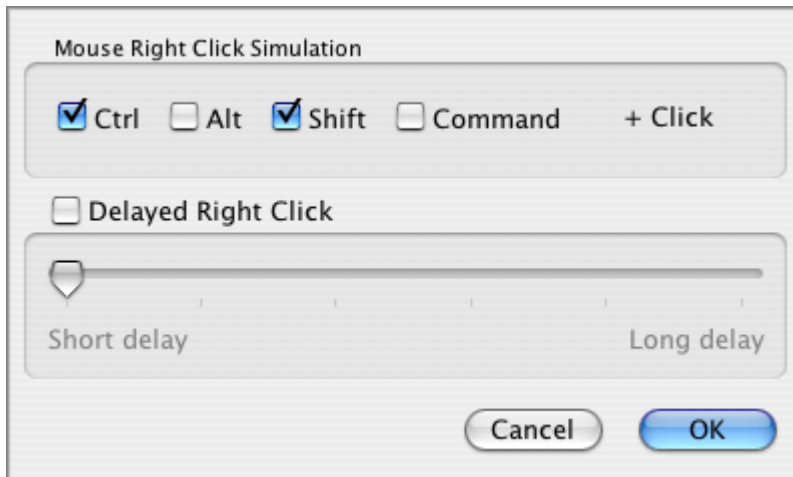
---

### Illusion Toggle Key Combination

This keys are used to switch Parallels Desktop virtual machine to illusion mode and back. For details refer to the [Illusion Mode](#).

### Mouse Righ-Click Simulation

Click this button to set the key combination to imitate mouse right-click for a mouse that does not have the right key. The default hot key is `Ctrl+Shift+mouse click`.



In addition to the key combination you may turn on another imitation method, **Delayed Right Click**. Preferred delay is specified by the slider. Both methods of imitation can be turned on at the same time.

---

**Note.** See also **Keyboard Shortcuts in Virtual Machine** (page 133) for more information on right-click imitation.

---

### Defining New Key Combinations

Each key combination should include at least one special key (Ctrl, Option(Alt) or Shift).

To define a new key combination, do the following:

- 1 Select check boxes for one or more special keys.
- 2 If you want to add other key:
  - select the **Custom** check box,
  - click **Enter** to specify other key
  - then press the key you want to use on your keyboard.

---

## Using Virtual and Real Disks

In this section we discuss all types of disks which can be used by Parallels Desktop virtual machines and basic operations that user can perform with these disks.

### Supported Types of Virtual Machine Hard Disks

The current version of Parallels Desktop allows virtual machines to use virtual hard disks and only one type of a real disk - Boot Camp partition with Windows XP installed.

A virtual hard disk can be in one of two formats: plain or expanding. Disks of both types are stored as .hdd files.

The size of a virtual disk can be set within the range from 20 MB to 128 GB.

## Formats of Virtual Disks

Virtual hard disks can be in one of two formats: **plain** or **expanding**.

**plain** A disk of this format has the same size from the moment it is created. This ensures that virtual disk has a room for a new application or data even if there is no free space on the real hard disk. It also allows the guest OS to operate a little bit faster. Disk in plain format can be created during *Custom installation*.

**expanding** A disk of this format is small initially and grows as you use it. The size specified when the disk was created is the maximum size to which the disk can grow. Using disks in this format saves space on the real hard disk.

Run Disk Compacting Tool or Parallels Compressor periodically to reduce the size of such disks.

Hard disk images of both formats are stored as `.hdd` files; however, the structure of a disk file is different. Format of the virtual hard disk is displayed in the **Disk format** field on the Advanced (page 112) tab of **Hard Disk Options**.

Disk format is set when you create a hard disk image. If you need to convert the disk to other format after the hard disk file is created, a copy of the disk in another format can be made using the Parallels Image Tool (page 215).

If you discover one day that a virtual hard disk is too small for your needs, you may increase the disk capacity using the Parallels Image Tool (page 215).

## Creating a New Virtual Hard Disk

A new virtual hard disk is created at the same time when a virtual machine is created. For a typical virtual machine, a new hard disk is created automatically, as for custom virtual machines, you have to select a disk format and its size when using the OS Installation Assistant (page 56).

To add a new virtual hard disk to an existing virtual machine use the Add Device Assistant. (page 122)

You may also replace the current virtual hard disk in an opened virtual machine configuration with a new blank one using the **Recreate** button on the **Hard Disk Options** (page 111) tab in **Configuration Editor**.

## Maintaining Virtual Hard Disks

Virtual hard disks require certain maintenance, similarly to real hard disks. An expanding disk is size efficient at the beginning of a virtual machine's life cycle and becomes less and less efficient as time goes on, because each time writing to the disk is requested, the system allocates new space, and therefore disk size increases. Deleting files does not reduce the size of a virtual disk image file in the primary operating system. Eventually, an expanding virtual disk could grow enormously causing a number of inconveniences.

Parallels Desktop includes two utilities to maintain virtual disks in "good health":

- Parallels Compressor™, a powerful tool that effectively cleans up virtual hard disks (not only expanding disks but plain ones as well). It allows a user to select a level of cleaning and additional operations to perform. Currently, Parallels Compressor can process virtual hard disks of the following guest operating systems:
  - Windows Vista
  - Windows 2003
  - Windows XP
  - Windows 2000

For information on Parallels Compressor refer to the Using Parallels Compressor (page 178) chapter.

- Disk Compacting Tool can be used for all guest operating systems. For more information on the Disk Compacting Tool refer to the Compacting Virtual Disk (page 167) topic.

## Boot Camp Option

Now you can use your Boot Camp Windows installation to boot in natively (via Boot Camp) or with Parallels Desktop as a bootable disk or as a data disk in virtual machines.

For using the Boot Camp Windows XP installation in Parallels virtual machines you have two options:

- Add Boot Camp partition as a hard disk to an existing virtual machine to use it as a data disk. Windows XP and Windows Vista will automatically recognize it as a new disk.
- Create a new virtual machine and choose the **Use Boot Camp** option for the virtual hard disk. Boot Camp Windows partition will be used as a bootable volume. Before you start this virtual machine for the first time, you must install Parallels utility on a Boot Camp Windows partition. For details see Using Boot Camp Windows Installation (page 172) chapter.

To use Boot Camp Windows installation in a virtual machine you have to install Parallels Tools for Boot Camp on it. Parallels Tools and Parallels Tools for Boot Camp will not interfere with the system when you boot into it via Boot Camp.

## Enlarging a Virtual Hard Disk

Enlarging of a virtual hard disk is a two-step procedure:

- 1 Increasing the size of a virtual disk with the help of Parallels Image Tool, see the Modifying Hard Disk Image (page 216) topic. After this, if the disk is in plain format, Finder will show that the disk file has increased its size. If the disk is in expanding format, Finder will show the same size of the disk file.
- 2 In the guest operating system the added space appears as a chunk of unpartitioned space. To use this additional unpartitioned space, you should do one of the following:
  - either create a new partition on this unpartitioned space,
  - or expand one of the partitions you already have.



**Warning.** Please back up your virtual machine by copying its files to a safe location before you start to enlarge its hard disk. This may help you to restore the virtual machine if something goes wrong with enlarging.

## Creating a New Partition

### In Windows Guest OS

To create a new partition on the unpartitioned space of your virtual hard disk you can use Windows build-in utility - **Disk Management**. Below, we describe the steps required for this in Windows XP (in other Windows guest systems the procedure will be very similar to this one).

- 1 Power on your virtual machine.
- 2 To start the Disk Management utility use one of the following ways:
  - click **Start -> Control Panel -> Administrative Tools -> Computer Management**. In the **Storage** section select **Disk Management**.
  - click **Start -> Run** and type `diskmgmt.msc` string and press **Enter**.
- 3 Right-click the **Unallocated Capacity** bar in the lower section of Disk Management window and on the context menu select the **New Partition** option.
- 4 The **New Partition** wizard opens. Select the **Primary Partition** option and click **Next**.
- 5 Specify the size for a new partition and click **Next**.
- 6 Assign a drive letter from the drop-down list and click **Next**.
- 7 In the **Format partition** dialog box select **Format partition**, select **NTFS** file system and **Default** allocation unit size. Specify a volume name and click **Next**.
- 8 Click **Finish** to exit the wizard and start formatting.
- 9 The new volume will appear in the Disk Management window and in **My Computer**.

### In Linux Guest OS

In most of Linux systems, for creating a new partition and other disk management operations you can use the `fdisk` tool. You should have the `root` privileges to do this.

Below we describe a sequence of steps required for this assuming that you created a typical configuration for your Linux virtual machine.

- 1 Start a terminal, perform the

```
su
```

command and enter the `root` password to gain the `root` privileges.

- 2 Start `fdisk` using the following command:

```
/sbin/fdisk /dev/hda
```

where `/dev/hda` stands for the hard drive that you want to partition.

`fdisk` is the tool with text interface, so the next commands you have to type at the `fdisk` command prompt.

Note that the following `fdisk` commands may be helpful:

- `m` - displays the available commands

- p - displays the list of existing partitions on your hda drive. Note that unpartitioned space is not listed.
- n - creates a new partition
- q - exits `fdisk` without saving your changes (helps in case you did something wrong)
- l - lists partition types
- w - writes changes to partition table

**3** To create a new partition type the following command:

```
n
```

When prompted, specify several parameters:

- *partition type* - type "p" to create a primary partition and "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;
- *number* - in most cases, you already have two partitions, the number for a new partition will be three;
- *start cylinder* - enter a starting cylinder or just press `Enter` to use the first available cylinder;
- *last cylinder* - just press `Enter` to allocate all the available space or specify the size of a new partition in cylinders if you like not to use all the space available;

By default, `fdisk` creates a partition with system ID equal to 83. If unsure of the partition system ID, use the "l" command to check. As you can see, `fdisk` supports a wide variety of partition types.

**4** Use the

```
w
```

command to write changes to the partition table.

**5** Restart the virtual machine using

```
reboot
```

command. When restarted, start the terminal and perform

```
su
```

command to receive the `root` privileges once again.

**6** Create a file system on the new partition. We recommend to use the same file system as on other partitions. In most cases it will be either `ext3` or `reiserfs` file system. Assuming that we want to use `ext3` file system, enter the following command:

```
/sbin/mkfs -t ext3 /dev/hda3
```

**7** Make a directory that will be a mount point for the new partition. Let's say we want to name it `data`, the command will be

```
mkdir /data
```

**8** Mount the new partition to the directory just created

```
mount /dev/hda3 /data
```

**9** Now make changes in your static file system information by editing your `/etc/fstab` file in any of the available text editors. In our case, add to this file the following string:

```
/dev/hda3 /data ext3 defaults 0 0
```

In this string `/dev/hda3` is the partition you've just created, `/data` is a mount point for the new partition, `ext3` is the file type of the new partition. For exact meaning of other parameters consult man pages for the `mount` and `fstab` commands.

Save the `/etc/fstab` file.

## 10 Exit the root account

```
exit
```

## Increasing the Existing Partition

In both Windows and Linux guest OSes, to increase the size of an already existing partition you can use a third-party Gnome Partition Editor 0.2.5 utility available for free.

Download Gparted 0.2.5 live CD .iso image:

<http://superb-east.dl.sourceforge.net/sourceforge/gparted/gparted-livecd-0.2.5-5.iso>

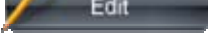

<http://superb-east.dl.sourceforge.net/sourceforge/gparted/gparted-livecd-0.2.5-5.iso..>

---

**Note.** You can also use other third-party disk management utilities specific for Windows or Linux systems.

---

To resize the partition with Gnome Partition Editor do the following:

- 1 In the Parallels Desktop window, click the  button, select **Options** in the **Resource** list, then select **Booting Options** and [CD-ROM, Hard Disk, Floppy] boot sequence.
- 2 Select CD/DVD-ROM in the **Resource** list and select **Use Image File** option and specify the path to the `gparted--livecd-0.2.5-5.iso` image file.
- 3 Power on the virtual machine to start Gnome Partition Editor.
- 4 Select the appropriate extra boot options, Live CD language and key map, screen depth and resolution. It is recommended to leave the default options.
- 5 On the next screen in the upper part you can see the bar graphically representing the virtual disk. Select the partition you want to increase and right-click it. On the context-menu select the **Resize/Move** option.
- 6 Now, expand the green bar by dragging the right green border up to the end of the disk bar. Click the **Resize** button, and then click **Apply** to resize the disk space.
- 7 When the operation is completed, click the CD/DVD-ROM icon  on the status bar and select the **Disconnect** option to disconnect the `gparted--livecd-0.2.5-5.iso` file.
- 8 Restart the guest OS. When fully logged in, use Finder to check that the partition has increased its size.

## CD/DVD Discs and Their Images

Parallels Desktop can access real CD/DVD discs and .ISO images of CD/DVD discs. Parallels Desktop uses CD/DVD disc images in ISO format (as files with .iso extension). It also can create ISO images of CD/DVD discs in case your Mac cannot read a particular disc. Use Parallels Image Tool (page 215) to create an image of a CD/DVD.

Parallels Desktop can read ISO images of discs created by many third-party applications.

There is a set of limitations on using CD/DVD discs in Parallels Desktop in that it allows the use of only a single-session CD or DVD. Multi-session discs cannot be read. Virtual machine cannot play back audio CDs. Neither CD nor DVD discs can be burned.

### To Eject CD/DVD Disc

In any guest OS press the Eject key on a Mac keyboard (the triangle with the line underneath).

In Windows guest OSes you may use also the following method:

- Click Start -->My Computer, then right click (or Control-click) the CD/DVD-ROM drive, and select the Eject command from the shortcut menu.

## Floppy Disk Images

Although most new Apple computers do not have floppy drives, Parallels Desktop virtual machine have virtual floppy drives. Parallels Desktop can create and use `.fdd` floppy image files that appear to a virtual machine floppy drive as real diskettes. In the guest OS you may also access real diskettes using an external USB floppy drive (see Using USB Devices in a Virtual Machine (page 129) to learn how to connect USB devices).

Blank floppy image can be created in the following ways:

- clicking the **Recreate** button on the Floppy Options (page 110) tab of the Configuration Editor,
- when adding a floppy drive to a virtual machine use the **Add Hardware Assistant** (page 122).

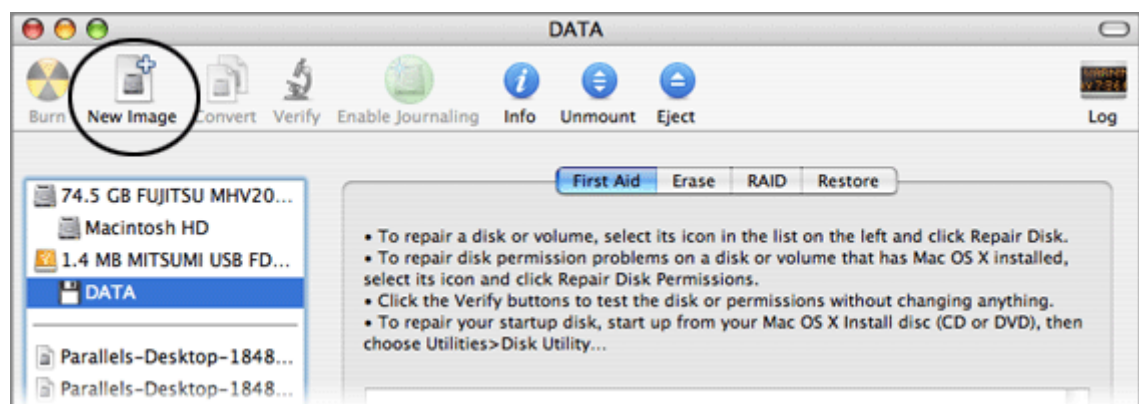
Image of a real diskette can also be created in a several ways:

- You may use an external USB floppy drive to create a floppy disk image in Mac OS X (see **Creating a FDD Image of a Floppy Disk** below in this topic).
- If in addition to Parallels Desktop, you have a PC with Parallels Workstation for Windows and Linux, you may create an `.fdd` image of a real diskette using the **Parallels Image Tool**, then transfer this image file to the Mac. Parallels Image Tool (page 215) provided with Parallels Desktop does not include the option of creating images of real diskette.
- Parallels Desktop can also read images of floppies created by WinImage or VMware applications, you only have to change file extensions from `.img` and `.ima` to `.fdd`.

### Creating a FDD Image of a Floppy Disk

To create an `.fdd` image of a diskette do the following:

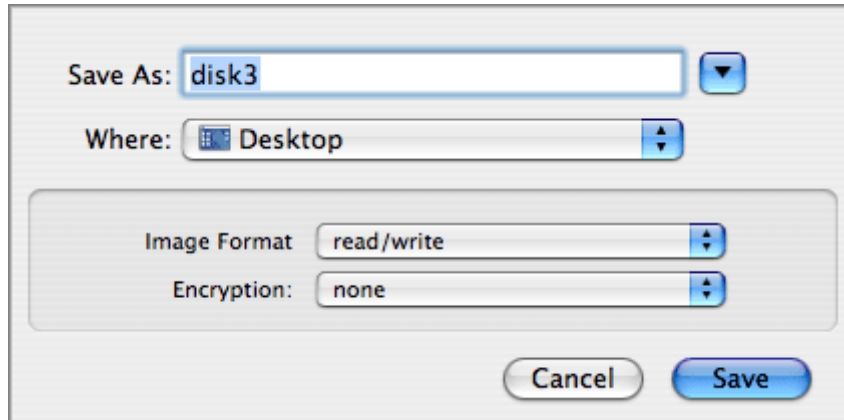
- 1 Plug in an USB floppy drive to your Mac, insert the diskette which image you want to create.
- 2 Open Finder -> Applications -> Utilities -> Disk Utility.
- 3 In the Disk Utility window, select the diskette in the left pane, then click the **New Image** button.



- 4 In the opened dialog specify:
  - name of the image in the **Save As** field,
  - where to save the image in the **Where** field,

- select Read/Write in the Image Format drop-down list,
- and None for the Encryption.

Then click Save.



- 5 Find the ready .dmg image of the diskette. Right-click (Control-click) it and select Get Info from the shortcut menu. In the Name & Extension group change the .dmg extension to .fdd. Press Enter.
- 6 When you are prompted to confirm that you want to change the extension of the file, click the Use .fdd button.

---

## Editing Virtual Machine Configuration

Configuration of a virtual machine contains the list of its virtual devices and their options. This section describes how to edit the configuration of an existing virtual machine and explains the devices options.

Configuration of an existing virtual machine can be changed in the Configuration Editor.

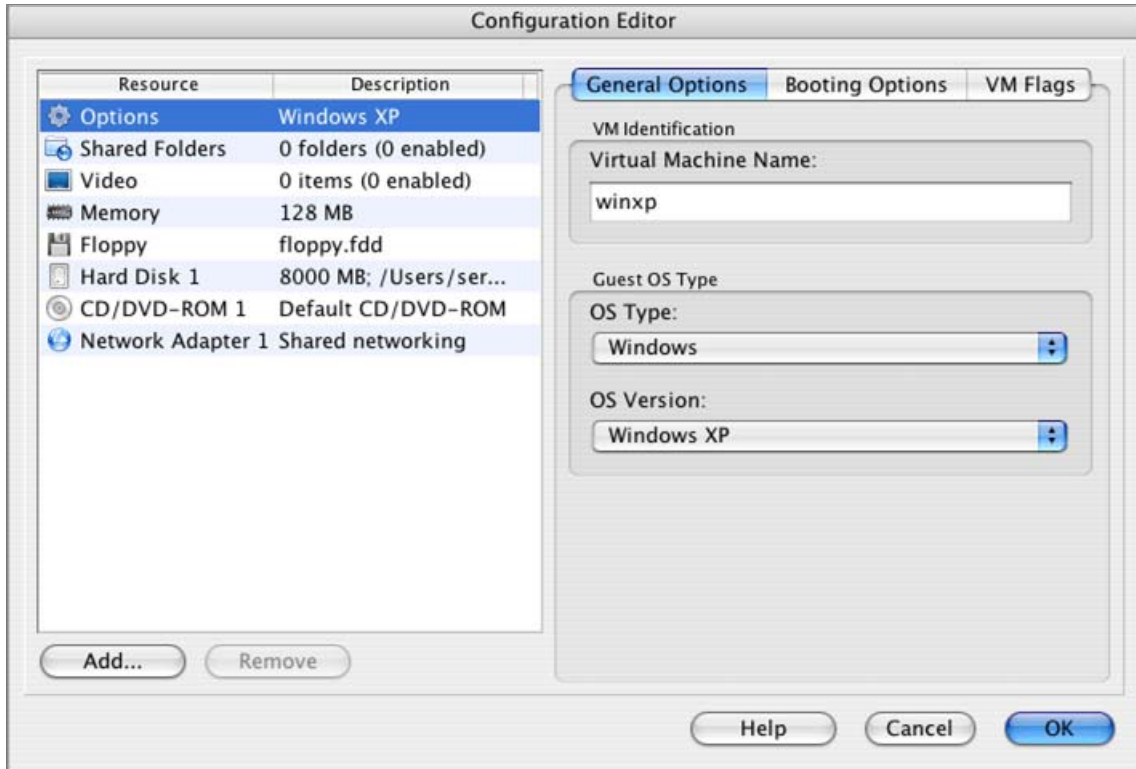
To open the Configuration Editor:

- on the Property Page click any device in the list of available virtual hardware.
- from the menu select Edit --> Edit Configuration.

Adding and removing devices are discussed in the Adding New Devices to Virtual Machine (page 122) section.

## General Options

Under Options general virtual machine settings are collected.



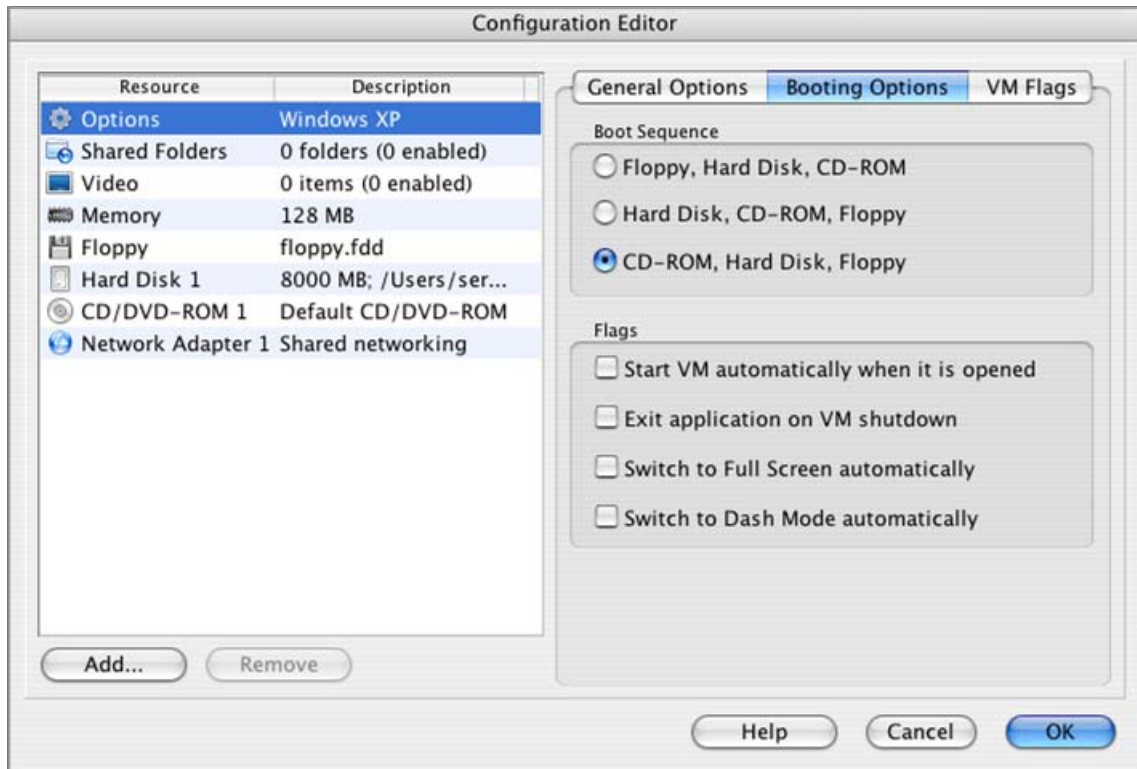
### VM Identification:

- Virtual machine name field shows the name of the machine that has been specified when creating and can be changed. Its name should be descriptive, and its length should be no more than 50 symbols. The name of the virtual machine is displayed on its Property Page (page 33).

### Guest OS Type:

- Here you can specify an operating system to be installed on the virtual machine (if you didn't choose the right one while creating the machine or by any reason want to install another OS). Always choose the operating system correctly. If OS specified on this tab is not the one actually installed in your virtual machine, this may cause problems varying from slow performance to machine failure.

## Booting Options

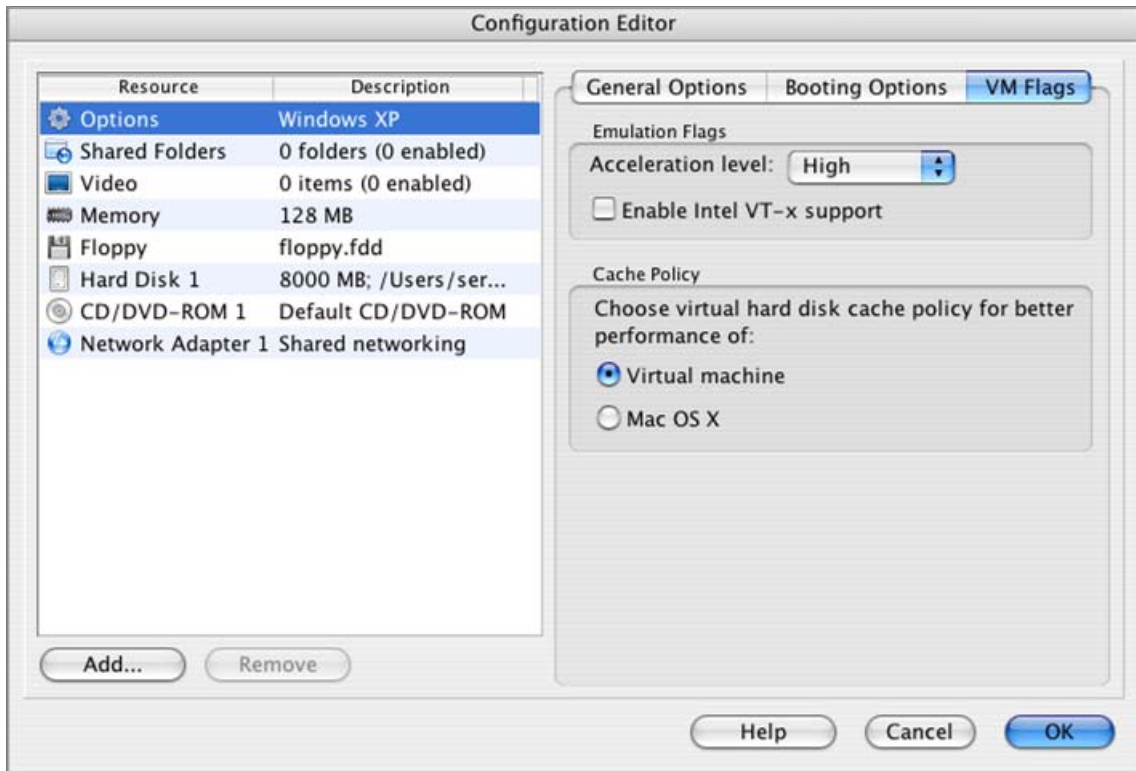


On the **Booting Options** tab you can select the booting sequence, that is the order in which the virtual machine will try to boot from different devices. You can choose one of the three predefined sequences - [Floppy, Hard Disk, CD-ROM], [Hard Disk, CD-ROM, Floppy], [CD-ROM, Hard Disk, Floppy]. During its startup, the virtual machine checks the first device (or media) of the boot sequence and tries to boot from it. If the media is not found or is not bootable, the virtual machine will proceed with the next device in the boot sequence, and so on.

**Note:** Please make sure that a boot disk (hard disk, CD-ROM, floppy disk) is available and configured correctly. If you select a boot disk that does not exist, after starting up the guest operating system and loading BIOS, you will see the error message “Currently opened virtual machine does not include any boot devices. In order to be successfully booted the virtual machine should have at least one of the following devices attached: floppy disk drive, hard disk drive, CD/DVD-ROM drive. Do you want to power on this virtual machine anyway?”. Click **No**, correct the configuration of your floppy or the corresponding IDE drive and try to start again.



## VM Flags



VM Flags tab contains various options that affect the performance of the virtual machine.

#### Emulation Flags:

- **Acceleration level.** Acceleration enables a number of the guest OS specific performance optimization techniques. We recommend selecting the *High* level. If you notice incorrect guest operating system behavior while running with high acceleration, for example, when installing software, shut down the OS and lower acceleration level. Note that without acceleration at all (*Disabled* level) the virtual machine runs very slowly.
- **Enable Intel VT-x Support** option is available for editing if you have an Intel processor with VT-x in your Mac. By default, VT-x support is enabled. See Intel Virtualization Technology (VT-x) Support (page 10) to learn about VT-x support in Parallels Desktop. If you are running a guest OS with VT-x support, it is indicated in the **About Parallels Desktop** screen (see the More Information (page 42) section).

#### Misc Flags:

- **PC speaker support enabled.** If this option is enabled the virtual machine can indicate its actions by PC speaker sounds.
- **Autostart VM when configuration is loaded.** After you open the virtual machine configuration file, the VM will be automatically started.
- **Switch to fullscreen mode automatically.** As soon as the virtual machine is started, it will run in fullscreen mode.

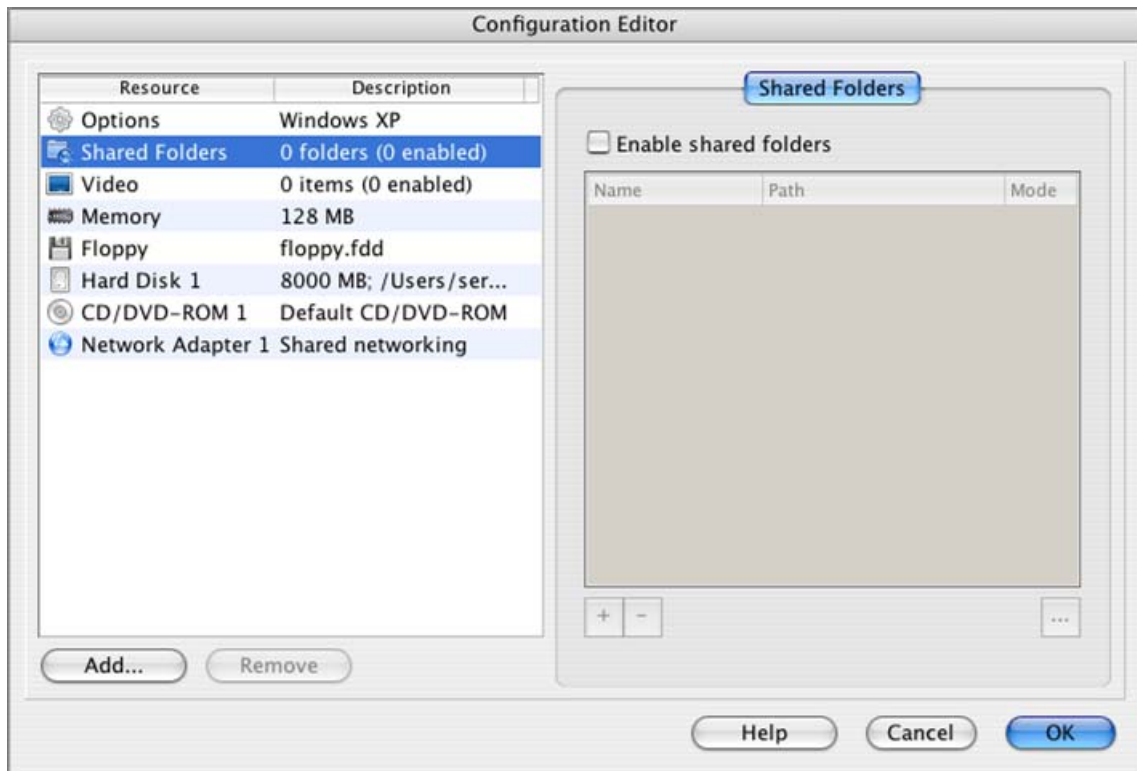
#### Cache Policy:




Caching of the virtual hard disk significantly increases the speed of virtual machine operations. However, caching requires a lot of your host Mac memory and may result in slowing down your Mac OS X applications, especially if the virtual hard disk is large. You may select whether you want to cache the virtual machine hard disk(s) or to disable caching.

- **Virtual machine.** With this option caching of the virtual hard disk(s) connected to the virtual machine is enabled.
- **Mac OS X.** With this option caching of the virtual hard hard disk(s) connected to the virtual machine is disabled.

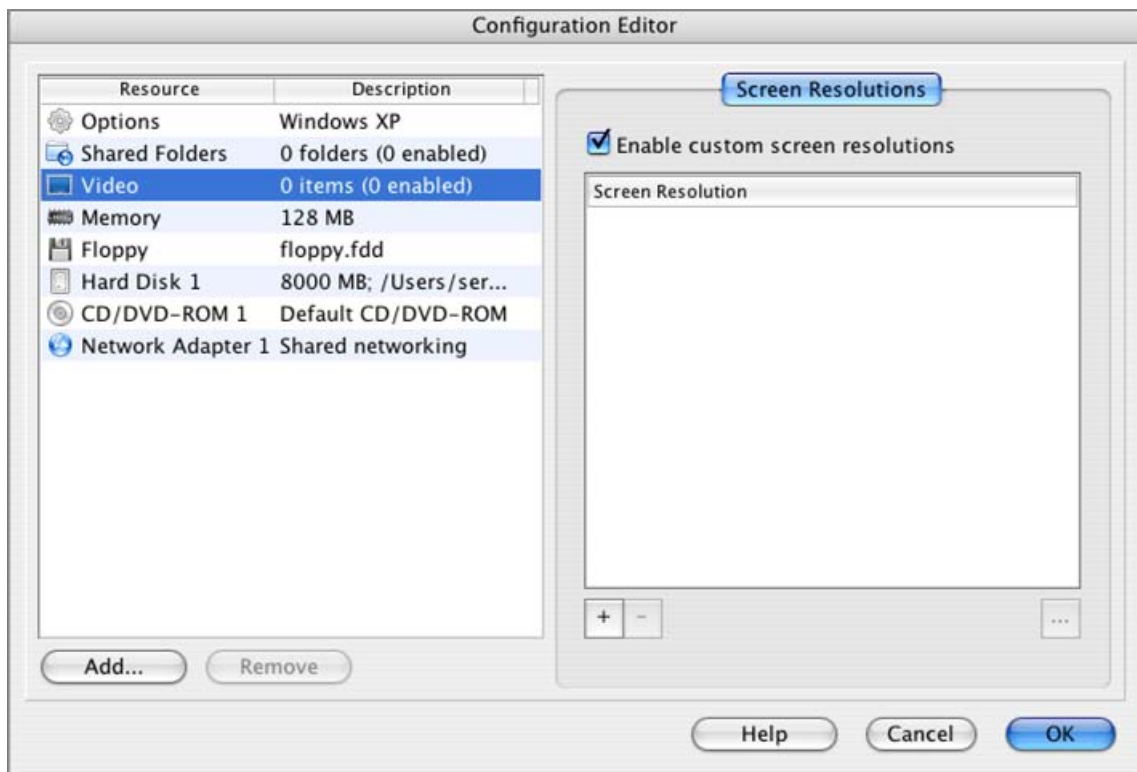
## Shared Folders




**Note.** This tab is active in Windows 2000/XP/2003/Vista guest OSes only. In other guest OSes you will see the message: "Feature is not available for this type of guest operating system".



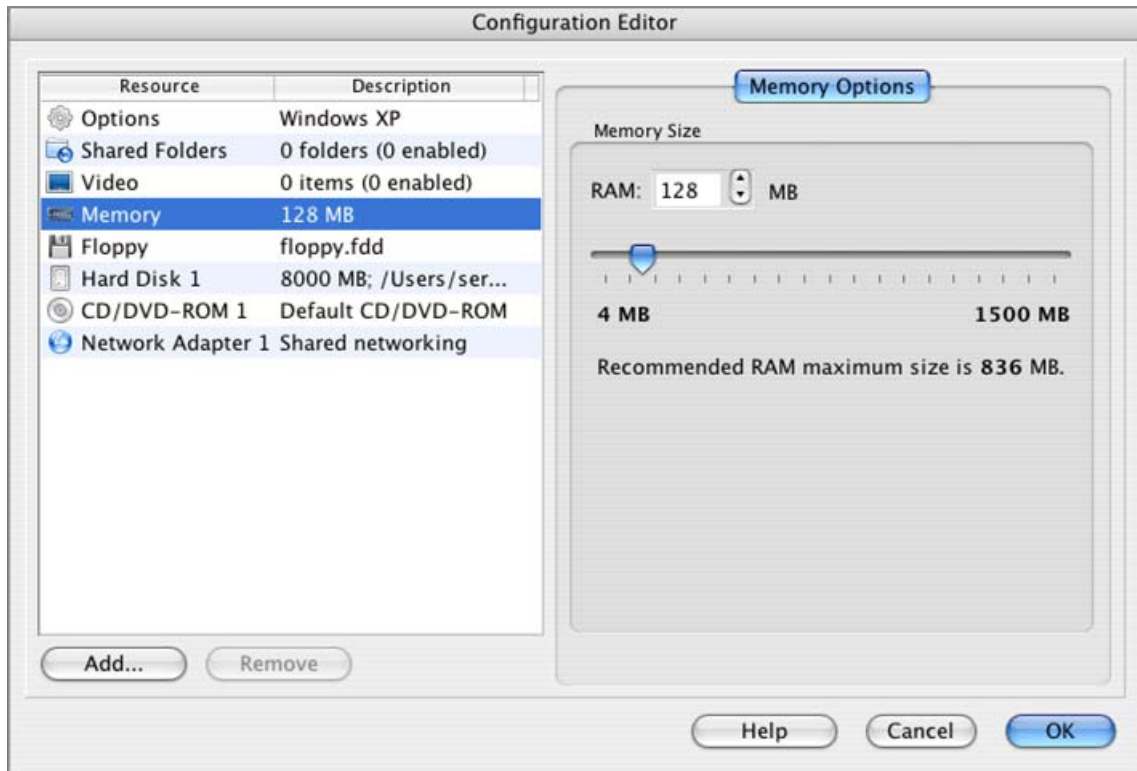
- **Enable shared folder** option allows/prohibits using shared folders in the virtual machine.
- The list below displays all the shared folders created for this virtual machine. The **Name** column shows name of the folder in the guest OS, the **Path** column shows the same folder in the file system of your Mac.
- Add button  opens the **Shared Folder Properties** dialog for creating a new shared folder. See the Using Shared Folders (page 126) section for detailed description of this process.
- Delete button  removes the selected shared folder.
- Edit button  opens the **Shared Folder Properties** dialog where you can edit the shared folder properties. See the description of this dialog in the Using Shared Folders (page 126) section.

## Video (Screen Resolutions)



- Enable custom screen resolutions option allows/prohibits using different screen resolutions for the virtual machine.
- Screen Resolutions table displays all the custom resolutions defined for this virtual machine. The check mark near a resolution means that this resolution will be available for selection in the virtual machine. Those resolutions that are not checked will not be available for selection. To enable/disable a resolution, open its properties using the Edit button.
- Add button  opens the Resolution Properties dialog for creating a new resolution. See the Using Custom Screen Resolutions (page 129) topic for detailed description of this process.
- Delete button  removes the selected screen resolution.
- Edit button  opens the Resolution Properties dialog where you can make changes in the screen resolution properties. See description of this dialog in the Using Custom Screen Resolutions (page 129) section.

## Memory Options



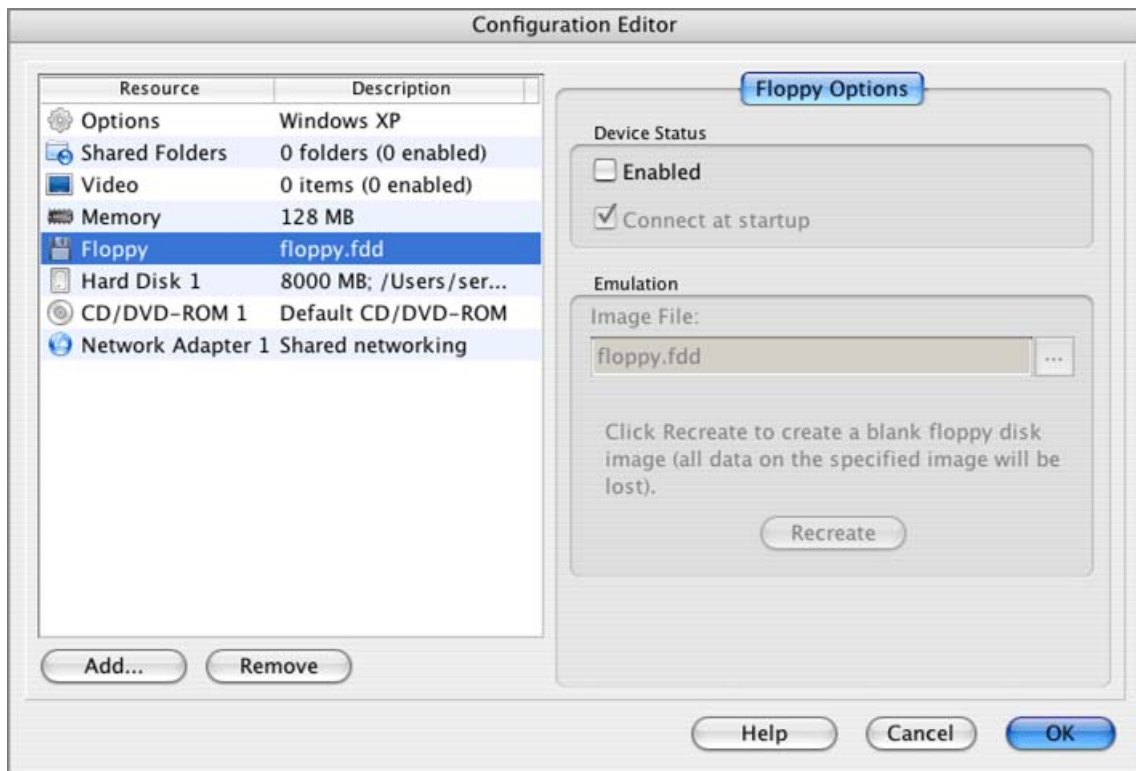
The Memory Size parameter defines the size of virtual memory (RAM) to be allocated for the virtual machine. You can choose any value from 4 to 1500 MB. We advise you not to exceed the recommended maximum because this is the limit of the physical RAM that your system can reserve for virtual machines without affecting the performance of Mac OS X. If the specified amount is not enough for normal performance of your virtual machine, the memory will be swapped to disk, thus slowing down both the guest OS and Mac OS X.

The recommended memory maximum size is specified below the slider. This value can be adjusted on the Memory tab (page 87) in the Preferences window.

To set the memory for the current virtual machine use slider, spin buttons in the RAM field, or type a value directly into the field. Memory amount should be set at a multiple of 4, otherwise you will get an error message.

## Floppy Options

A virtual machine floppy drive can be connected to a floppy disk image. To get information on floppy disk images used by Parallels Desktop read the Floppy Disk Images (page 101) topic.



### Device Status:

- To temporarily disable floppy drive operations without deleting the floppy drive from configuration, clear the **Enabled** check box.

**Note:** If you start the virtual machine with the floppy drive disabled, you cannot change this option when virtual machine is running.

If the floppy drive is enabled, it can be connected/disconnected while VM is running. Media that the floppy drive accesses can also be changed.

- To start guest OS with the floppy image connected, select the **Connect at startup** option.

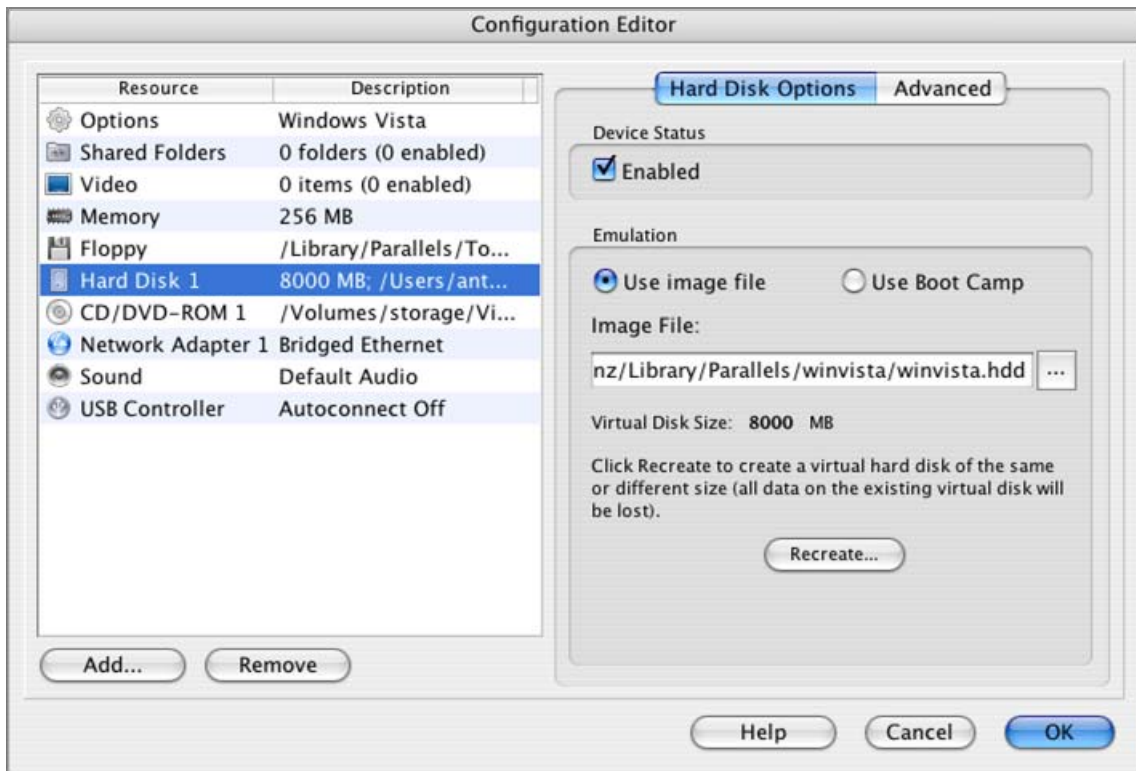
### Emulation:

- To connect a floppy disk image to the virtual floppy drive, specify the name of the floppy disk image in the **Image File** field. You may use **Browse** button to locate the file.
- With Parallels Desktop you can create a blank floppy image. Type the file name and the path in the **Image File** field and click the **Recreate** button. The size of a floppy disk image equals 1.44 MB. The default extension for a floppy disk is `.fdd`.

## Hard Disk Options

The current version of Parallels Desktop allows virtual machines to only use hard disk images in .hdd format. Read the Hard Disk Images (page 94) topic to get acquainted with disk format and its other options.

Up to four IDE devices (hard disks and CD/DVD-ROM drives) can be connected to a virtual machine currently. This means, that there can be no more than total four hard disk and CD/DVD-ROM drives. (It doesn't matter how many of four IDE devices are hard drives and how many are CD/DVD-ROMs.)



### Device Status:

- To temporarily disable operations with this hard drive without deleting it from configuration, clear the **Enabled** check box.

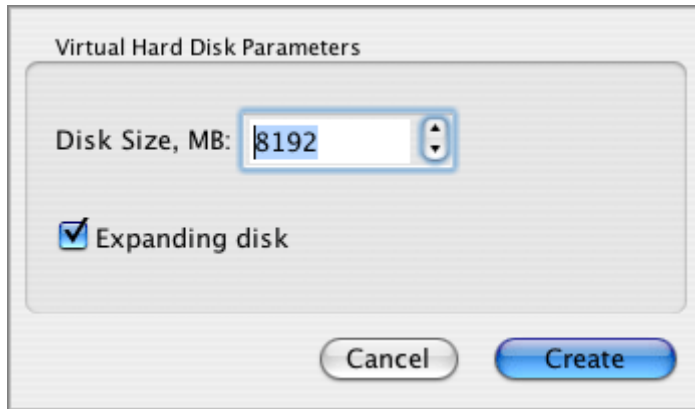
### Emulation:

- If you want to use Boot Camp Windows XP partition as s disk for the virtual machine, select the **Use Boot Camp** option.
- If you want to change the hard drive connected to your virtual machine, choose another .hdd file in the **Image File** field.

**Recreate** button deletes an old hard disk and creates a new one. If you want to replace the current hard disk with a new one do the following:

- 1 Click the **Recreate** button.

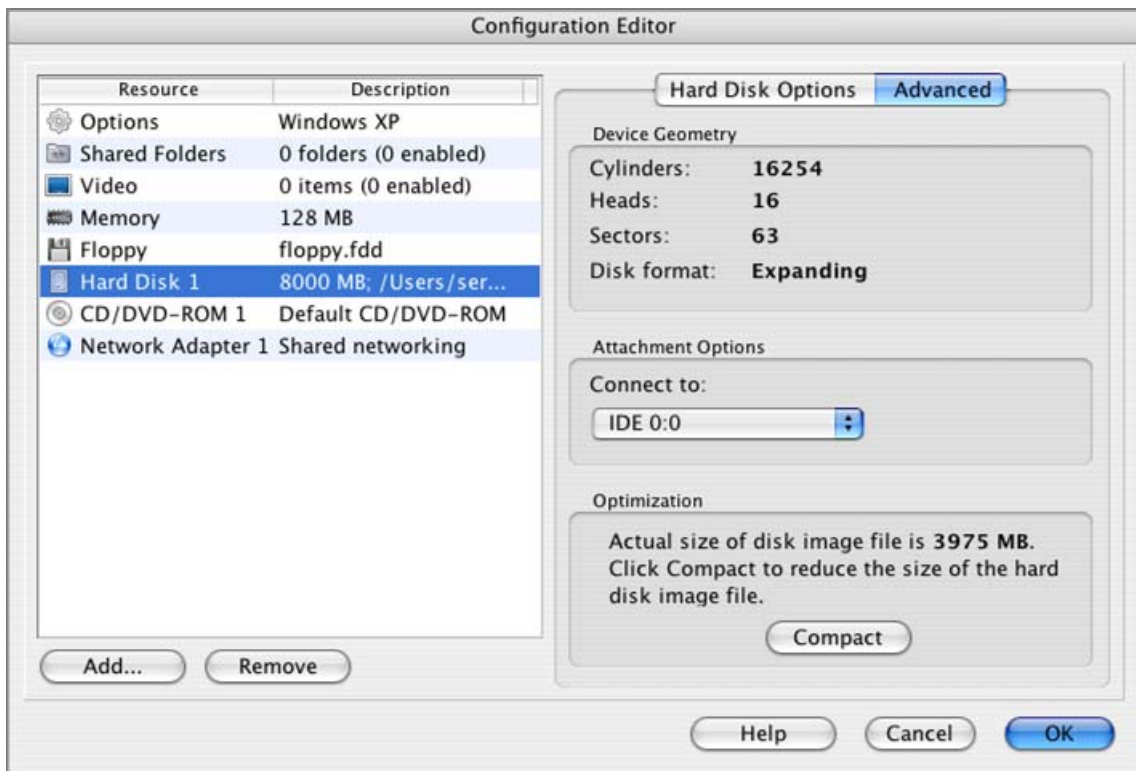
- 2 Create HDD dialog appears. You can specify Disk size and whether the disk should be expanding (page 95) or plain (page 95). Select **Expanding disk** check box if you want the hard disk to be expanding.



- 3 Click **Create**.
- 4 Click **Yes** to confirm that you are going to create a new disk instead of the old one. A new blank disk is now connected to your virtual machine.

**Note:** If while using a hard disk you discover that its size is insufficient, you may increase disk capacity using the Parallels Image Tool (page 215).

### Advanced





**Device Geometry:**

- Fields **Cylinders**, **Heads**, and **Sectors** in this group show geometry of a virtual HDD. Note that the geometry concerns virtual disk, not a real one where virtual disk is stored.
- **Disk format** label indicates virtual hard disk format. See the **Format of The Virtual Disk** (page 95) in the **Hard Disk Images** topic.

**Attachment Options:**

- Choose the IDE channel to connect to the HDD image in the **Connect to** field. If you want the HDD to be startup one select *IDE 0 : 0*.

Note that if you set two startup drives at once - hard disk (IDE 0:0) and CD/DVD-ROM (IDE 0:1) - the guest OS will try to boot according to the sequence set on the **Booting Options** (page 104) tab under the **General Options**.

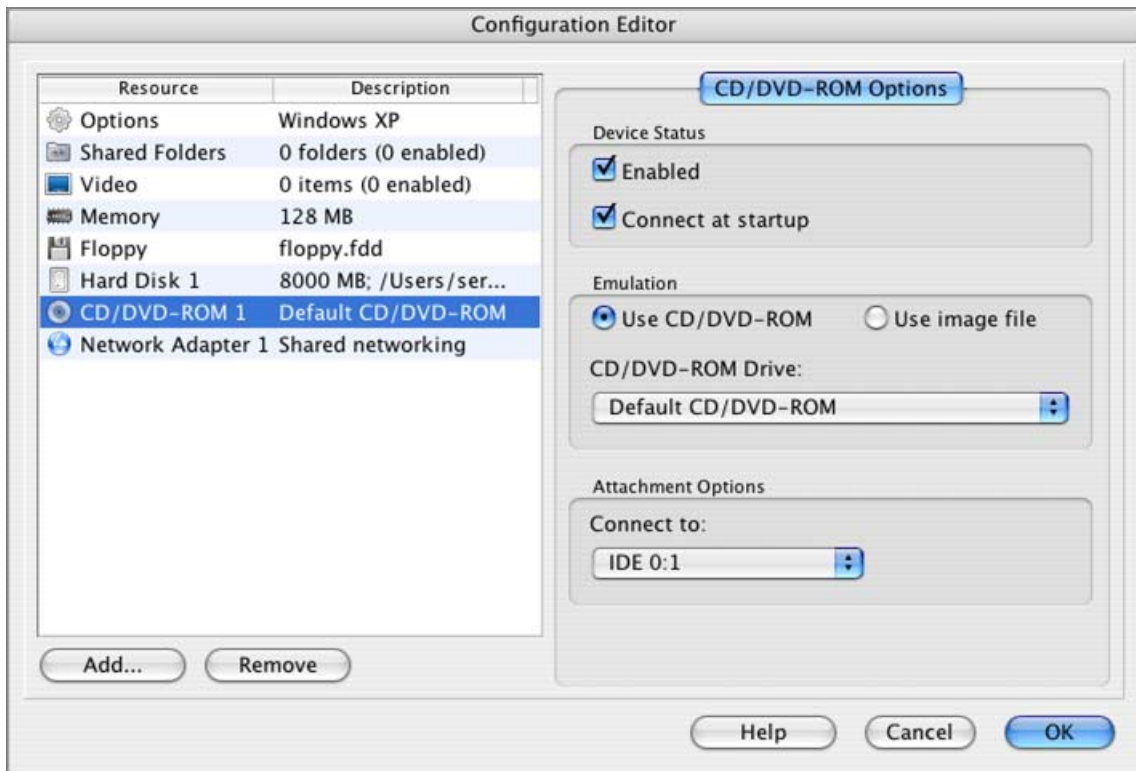
**Optimization:**

- If the selected disk is an expanding-type disk, the **Compact** button starts the process of compacting the disk. See the **Compacting Virtual Disk** (page 167) topic for information on this feature. The **Compact** button is disabled for plain virtual disks.

## CD/DVD-ROM Options

A virtual machine CD/DVD-ROM drive can be connected to a real CD/DVD-ROM drive of your computer as well as to a CD/DVD .iso image. To get information on using CD/DVD images in Parallels Desktop look in CD/DVD Real Discs and Images (page 100) topic.

Up to four IDE devices (hard disks and CD/DVD-ROM drives) can be connected to a virtual machine currently. This means, that there can be no more than four hard drives plus CD/DVD-ROM drives, i.e., it doesn't matter how many of IDE devices are hard drives and how many are CD/DVD-ROMs.



### Device Status:

- If you wish to temporarily disable a CD/DVD-ROM drive without deleting it from configuration, deselect **Enabled** check box.

**Note:** If you start the operating system with the CD/DVD-ROM drive disabled, you cannot change this option when virtual machine is running.

If the CD-DVD-ROM drive is enabled, it can be connected/disconnected while VM is running. Media that the CD/DVD-ROM drive can access may also be changed.

- If the CD/DVD-ROM drive is enabled, you can select the **Connect at startup** check box to start the guest OS with the CD/DVD disc inserted.

**Emulation:**

- If you have a physical CD/DVD-ROM on your computer, you can use it in the virtual machine. In this case, select the **Use real CD/DVD-ROM** check box, the name of the physical CD/DVD-ROM (for example, D:) will be shown in the **CD/DVD-ROM drives** drop-down menu and available for selection.

---

**Note:** To be able to connect the virtual machine CD/DVD-ROM drive to a real CD/DVD-ROM drive, you should have system privileges to access the real device. Otherwise the real CD/DVD-ROM drive will not appear in the list of available devices even though it is installed on your computer.

---

- If you want to use a CD/DVD image (e.g., the `.iso` file), select the **Use image file** flag. As you select it, another field where you can enter the CD/DVD image file name appears below. Specify the path to your CD/DVD image file or click the **Browse** button and locate the CD/DVD image file.

**Attachment Options:**

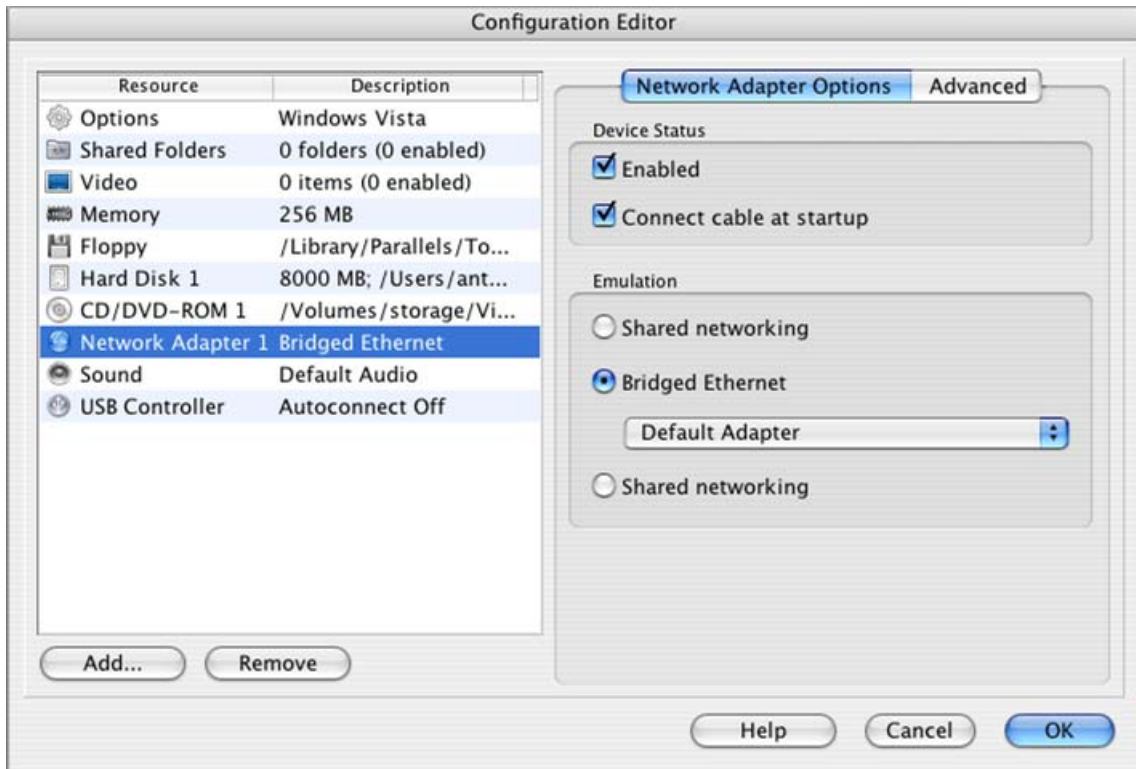
- Choose the IDE channel to connect to CD/DVD-ROM image in the **Connect to** list. If you want the CD/DVD-ROM to be the startup drive select `IDE 0:1` in the list.

Note that if you set two startup drives at once - hard disk (IDE 0:0) and CD/DVD-ROM (IDE 0:1) - the guest OS will try to boot according to the sequence set on the Booting Options (page 104) tab of the **General Options**.

## Network Adapter Options

In the current version of Parallels Desktop a RTL8029 (NE2000 compatible PCI card) network adapter is supported.

In a Linux guest OS, to be able to access an external network in the virtual machine, a `ne2k-pci` driver should be loaded into the Linux kernel. It is included by default, however if you are going to recompile the kernel remember to select the `ne2k-pci` component. In a FreeBSD guest OS you need to have the `if_ed.ko` module loaded.



### Device Status:

- If you wish to temporarily disable network support in the virtual machine without deleting the network adapter from configuration, deselect the **Enabled** check box. When the **Enabled** check box is selected, the options and fields for configuring the network become active.
- If network adapter is enabled, you can select **Connect at startup** check box to start the guest OS with network adapter connected.

### Emulation:

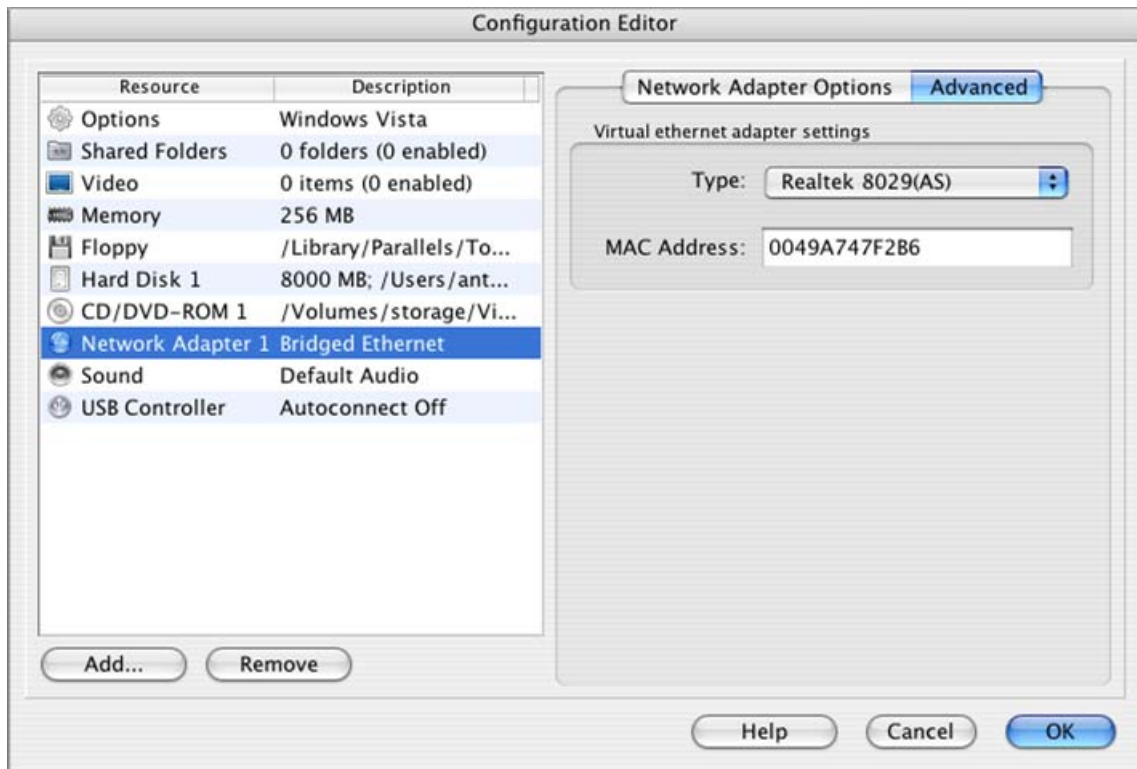
In the **Emulation** group, you can select the type of network adapter to be used in your guest OS.

- **Bridged Ethernet** networking is intended to access local network and Internet using physical Ethernet adapter of your computer. A virtual machine is treated as a separate computer and should be configured the same way as a real one.

If you select the **Bridged Ethernet** radio button, the drop-down list below will show a list of all physical network adapters available on your computer. Choose one of them to connect to your virtual adapter. See [Bridged Ethernet Networking](#) (page 125) to learn more about this type of networking.

- Select **Host-only networking** if you don't want your virtual machine to be accessible from outside your Mac, or network interfaces of your Mac are off. When you set this option, your virtual machine will be connected to Mac and other virtual machines, but will be disconnected from Internet. Creating Host-Only Network (page 126) topic discusses how to configure a host-only network.
- Select **Shared networking** if you want to provide Network Address Translation (NAT) feature to your virtual machine. See Shared Networking (NAT) (page 125) to learn how to configure this type of networking.

## Advanced



This tab allows you to specify a network driver to be used in your guest OS. In the current version of Parallels Desktop a RTL8029 driver for the Ethernet adapter is supported. It is already selected in the **Type** field.

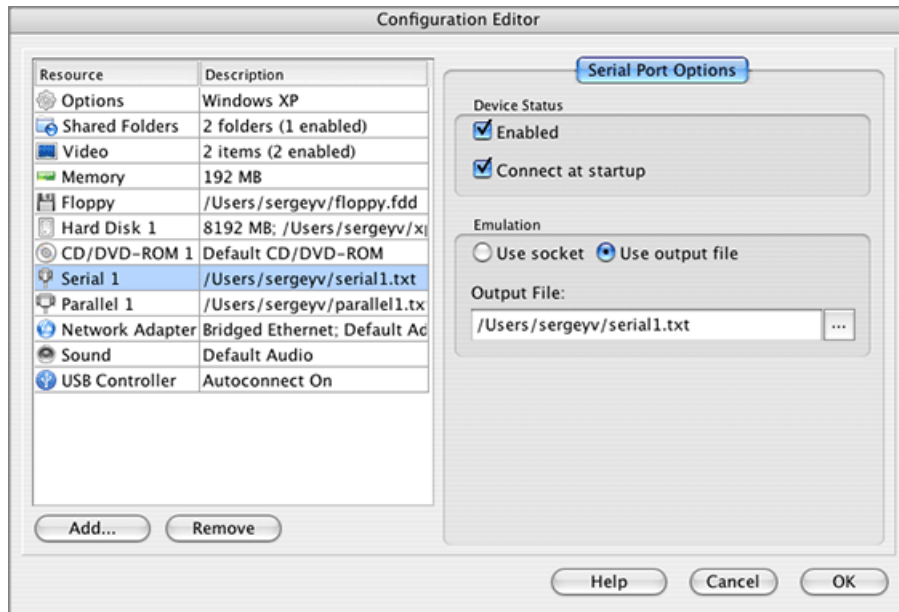
You can find native Realtek RTL8029 drivers for many different guest OSes in the Parallels Tools (page 71) pack shipped together with the Parallels Desktop.

In Windows 2000/XP/2003 guest operating systems you can improve network performance by installing a specially developed PRLETH driver that can be found in the Parallels Tools pack.

A **MAC address** is generated automatically but can be changed manually. If you decide to change it, please make sure that the number is unique inside your network.

## Serial Port Options

Parallels Desktop allows up to four serial ports to be connected to a virtual machine.



### Device Status:

- If you wish to temporarily disable operations with a serial port without deleting it from configuration, deselect the **Enabled** check box.

---

**Note:** If you start the operating system with the serial port disabled, it can not be connected/disconnected while the VM is running.

---

- If you have enabled the port, you can select the **Connect at startup** check box to start the guest OS with this port connected.

### Emulation:

Parallels Desktop suggests two methods of serial port emulation:

- using socket technology (**Use socket** option).

If you have selected **Use socket**, the **Socket Name** field appears containing a default socket name. Use it or type a new name that should subject to the following rules. The name should begin with `/tmp/`, i.e. it should be in the form `/tmp/<socket>`. If a name doesn't subject to the rule, then after virtual machine is started you will get the error message: "Com Port <number>: Unable to open <port name> device".

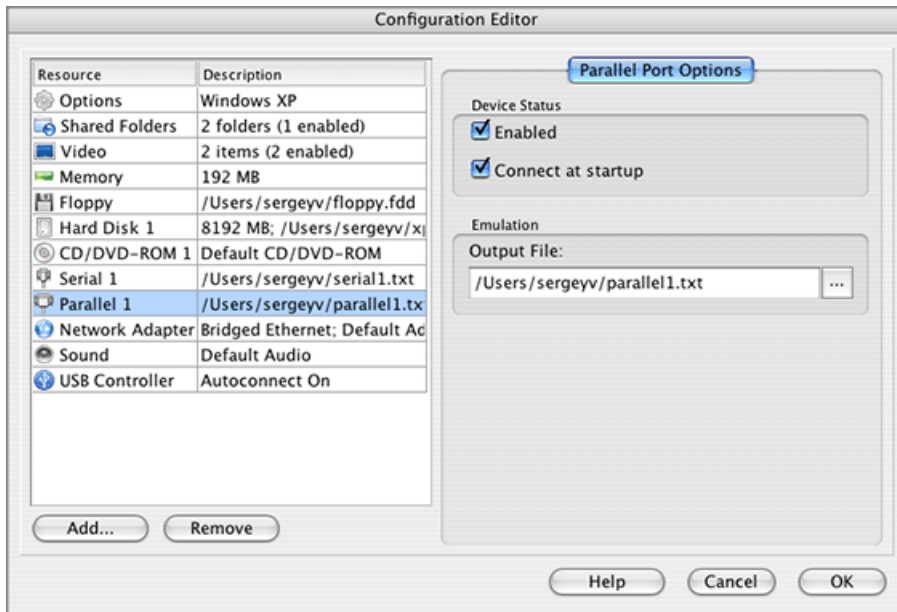
In the second field select a role at this end of the socket.

- using an output file (**Use output file** option).

You can attach the existing file using the **Browse** button or create a new one. The new file is created in the virtual machine folder.

## Parallel Port Options

Parallels Desktop allows up to three parallel ports to be connected to a virtual machine.



### Device Status:

- If you wish to temporarily disable operations with a parallel port without deleting it from configuration, deselect the **Enabled** check box. If the parallel port is enabled, it can be connected/disconnected while the VM is running.

---

**Note:** If you start the operating system with the parallel port disabled, you cannot change this option when the virtual machine is running.

---

- If you have enabled a port, you can select the **Connect at startup** check box to start the guest OS with this port connected.

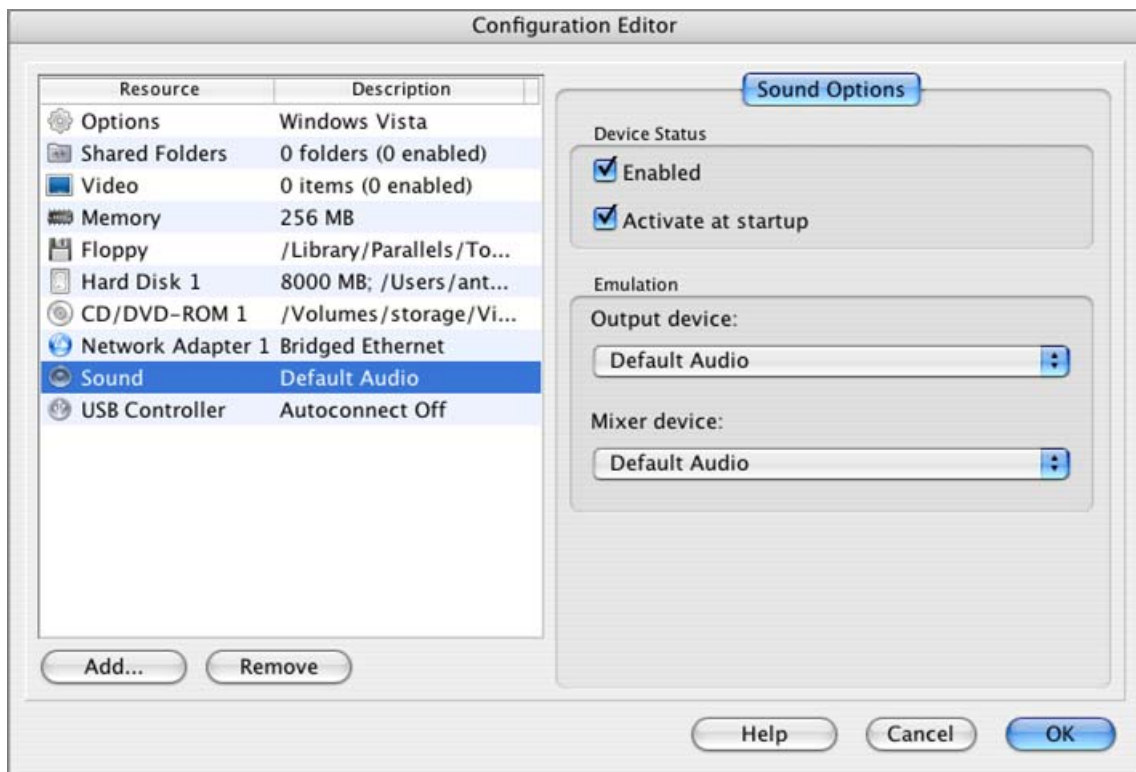
### Emulation:

The current version of Parallels Desktop suggests only one method of parallel port emulation:

- using an output file (**Use output file option**).

You can attach the existing file using the **Browse** button or create a new one. The new file is created in the virtual machine folder.

## Sound Options



Parallels Desktop virtualizes the Realtek AC'97 compatible sound card.

Device status:

- **Enable** option allows/prohibits using the sound device in the virtual machine. If the sound device is enabled, it can be connected/disconnected while the VM is running. However if you wish to temporarily disable operations with a sound device without deleting it from configuration, deselect the **Enabled** check box.

---

**Note:** If you start the operating system with the sound device disabled, you cannot change this option when the virtual machine is running.

---

- To start the guest OS with the sound device activated, select the **Activate sound at startup** check box.

Emulation:

- After the sound is enabled, the **Output Device** field appears containing a list with the *Default Audio* and *Null Device* items. As a rule we recommend to select the *Default Audio* device. *Null Device* is the choice for situations when you don't want to produce sound while the sound card is required by the guest OS'es applications.
- The same situation occurs with the **Mixer Device**. As a rule we recommend to select the *Default Audio* device. *Null Device* is the choice for situations when you don't want to produce sound while the sound card is required by the guest OS'es applications.

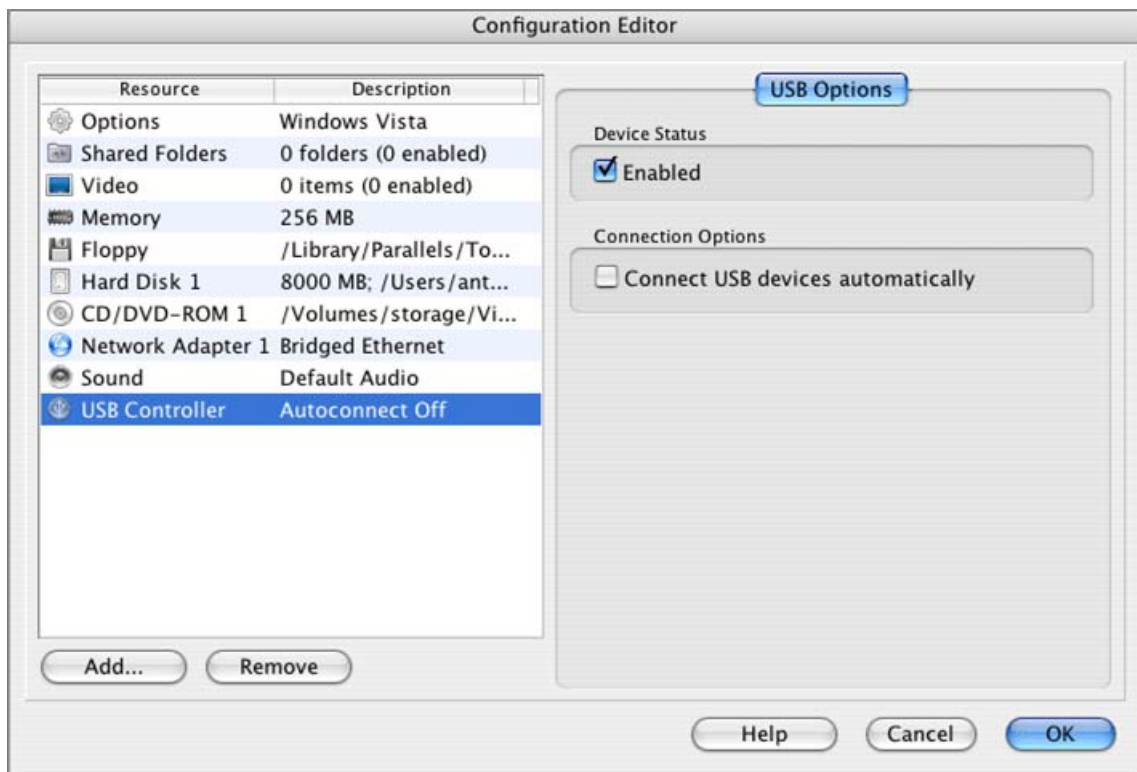
---

**Note.** If you are not satisfied with the quality of sound produced, a special AC'97 sound driver (page 72) is available for Windows 95/98/ME/NT/2000 guest OSes and for OS/2 and eComStation guest OSes. You can install it instead of standard one.

---



## USB Options



### Device Status:

- **Enable** option allows/prohibits using USB devices in the virtual machine. If the USB is enabled, USB devices can be connected/disconnected to the virtual machine while it is running. However, if you wish to temporarily disable USB operations without deleting it from configuration, clear the **Enabled** check box.

---

**Note:** If you start the operating system with the USB disabled, you cannot change this option when the virtual machine is running.

---

### Connection Options:

- **Autoconnect USB devices.** Select this option if you want the running virtual machine to capture new USB devices connected to your Mac. A new device can be captured if there is no more than one USB device currently active.

---

## Adding/Removing and Configuring New Devices

Adding new devices to a virtual machine is almost like 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 disks and CD/DVD-ROM drives (there can be only 4 IDE devices);
- a floppy drive;
- a network adapter;
- up to four serial ports;
- up to three parallel ports;
- a sound device;
- a USB controller.

### Using Add Hardware Assistant

New devices are added using the **Add Hardware Assistant**. In addition, if you add a floppy drive, a new blank `.fdd` image can be created at the same time and connected to the floppy drive. When adding a virtual hard disk you may choose between connecting an existing hard disk image and creating a new one.

---

**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.

---

To add a new device to the virtual machine do the following:

- 1** Open the virtual machine to which you want to add new device, but do not power on it. Or stop the virtual machine if it is running.
- 2** Select **Edit Configuration** in the **Edit** menu or click any device link on the **Property Page**.
- 3** **Configuration Editor** opens. In the lower left part of the **Configuration Editor** window click the **Add** button.
- 4** The **Add Hardware Assistant** greets you with the **Welcome to Add Hardware Assistant** screen. Click **Next**.
- 5** On the **Select hardware** screen you should choose the device you want to add to your machine.

The **Available Hardware** list contains devices available for adding. If the VM configuration already includes the maximum allowed number of a particular device type, this device type will not appear in the **Available Hardware** list. For instance, only one floppy drive is allowed.

The wizard allows you to add only one device at a time.



On this screen you may prefer to add devices immediately without specifying its options, in order to save time. (You may set options later in the Configuration Editor). To do so, click the **Add Instantly** button after selecting the desired device. The new device is added immediately with standard options, and some of them are not set at all (for example, the instant hard disk has a size of zero).

To set the options of the device being added click the **Next** button.

- 6 Follow the assistant's screens to configure the new device. You should select the device type, the media it is connected to, and the options specific to the device and media type. All of them are described under the Editing Virtual Machine Configuration (page 102) section. The final options screen contains the **Finish** button.

## Removing Devices

Most virtual machine devices can be removed from the configuration. Memory and those elements of the virtual machine configuration that are not devices but rather collections of settings can not be removed. These elements are: Options, Shared Folders, and Video.

---

**Note.** Any device, except memory, can be disabled in the Configuration Editor (page 102) without removing it from configuration. Uncheck the **Enabled** check box of the desired device.

---

To remove a device:

- 1 Open the virtual machine from which device you want to remove, then open the Configuration Editor by selecting **Edit->Edit Configuration** in the menu.
- 2 Select the device you want to remove in the left part of the **Configuration Editor** window.
- 3 Click the **Remove** button.

---

## Networking in a Virtual Machine

Parallels Desktop allows three types of networking in a virtual machine:

- Shared Networking (NAT).
- Bridged Ethernet
- Host-only networking

This section describes all these types of networking and ways of configuring them.

## Shared Networking (NAT)

By default, virtual machines created during **Express** or **Typical OS** installation use Shared Networking (NAT) mode for network connections. In this mode your virtual machine can access the Internet while being invisible for other computers except your Mac.

This mode is preferred in the following cases:

- your computer accesses the Internet via a modem or another non-Ethernet device,
- as a mobile user, you access the Internet from Internet cafes, hotel rooms and on flights,
- you want to access the Internet in a virtual machine but you are concerned about security,
- you have problems with Bridged Ethernet mode.

Parallels NAT adapter installed along with Parallels Desktop provides Shared networking support in Mac OS X. IP addresses for the virtual machines are provided by Parallels DHCP server connected to the Parallels NAT adapter.

### Configuring Shared Networking for a Virtual Machine

Open **Configuration Editor** for the virtual machine and on the **Network Adapter Options** (page 116) tab select the **Shared networking** option.

If you want your virtual machine to have the IP address from specific range, then:

- Select **Parallels Desktop->Preferences->DHCP** in the Parallels Desktop menu. In the **DHCP** (page 88) tab, specify a range of IP addresses to be assigned to the virtual machines and your primary OS in the **DHCP Scope for Shared Networking** group.

---

**Note** that this scope of addresses must be different from scopes of all other networks your Mac has access to.

---

## Bridged Ethernet Networking

If your virtual machine uses the Bridged Ethernet type of connection to the network, 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 use **Bridged Ethernet** mode do the following:

- 1** Open **Configuration Editor** for the virtual machine and on the **Network Adapter Options** (page 116) tab select the **Bridged Ethernet** mode in the **Emulation** group
- 2** Choose the proper network adapter from the list. The **Default Adapter** option is recommended. It connects to your Mac's **Built-in Ethernet** or **AirPort** whichever is currently active.
- 3** Configure network options in the guest operating system.

**Note.** In case your Mac uses AirPort with WEP Enterprise, it may not be possible for the virtual machine to get its own IP-address. Use other type of network connection.

If you encounter problems when using Bridged Ethernet mode or have special security concerns, consider Host-Only Networking.

## Host-Only Networking

Parallels Desktop provides a closed network accessible only to Mac OS X and virtual machines running on it. The Mac OS X is connected to this network via the **Parallels Host-Guest** adapter installed along with Parallels Desktop.

IP addresses for machines in a host-only network are provided by Parallels DHCP server connected to Parallels Host-only Adapter. DHCP server is started automatically whenever you launch Parallels Desktop.

### Configuring Host-only Networking

Open **Configuration Editor** for the virtual machine and on the **Network Adapter Options** (page 116) tab select the **Host-only networking** option.

If you want your virtual machine to have the IP address from the specific range, then:

- Select **Parallels Desktop->Preferences->DHCP** in the Parallels Desktop menu. In the DHCP (page 88) tab, specify a range of IP addresses to be assigned to the virtual machines and Mac OS X in the **DHCP Scope for Host-only Networking** group.

---

**Note** that this scope of addresses must be different from scopes of all other networks your Mac has access to.

---

---

## Using Shared Folders

Shared folders are folders in your Mac file system that are visible to the guest OS also. These folders are used for exchanging files between the primary OS and a virtual machine or between several virtual machines.

In the primary OS shared folders appear as usual folders, while in guest OS they are objects of the network neighborhood.

Using shared folders is possible for the following guest OSes:

- Window 2000/XP/2003/Vista.



## Setting Up a Shared Folder

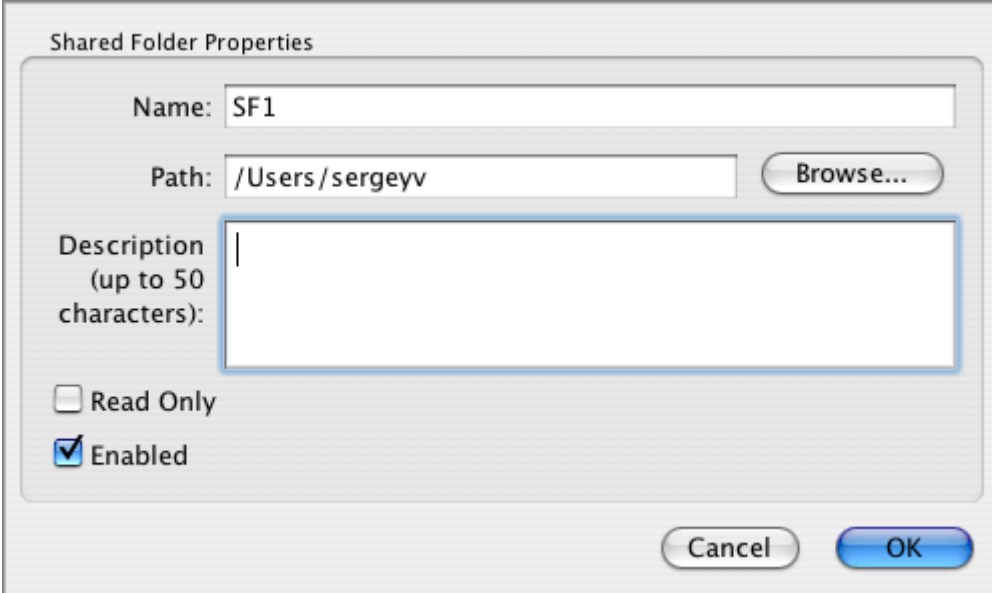
Setting Up a shared folder requires two steps:

- 1 Adding a shared folder(s) in your virtual machine configuration.
- 2 Installing Parallels Tools in your guest OS.

See below for detailed instructions.

### Adding a Shared Folder

- 1 Open the virtual machine configuration, click the  button to open the Configuration Editor.
- 2 In the Configuration Editor, select the Shared Folders tab (see the Shared Folders (page 107) topic). Select the Enable shared folders option.
- 3 In the Shared Folders tab, click the  button to open the Shared Folder Properties screen.
- 4 In the Shared Folder Properties screen:
  - specify a name for the folder which will appear in your guest OS in the Name field;
  - specify a folder in your Mac OS X file system that will be shared in the Path field;
  - if you want to restrict writing to this folder from inside the guest OS, select the Read Only check box. You will be able to save files to this folder in the primary OS only;
  - make sure the Enabled check box is selected;
  - and click OK.



Shared Folder Properties

Name: SF1


Path: /Users/sergeyv Browse...

Description (up to 50 characters):

Read Only

Enabled

Cancel OK

- 5 Click OK in the Configuration Editor.
- 6 Click  to save the virtual machine configuration.

If you have not installed the Parallels Tools in a virtual machine, proceed to the [Installing Parallels Tools in the Guest OS](#) subtopic. If you have them installed:

- power on your virtual machine and view shared folders in your guest OS.

### Installing Parallels Tools in Guest OS

Parallels Tools includes the Shared Folders tool which is necessary for a guest OS to view the shared folders. See a full description of this tool in the [Parallels Tools Overview](#) (page 72).

Installation of Parallels Tools is performed just after you have created a new virtual machine and installed a guest OS in it. See [Installing Parallels Tools](#) (page 71) for detailed descriptions on how to do so in a particular guest OS. We recommend that you perform the *typical* installation, but if you perform a *custom* installation make sure the Shared Folders tool is selected.

## Viewing Shared Folder in Guest OS

There are two ways to view the contents of the shared folders in the guest OS.

### Easy Way

Shared Folders Options (page 166) tab in Parallels Tools Center contains the **Place shortcut on the desktop** option. If it is selected viewing contents of shared folders is simple:

- Click the **Parallels Shared Folders** icon on the desktop of a running virtual machine.

### General Way

- 1 In the virtual machine, open **Windows Explorer**.
- 2 In Explorer, select **My Networks Places->Entire Network** and find the **Parallels Shared Folders**.
- 3 Click the **Parallels Shared Folders** to view the list of shared folders available in your virtual machine.

---

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

---



---

## Using USB Devices in a Virtual Machine

The current version of Parallels Desktop emulates the 2-port USB 1.1 controller. This means that up to two USB peripherals can be connected to a virtual machine simultaneously. This number does not include a keyboard, mouse, and USB microphone that will be connected in any case.

Parallels Desktop lets you connect USB devices to virtual machines automatically. See the USB Options (page 121) section to learn how to turn this option on. And see the Connecting USB Devices (page 158) section to learn how to connect a USB device to a virtual machine both automatically and manually.

---

## Custom Screen Resolutions


Virtual machine, like a real computer, allows to change the resolution of its monitor. You may use standard screen resolutions, such as 640x480, 800x600, etc, but with virtual machine you have one more degree of freedom - non-standard screen resolutions. Use them if you want the virtual machine monitor to occupy a certain part of your computer monitor.

Procedure of defining custom resolution is different in different guest OSes.

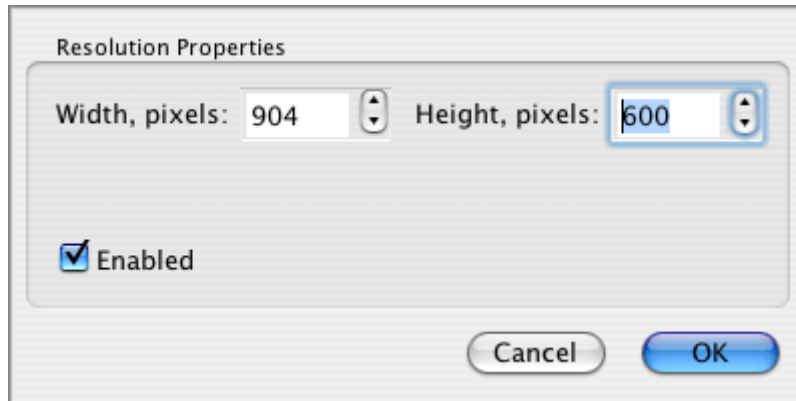
### In Windows Guest OSes

Parallels Desktop allows you to define up to 10 different resolutions for a Windows virtual machine and change them when running the guest OS. Note that these resolutions should be no less than 800x600.


#### Adding a Screen Resolution

- 1 Open the virtual machine configuration you want to add a resolution to, click the  button to open the Configuration Editor.
- 2 In the Configuration Editor, select **Video** in the Resource list.
- 3 In the Screen Resolutions tab (see Video (Screen Resolutions) (page 108) ), make sure the **Enable custom screen resolutions** option is selected.
- 4 Click the **Add** button to open the Resolution Properties dialog.
- 5 In the Resolution Properties dialog:
  - set the desired resolution options in the **Width, pixels** and **Height, pixels** fields;
  - select the **Enabled** check box if you want this resolution to be available for selection in the guest OS;

click OK.



6 Click OK in the Configuration Editor.

7 Click  Save to save the virtual machine configuration.

## Changing Screen Resolution for a Virtual Machine

To change screen resolution:

- Power on your virtual machine.
- Select the preferred resolution as it is usually done in your guest OS. The guest OS will propose for selection all the resolutions available in the Video (Screen Resolutions) (page 108) tab for which the **Enabled** option is selected.

If you have defined a non-typical resolution and do not see it in the list of available resolutions in the running guest OS, this means that your guest OS can not use this resolution.

## In Linux Guest OSes

To run a Linux virtual machine with a non-standard resolution do the following:

1 In a terminal, generate xorg.conf modeline by executing

```
gtf <width> <height> <refresh>
```

**Note.** For LCD monitors, used in notebooks, the refresh should not to be more than 60.

The output string may look for example as follows:

```
Modeline "1440x900_60.00" 106.47 1440 1520 1672 1904 900
901 904 932 -HSync +Vsync
```

"1440x900\_60.00" is the mode name; 1440 is width, 900 is height, and 60 is refresh of the new mode that were given to the gtf.

2 Open xorg.conf and paste the output of gtf to "Monitor" section. Monitor section should look approximately as follows:

```
Section "Monitor"
    Identifier "monitor1"
    VendorName "Generic"
    ModelName "1024x768 @ 70 Hz"
```

```

    HorizSync 31.5-57.0
    VertRefresh 50-70

    # TV fullscreen mode or DVD fullscreen output.
    # 768x576 @ 79 Hz, 50 kHz hsync
    ModeLine "768x576"      50.00  768  832  846 1000  576
590  595  630

    # 768x576 @ 100 Hz, 61.6 kHz hsync
    ModeLine "768x576"      63.07  768  800  960 1024  576
578  590  616

    Modeline "1440x900_60.00" 106.47  1440 1520 1672 1904
900 901 904

932  -HSync +Vsync
EndSection

```

- 3 In `xorg.conf`, locate the section "Screen", subsection "Display", and string that begins with the "Modes" keyword. It contains modes list. Insert name of the new mode in the beginning of the modes list.

---

**Note.** Make sure, that "Depth" property of the subsection "Display" equals to "DefaultDepth" value defined in section "Screen".

---

- 4 If you use Mac computer of ordinary size, just restart X Server.
- 5 If you use MacBook or MacBook Pro, you have to take one more step. In the "Device" section change the driver from "fbdev" to "vesa". Now, save the changes and restart your virtual machine.

---

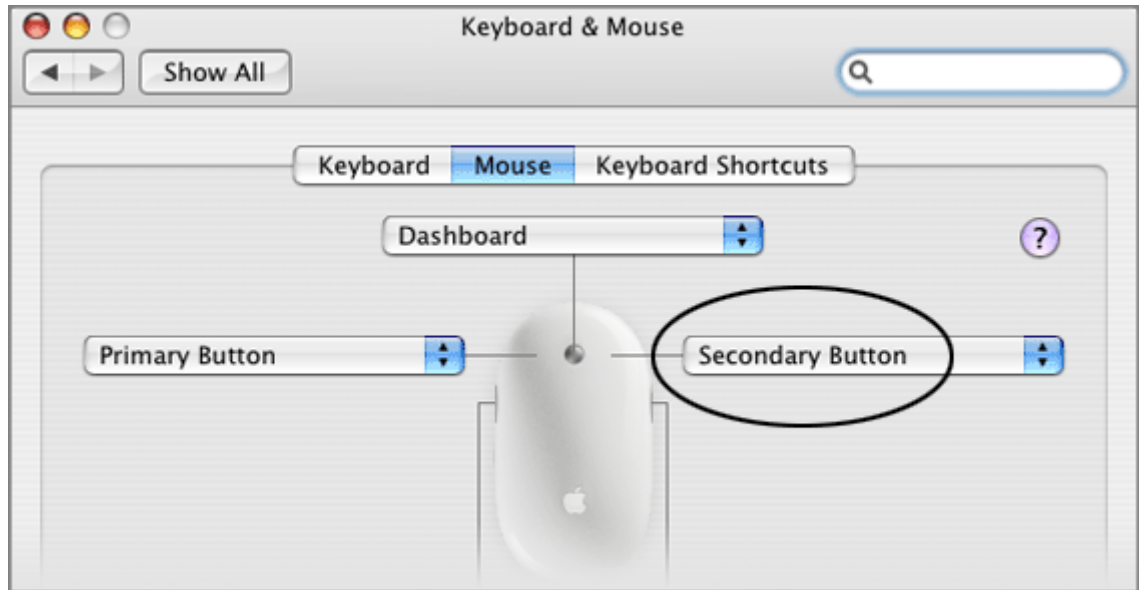
## Using Mouse in a Virtual Machine

### How to Configure Mac to Use the Right Mouse Key

By default, right button of Mac mouse is configured to perform the same functions as the left button (if your mouse has the right button at all). This is not likely to be comfortable in Windows guest OSes. You may configure your mouse in such a way that its right button will perform its specific functions:

- 1 Go to the Apple System menu, select System Preferences, and in the Hardware section click Keyboard&Mouse.

- 2 In the Keyboard&Mouse dialog, open the Mouse tab and set for the right button Secondary Button function.



### How to Right-Click If Mouse Does Not Have the Right Key

If your mouse does not have the right key, you probably use the `Ctrl+click` combination instead. Parallels Desktop gives you the option of using the `Ctrl+click` combination for standard selection operation and proposes other ways to perform a right-click in virtual machine. Do one of the following:

- Press a key combination plus mouse click simultaneously.  
By default `Ctrl+Shift+click` the mouse key is defined. You may set other keys on the Preferences -> Hot Keys (page 92) tab.
- Click with delay.  
You have to click and hold the mouse button until the context menu is displayed. Preferred delay is specified on the slider on the Preferences -> Hot Keys (page 92) tab.  
By default this method is disabled and is to be enabled manually on the Preferences -> Hot Keys (page 92) tab.

On MacBook and MacBook Pro you may also use one more method:

- Click the small `Enter` key that is to the right of the space bar and `Apple` key on your keyboard. In Windows guest OSes `Enter` key on Mac keyboard is an analog of `Menu` key on Windows keyboard.

---

# Keyboard Shortcuts in a Virtual Machine

## How to Press F1-F12 and Others Function Keys in MacBook and MacBook Pro

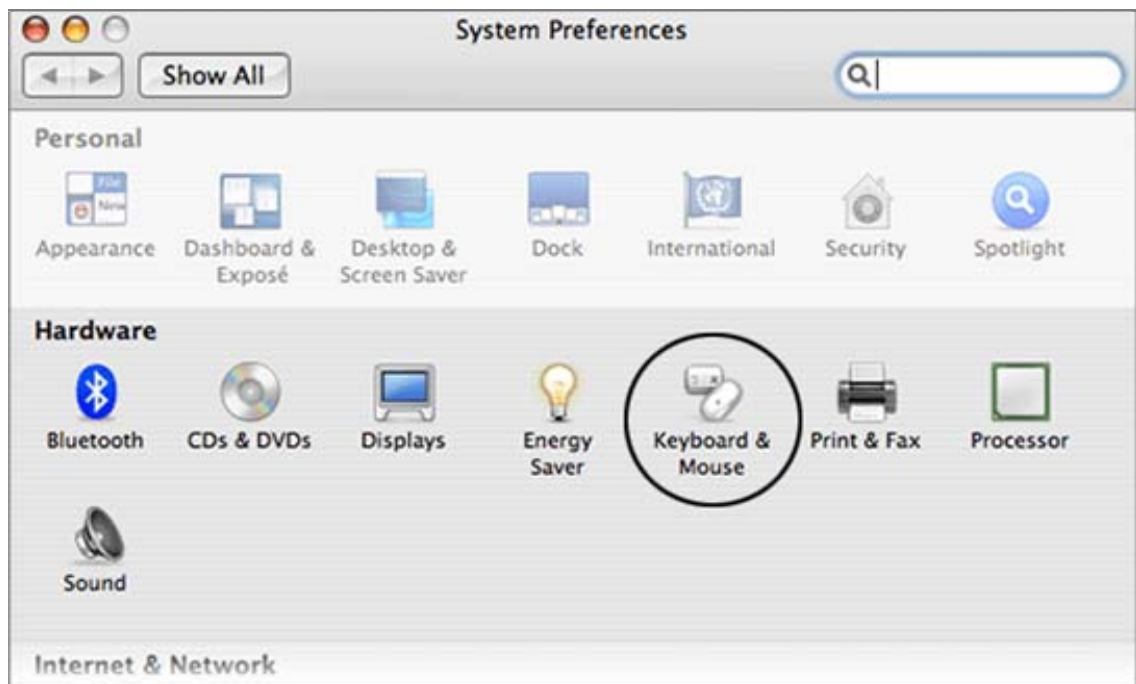
To press F1-F12 in your virtual machine please press Fn+(F1-F12) key combination instead.

If you want to press Ctrl+Alt+Del key combination in a virtual machine, use one of the following techniques (see also Shutting Down and Resetting a Virtual Machine (page 151)):

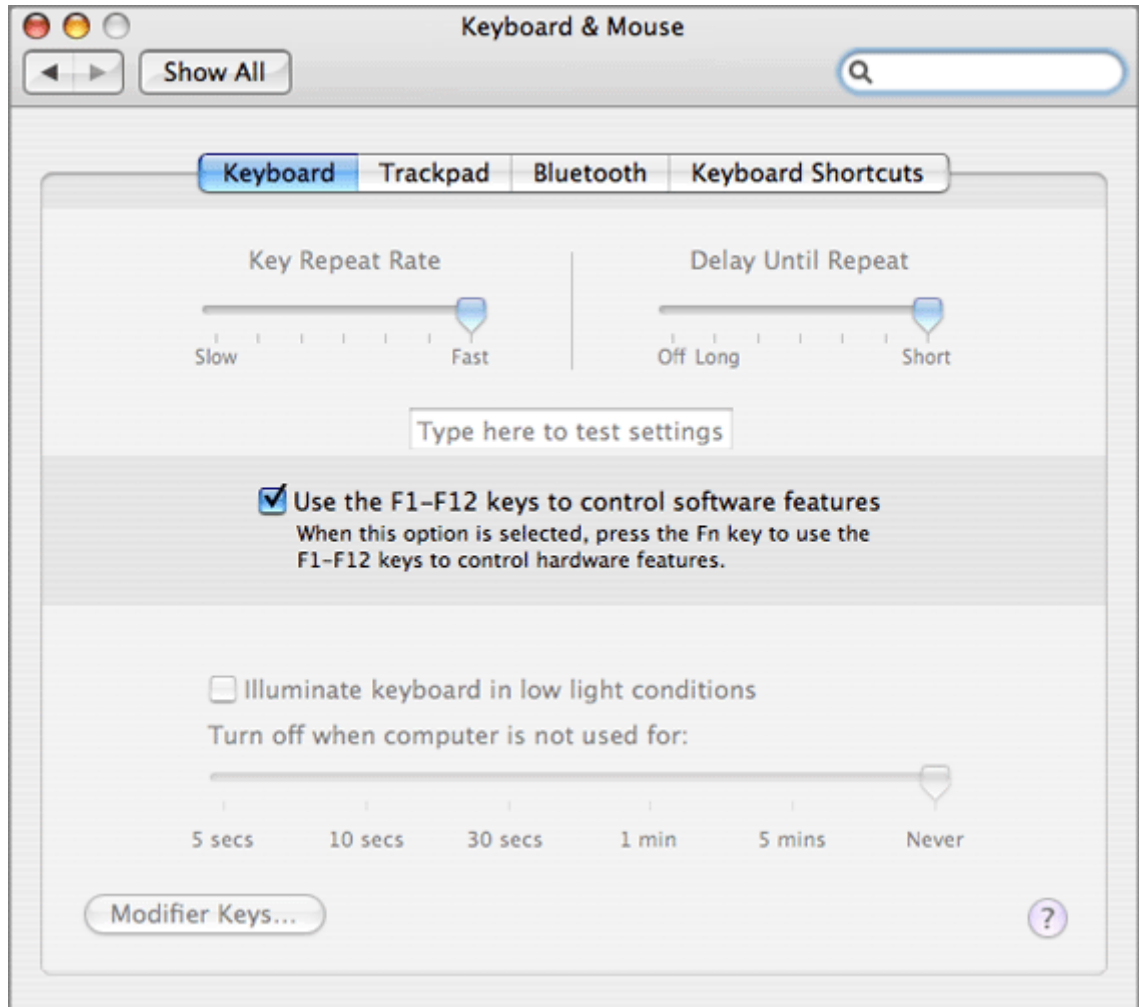
- select VM->Send Key->Ctrl+Alt+Del in menu,
- press Ctrl+Option(Alt)+Del while the keyboard is captured inside a virtual machine window.

If you want F1-F12 keys to be recognized as they are do the following:

- 1 Go to the Apple System menu->System Preferences->Keyboard & Mouse in the Hardware section.



- 2 In the Keyboard&Mouse window, select Keyboard tab and check option Use F1-F12 keys to control software features.



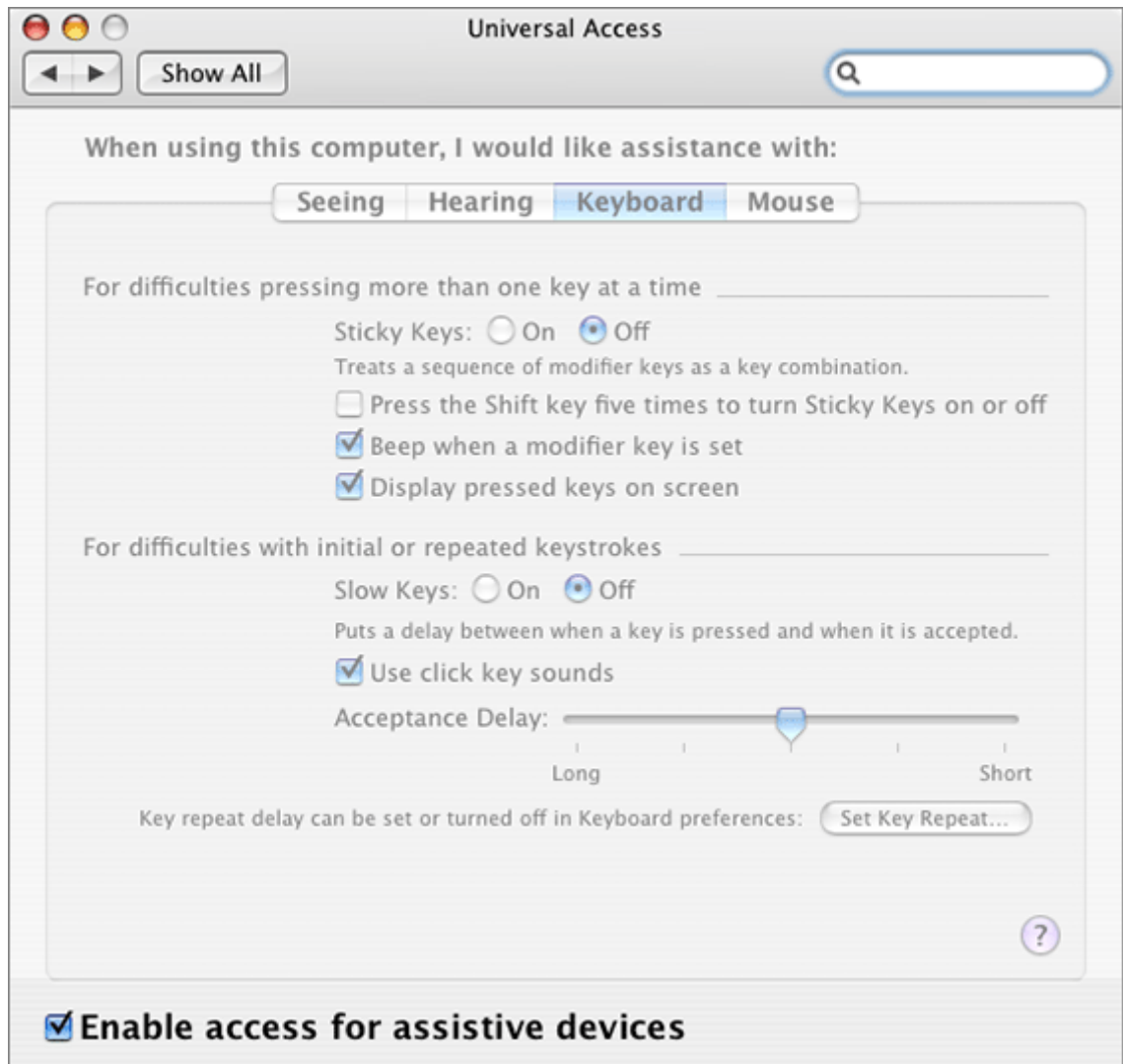
## Using Mac System Keyboard Shortcuts in a Virtual Machine

Mac keyboards have a set of system keys, and problems may result when using these keys in a virtual machine. For instance, the F9 – F12 keys are reserved for Dashboard & Exposé operation, whereas F11 can be handy in Windows Internet Explorer for full screen mode. To be able to use this Mac shortcuts with a virtual machine keyboard, do the following:

- 1 Go to the Apple System menu, open System Preferences, and click Universal Access in the System section.



- 2 In the Universal Access window select Enable access for assistive devices option.




---

## Multi-User Access to a Virtual Machine

By default Parallels Desktop puts a new virtual machine to the private folder of the user created it. This folder is specified in the Preferences/Common screen (see the Common (page 86) topic) and while the virtual machine is stored in that folder, nobody except you can run this virtual machine.

If you want to provide an access to a virtual machine to other users:

- 1 Copy all the components of the virtual machine, in particularly:
  - virtual machine folder,
  - configuration file (.pvs),
  - hard disk image(s) (.hdd),



- saved state file (.sav) (if any),
- CD/DVD image file (.iso) (if any),
- floppy disk image file (.fdd) (if any),
- serial and parallel port output files (.txt) (if any)

to the User/Shared folder of your Mac.

**2** Set proper access rights to all of the copied files and the virtual machine folder. For this:

- right-click on a file and select **Get Info** item in the context menu,
- in the **Info** screen, click **Ownership & Permission** to open that part of the screen,
- for the **You can** option set **Read & Write**,
- click **Details**,
- for the **Other** option select **Read & Write**.



---

## Making Copy of a Virtual Machine

A complete copy of a virtual machine can be created using the Clone Virtual Machine Assistant. A new configuration file and new hard disk drive(s) are made. The clone includes as many hard drives as there are connected to an original machine. By default the assistant puts new files into a new directory, but you may prefer to store them in an existing one. Copies of virtual hard disks are always placed in the same folder with the copy of the configuration file.

Auxiliary devices of the new virtual machine are connected to the same drives or disk images as the source devices. If source CD/DVD-ROM drive is connected to an `.iso` CD/DVD disc image file, this connection is restored in the new machine. The same goes for the floppy drive. However output files of serial/parallel ports, if used, are not transferred from the original VM. In the clone, they are started from scratch.

If a network adapter is included in the original configuration, a new MAC address is generated for the new adapter.

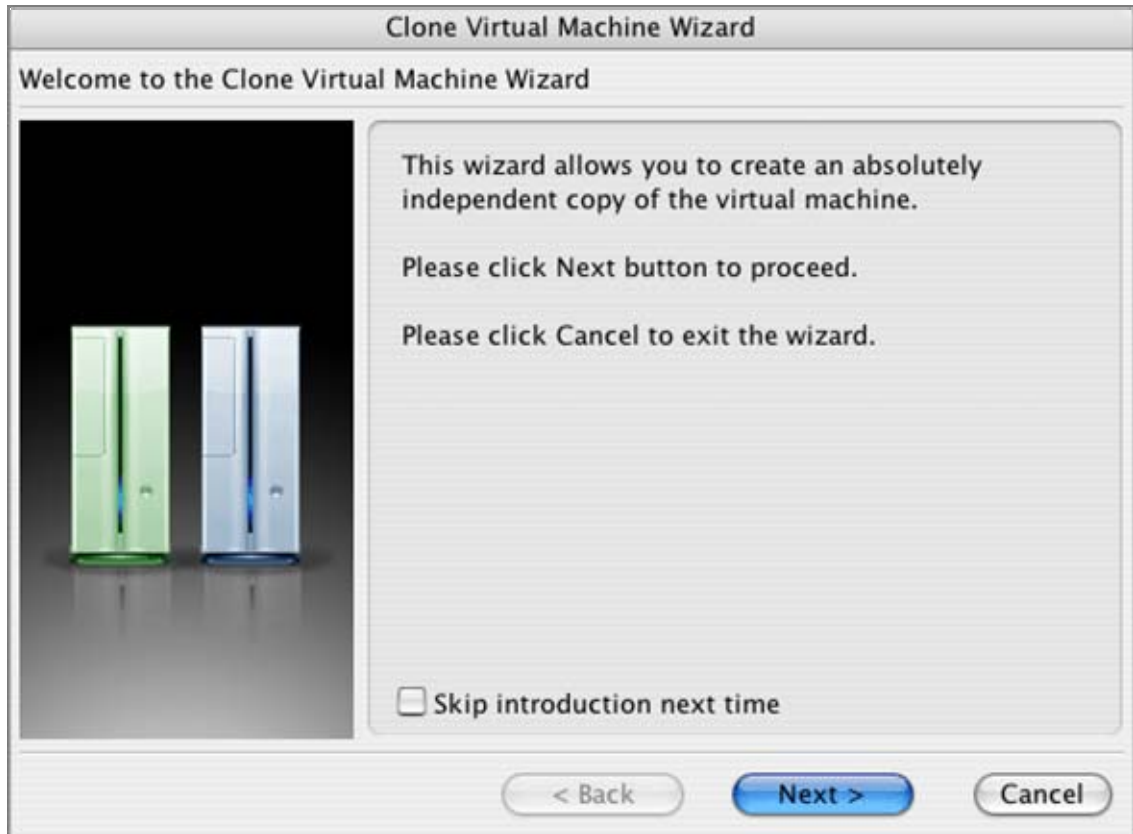
A virtual machine to be copied should be opened and meet the following conditions:

- The guest OS is not running. If it is running, the menu item that starts the assistant is disabled.
- The virtual machine is not opened by another instance of Parallels Desktop.
- It is not a blank virtual machine. Blank virtual machines can not be copied.

To make a clone of a virtual machine:

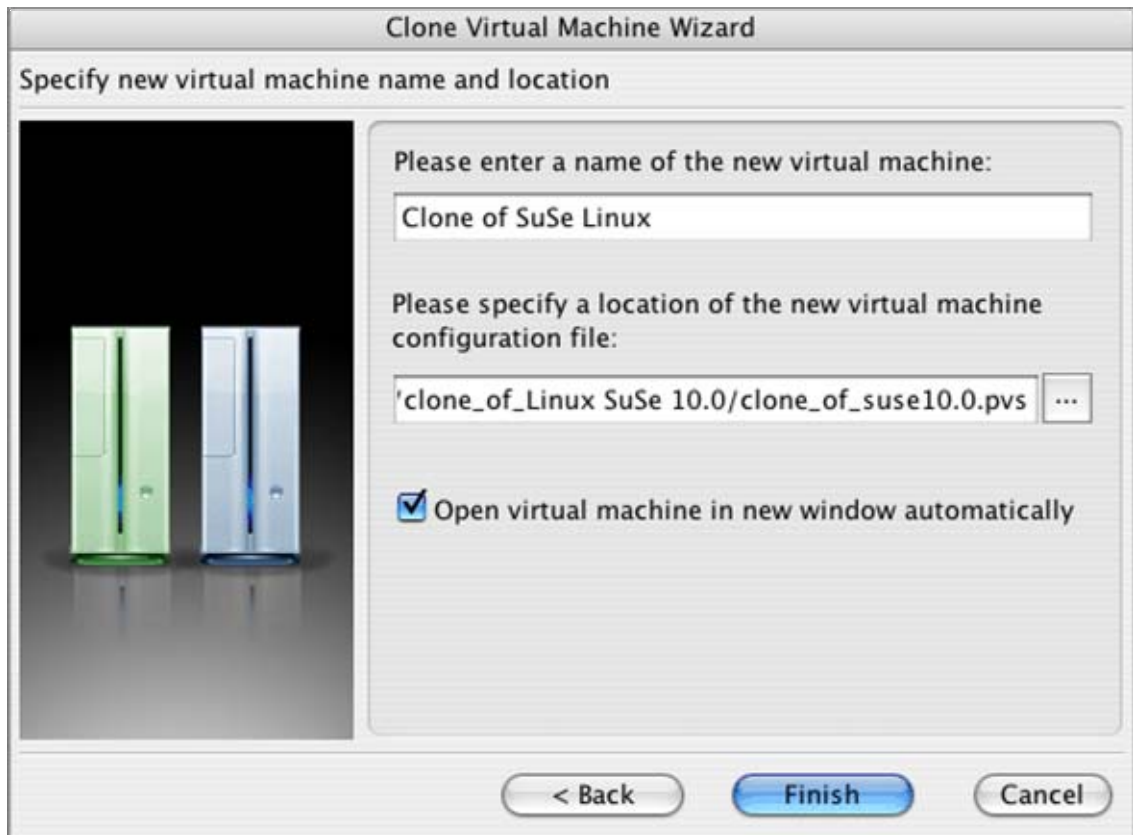
- 1 Open the virtual machine you want to make copy of.

- 2 Select Clone VM in the VM menu. The Clone VM Wizard starts. Click Next.



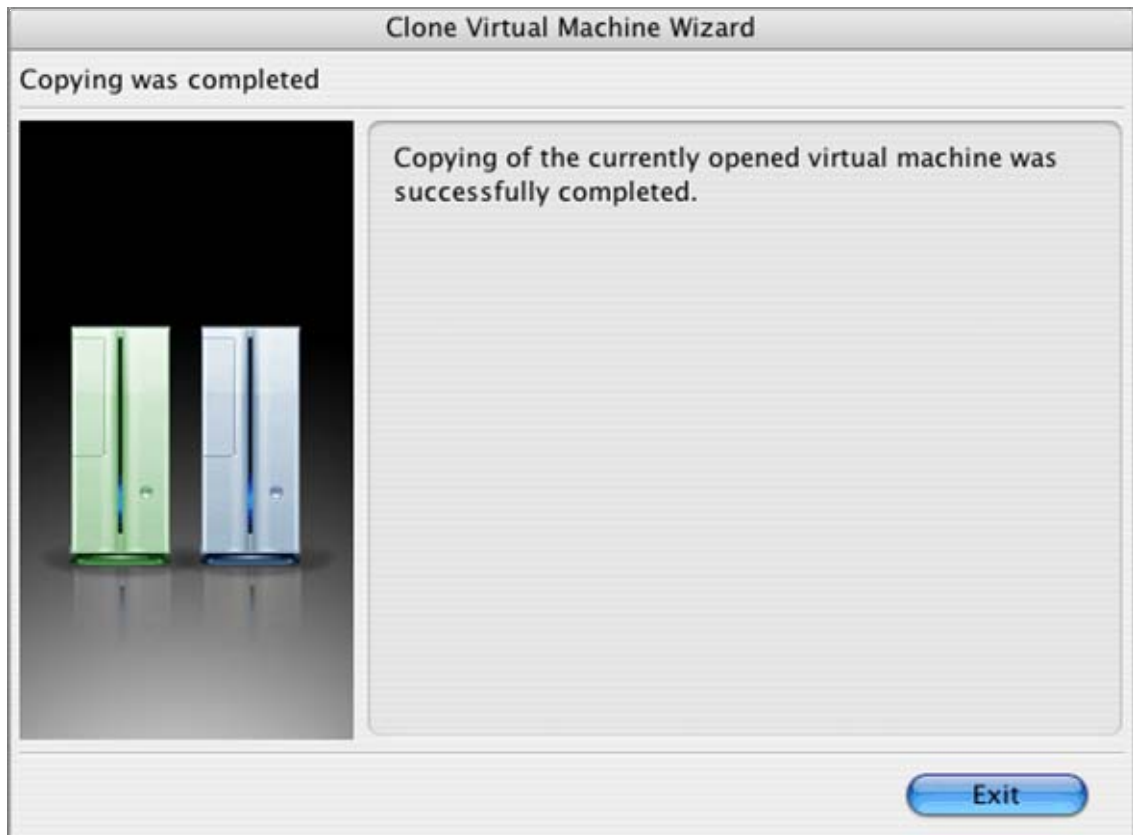
- 3 In the next step, **Specify new virtual machine name and location**, you have to specify a name for the clone and a path for storing its configuration file. The name and path suggested by the assistant are made by adding "Clone of" at the beginning of the original virtual machine name and path. You can modify both of them. Remember that a virtual machine name should be no longer than 50 characters.

If you select the **Open virtual machine in new window automatically** option, after the new configuration is created it will be opened in a new Parallels Desktop window. Click **Finish** to start copying the machine.



If the directory for storing the virtual machine configuration file does not exist, the confirmation for its creation may be asked: "Directory <directory name> does not exist. Do you want to be created automatically?" Click **Yes**. A new directory will be created.

- 4 While the virtual machine is being copied, the **Copying in progress** screen indicates the current state of the process. If everything is OK, the assistant informs you that copying has been performed and a new machine is ready. Click **Exit** to close the assistant.



A new instance of Parallels Desktop is opened with the new virtual machine loaded, if you have selected the corresponding option on the **Specify new virtual machine name and location** screen.

---

## Deleting a Virtual Machine

Virtual machines can be deleted manually, however we recommend doing it using the **Delete VM assistant** that detects all the files that make up the virtual machine and are connected to it.

The assistant helps remove the following virtual machine components and associated files:

- configuration file,
- virtual hard disk drives connected to the virtual machine,
- CD/DVD disc `.iso` images connected to the virtual machine (if any),
- floppy disk image (`.fdd` or other) connected to the virtual machine (if any),
- output files of serial and parallel ports (if any),
- home directory where virtual machine files are stored.

The assistant can delete a currently opened virtual machine that meets the following conditions:

- Its guest OS is not running. If it is running, the menu item that starts the assistant is disabled.
- The virtual machine is not opened by another instance of Parallels Desktop.
- The virtual machine is not blank.

To delete a virtual machine:

- 1 Open the desired virtual machine.

- 2 Select Delete VM in VM menu. The Welcome to the Delete Virtual Machine assistant screen is opened. Click Next.



- 3 The assistant detects all files related to the virtual machine and presents them on the **Review files to be deleted** screen. Each device/file is displayed in a separate string, i.e. if two hard disks are connected to the virtual machine, there will be two hard disk strings on the screen. The full path is displayed for each component.

The configuration file, virtual hard disk, output files of serial and parallel ports, and the home directory are pre-selected for deleting while connected CD-ROM `.iso` images and floppy `.fdd` (or other) images are not, because they can be useful for other virtual machines. If you do not consider them to be useful, mark them for deletion on this screen. Note that virtual hard disks can also be attached to other virtual machines.



Review selected files, check those that should be deleted and click **Finish** when you are ready.



- 4 The virtual machine assistant removes the selected files from your hard disk. If everything is OK the final assistant screen will appear:



The virtual machine is considered to be successfully deleted if all the selected components or all selected components except the home directory (if it was chosen for deleting) have been removed. If the home directory contains any files it will not be deleted.

Click **Exit** to close the assistant.

After the virtual machine is deleted, a blank VM is opened in the Parallels Desktop screen. The deleted machine disappears from the list of recently used configurations in the **File** menu.

## CHAPTER 6

# Running a Virtual Machine

This chapter provides the information on what you can do with a virtual machine while the guest operating system is running.

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---

## Overview

When you start a virtual machine, its console is opened and acts as the display of a real computer (refer to [Console View](#) (page 35)). Your next step is to capture your keyboard and mouse in the virtual machine screen; after doing so you are able to work with the virtual machine in the same way you would with a standalone computer.

Parallels Desktop controls such as the toolbar and the menu allow you to manage virtual machine behavior when running the machine in windowed mode. You may also run the virtual machine in fullscreen mode, where Parallels Desktop controls and the primary operating system are not visible.

While working in windowed mode, Parallels Desktop controls let you to do the following:


- start, turn off, and reset the virtual machine,
- switch between the virtual machine and your Mac,
- suspend the virtual machine,
- connect and disconnect devices, and change data types accessed by them,
- temporarily disable separate Parallels Tools (if you have them installed),
- expand the virtual machine console to fullscreen mode.

The Configuration Editor is inaccessible while the virtual machine is running.

---

## Starting a Virtual Machine

To start a virtual machine:

- 1 Start Parallels Desktop in one of the following ways:
  - Click the Parallels Desktop yellow icon on the Dock. It opens with the last used loaded. Make sure that the required virtual machine configuration is open. See [Selecting and Opening a Virtual Machine](#) (page 83).
  - Click the virtual machine alias on the desktop
- 2 Do one of the following:
  - Click the **Power On Virtual Machine**  button on the Parallels Desktop toolbar,
  - Select **Power On** in the **Actions** menu.

The virtual machine will be turned on; its console will be opened in the Parallels Desktop window, and you can see the booting process of the guest OS.

If you don't see the toolbar in the Parallels Desktop window, see the **Toolbar** section of the **Main Window** (page 31) topic to learn how to make it visible.

**Note** that the virtual machine can be powered on only if you have a registered copy of Parallels Desktop, regardless of its status. If your copy is not registered, the "This copy of Parallels Desktop is currently not active" warning appears. This warning displays your current activation status and prompts you to activate your copy of the product. See **Activating Parallels Desktop** (page 21) for a detailed description of the activating procedure and its options.

---

# Capturing and Releasing the Keyboard and the Mouse

This section explains how to capture and release input devices (like your mouse and keyboard) inside a virtual machine.

When you power on a virtual machine, either during a guest OS installation or normal operation, you will need to capture the computer's input devices in the virtual machine to interact with it exactly as if you were using a stand-alone computer. Since each virtual machine is independent, it will not "see" the primary OS, and consequently, you will not be able to access Parallels Desktop's menu and toolbar from inside the virtual machine without manually releasing your input devices to the primary OS.

## To capture the keyboard and mouse input in a virtual machine

You have the following options:

- Move the cursor over the virtual machine screen and click in the screen.
- Select **Capture Input** in the **VM** menu.
- Press **Command+Insert** on your keyboard.

When the mouse input is captured, you cannot move the cursor out of the virtual machine screen.

## To release the keyboard and mouse to Mac OS X

- Press the hot key combination designated for releasing the keyboard/mouse. The default combination is **Ctrl+Option(Alt)** or **Ctrl+Option(Alt)**, can be changed in the **Hot Key Combi** (page 92)nations tab of the **Preferences** window.

The keyboard and mouse will be released immediately.

## After Parallels Tools Installation

Parallels Tools are available for most of Windows OSes. See the **Parallels Tools Overview** (page 72) to learn if this package is available for your guest operating system.

**OS Installation Assistant** in *Express installation* mode installs Parallels Tools automatically. In other cases you should install the Tools manually.

After Parallels Tools installation, you can switch the control over mouse and keyboard input more easily:

- **to capture** - click anywhere in the virtual machine window
- **to release** - click anywhere outside the virtual machine window

---

## Switching to Fullscreen Mode


You can run a guest operating system in fullscreen mode when the guest OS screen occupies the whole screen of your computer monitor with Mac OS X and its applications as well as the Parallels Desktop menu, toolbar, and status bar hidden.

---

**Note:** You can start a virtual machine in fullscreen mode if the **Switch to fullscreen mode automatically** option is turned on in the VM Flags (page 105) tab of the **General Options**.

---

If you want to switch to fullscreen while running a guest OS, do one of the following:

- click the Full Screen mode  toolbar button,
- select **View -> Full Screen** in the menu,
- press the appropriate hot key combination on your keyboard (Option(Alt)+Enter by default, unless you have defined other hot keys).

To return to windowed mode:

- press any of the hot key combinations defined (Ctrl+Option(Alt) or Option(Alt)+Enter by default).

Hot key combinations are defined in the Hot Key Combinations (page 92) tab of the Preferences.

You may choose type of animation that is displayed when switching to fullscreen mode, and the size of the virtual machine window. See User Interface (page 90) for more details.


---

## Running a Virtual Machine in Illusion Mode

Illusion is a new mode in which you can run a virtual machine.

**Illusion mode** is available for Windows XP / Windows Vista guest operating systems. Illusion mode will make you forget that you are running Windows applications inside a virtual machine. On desktop of your Mac you will have Outlook window along with windows of Mac OS X applications and you will be able to switch between them just pointing at the application window and clicking in this window! You also can copy files between them by drag-and-drop.

To switch a virtual machine to Illusion mode and back do one of the following:

- click the  icon on the toolbar,
- select **View-->Switch to Illusion** from menu.

---

## Shutting Down and Resetting a Virtual Machine

The same rules are applied to turning off/resetting a virtual machine as to turning off/resetting a stand-alone computer.

First, shut down a guest operating system by using "the shut down" command (such as **Start->Shut Down** in Windows). It is **STRONGLY RECOMMENDED** that you shut down the machine this way to ensure safety of your data. Only if you are unable to stop the guest OS this way, you may use the Parallels Desktop controls.

### Forced Stopping a Virtual Machine


To stop a virtual machine anyway, do one of the following:

- Click the **Power Off**  button.
- Select **Actions -> Power Off** in the menu.

The virtual machine will be stopped immediately.

### Resetting a Virtual Machine

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

- Click the **Reset**  button on the Parallels Desktop toolbar.
- Select **Reset** in the **Actions** menu.
- Select **Actions->Send Key->Ctrl+Alt+Del** in the menu.
- Press **Ctrl+Option(Alt)+Del** while the keyboard is captured inside a virtual machine window.

---

**Note.** MacBook and MacBook Pro users may need to press **Ctrl+Option(Alt)+Fn+Del** exactly in this order.

---

---

## Pausing Virtual Machine

When a virtual machine is paused, the guest OS is stopped and the virtual machine process is removed from the CPU processes list. Execution of the guest operating system can be continued at any time.

Pausing the guest OS is recommended if you want to leave the virtual machine for a short period of time. If you want to leave it for an extended period, and, especially, if you need to restart Mac OS X, it is best to suspend the VM. See [Suspending/Resuming Virtual Machine](#) (page 152).

To pause a virtual machine:

- Select **Pause** in the **Actions** menu.

When a virtual machine is in paused mode, its console is darkened.

To continue running the virtual machine do one of the following:

- Click the **Power On**  button on the toolbar.
- Select **Continue** in the **Actions** menu.


---

## Suspending / Resuming Virtual Machine

The state of the running virtual machine, and states of all running applications, can be saved in order to continue working with the guest OS at a later time. This is called **suspending** the virtual machine. When a VM is suspended, its state is saved to the hard disk in a file with the `.sav` extension. After saving, you may return to the saved virtual machine at any time and continue running the guest OS from the point where you stopped it.

### Suspending a Virtual Machine

To suspend a virtual machine:

- 1 When virtual machine is running, do one of the following:
  - Click the **Suspend Virtual Machine**  button,
  - Choose **Actions -> Suspend** in the menu bar.
- 2 You can see the progress of saving the virtual machine's state process on the **Please wait while virtual machine is suspending** dialog. When it is finished, the virtual machine **Property Page** will be displayed.




**Note.** While the virtual machine is suspended, its configuration can not be changed. If you begin editing, despite the warning, the `.sav` file will be deleted, and you will not be able to resume the virtual machine.

---

### Resuming a Suspended Virtual Machine

To resume a suspended virtual machine:

- 1** Open the suspended virtual machine in Parallels Desktop.
- 2** Do one of the following:
  - Click the Power On  button,
  - Select Actions -> Power On in the menu bar.
- 3** Wait until the guest OS state is resumed. Progress is displayed on the Please wait while virtual machine is resuming dialog.

After the virtual machine has been resumed, its `.sav` file is deleted.

---

## Changing Configuration at Runtime

Although the Configuration Editor (page 102) cannot be accessed while a virtual machine is running, you can connect / disconnect certain devices at runtime or switch some of them for using other media.

Generally, the following virtual devices can be connected/disconnected to the running virtual machine:

- CD/DVD-ROMs
- Floppy drive
- Network adapter
- Parallel ports
- Serial ports
- Sound device
- USB device

Only the devices *enabled* in the virtual machine configuration can be connected/disconnected at runtime. To enable a device stop the virtual machine, then enable the device in the Configuration Editor. After that, you may power on the virtual machine; the device can be connected/disconnected at a runtime.

The devices configurable at runtime can be configured in two ways:

- by using commands from the **Devices** menu in the menu bar;
- by clicking a device icon on the status bar and choosing command from a device shortcut menu;
- (for CD/DVD\_ROM and floppy drives only) by dragging and dropping the image file on the appropriate status bar icon.

## Connecting a CD/DVD-ROM Drive

If you start a guest operating system with the CD/DVD-ROM drive enabled you can connect/disconnect it and change the media it accesses while running the guest OS.

---

**Note:** If the guest OS was started with the CD/DVD-ROM drive disabled, you should shut down the guest OS first, then enable the CD/DVD-ROM in the Configuration Editor and power on the guest OS.

---

To control the CD/DVD-ROM drive at runtime use **Devices** menu in the menubar.



If you have several CD/DVD-ROM drives connected to your virtual machine, in the **Devices** menu they are numbered 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.

To disable all CD/DVD-ROM drive operations while running the guest OS click **CD/DVD-ROM -> Disconnect** in the Parallels Desktop **Devices** menu.

To reconnect the CD/DVD-ROM drive again select **CD/DVD-ROM --> Connect** command in the **Devices** menu.

### To change media accessed by the CD/DVD-ROM drive

Do one of the following:

- drag and drop an image file (or CD icon) to the CD/DVD-ROM drive icon  on the status bar
- use **CD/DVD-ROM --> Connect to** and **CD/DVD-ROM --> Connect image** commands from the **Devices** menu
- right-click (Control-click) the CD/DVD-ROM icon  on the status bar (page 39) and choose the appropriate command from the device shortcut menu.

## Connecting a Floppy Drive

If you start a guest operating system with the floppy drive enabled, you may connect/disconnect it and replace the image file it accesses at runtime.

---


**Note:** If the floppy drive is disabled, you should shut down the guest OS first, then enable the floppy in the Configuration Editor (select the **Enabled** check box in the Floppy Options (page 110) tab) and power on the virtual machine.

---

To connect or disconnect the floppy drive:

- Choose **Floppy --> Connect** or **Floppy --> Disconnect** from the **Devices** menu.

To connect or replace the image file accessed by the virtual floppy do one of the following:

- choose **Floppy --> Connect image...** command in the **Devices** menu; locate the image file and select it;
- right-click (Control-click) the floppy drive icon  on the status bar (page 39) and choose the **Connect image...** command from the device shortcut menu;
- drag and drop an image file onto the device icon on the status bar.

## Connecting a Network Adapter


If a network adapter is enabled in your virtual machine configuration, you can connect/disconnect it while running the guest OS.

---

**Note:** If the network adapter is disabled, shut down the guest OS first, then enable the network adapter in the Configuration Editor (select the **Enabled** check box in the Network Adapter Options (page 116) tab) and power on the virtual machine.

---

To connect or disconnect the network adapter, do one of the following:

- choose **Devices --> Network** from the menu, then select the **Connect** or **Disconnect** command;
- right-click the network adapter icon  on the status bar (page 39) to display the shortcut menu and choose the command.

## Connecting Serial/Parallel Ports



If a parallel/serial port is enabled in your virtual machine configuration, you can connect/disconnect the port while running the guest OS.

---

**Note:** If the parallel/serial port disabled, shut down the guest OS first, then enable the serial or parallel port in the Configuration Editor (select the **Enabled** check box in the Serial Port Options (page 118) tab or Parallel Port Options (page 119) tab) and power on the virtual machine.

---

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

- click **Devices** menu; select **COM** (from 1 to 4 depending on how many serial ports are enabled) or **LPT** (from 1 to 3 depending on how many parallel ports are enabled), then select the **Connect/Disconnect** command;
- right-click the serial () or parallel () port icon on the status (page 39) bar to display the shortcut menu, and choose the command.

## Connecting a Sound Device


If a sound device is enabled in your virtual machine configuration, you can connect/disconnect it while running the guest OS.

---

**Note:** If the sound device is disabled, shut down the guest OS first, then enable the sound device in the Configuration Editor (select the **Enabled** check box in the Sound Options (page 120) tab) and power on the guest OS.

---

To connect or disconnect the sound device, you do the following:

- click **Devices --> Sound** in the menu, choose **Activate** to connect the sound device (or select **Mute** to disconnect);
- right-click the sound device icon  on the status bar (page 39) to display the shortcut menu and choose the command.


## Connecting USB Devices

If the USB controller is enabled in the virtual machine configuration, you can connect/disconnect USB peripherals at runtime. Please refer to Using USB Devices in a Virtual Machine (page 129) for general information.

---

**Note:** If the USB controller is disabled, shut down the guest OS first, then enable the USB controller in the Configuration Editor (select the **Enabled** check box in the USB Options (page 121) tab) and power on the virtual machine.

---

Parallels Desktop automatically detects all the USB devices connected to your Mac and displays them in a list when you choose the **Devices->USB** menu and in the shortcut menu for the USB controller () in the status bar. Those devices that are currently connected to the virtual machine are checked (selected). You can not use a USB device in Mac OS X while it is being used by the virtual machine.

Note that a USB microphone is connected to a virtual machine in a special way.


### Auto-Connection

If the **Auto-connect USB devices** option in the USB Options (page 121) tab is turned on and only one or no USB devices are currently active, you can connect an additional USB device to your virtual machine. Do the following:


- simply plug in a USB device to your Mac.

If you connect an additional USB device to your Mac while virtual machine already has connected two USB devices (not counting keyboard, mouse, or microphone), nothing will happen. You will be able to activate the newly connected device manually after deactivating any of the currently active USB devices.

### Manual Connecting

- Plug in a USB device to your Mac.
- Click the USB controller icon () in the status bar (or select **Devices->USB** in the Parallels Desktop menu) to display the list of all the USB devices connected to your Mac. Make sure that only one USB device (or no one) is currently active. If there are two devices checked, disconnect one of them by clicking it.
- Choose the desired USB device in the list and click it to connect.

### Connecting a Microphone

Parallels Desktop does not treat a USB microphone as a USB device even if it appears in the list of USB devices connected to your Mac (in the **Devices->USB** menu and in the shortcut menu for the USB controller ()). Use the guest OS means to make a microphone visible to your guest OS.

---

# Parallels Tools Center

---

**Note.** Parallels Tools Center is available in Windows guest OSes only.

---

Parallels Desktop allows you to control the status of Parallels Tools in all of the Windows guest OSes for which tools are provided (see Parallels Tools Overview (page 72) for tools descriptions and availability table). The Parallels Tools Center, which is installed along with Parallels Tools, allows you to:


- check the status of various tools;
- temporarily disable and enable each tool separately (for those tools that can be stopped without interfering with the guest OS execution);
- configure specific tool parameters (for those tools that have them).

The Parallels Tools Center is organized as a collection of tabs, each of which contains settings for an individual tool. In each guest OS, the Parallels Tools Center contains tabs only for those tools that you have installed in your guest OS.

Parallels Tools Center is started automatically upon guest OS startup; its icon is placed into the guest OS system tray.

## Opening Parallels Tools Center

To open Parallels Tools Center:

- click its icon  in guest OS system tray.

## Restarting Parallels Tools Center

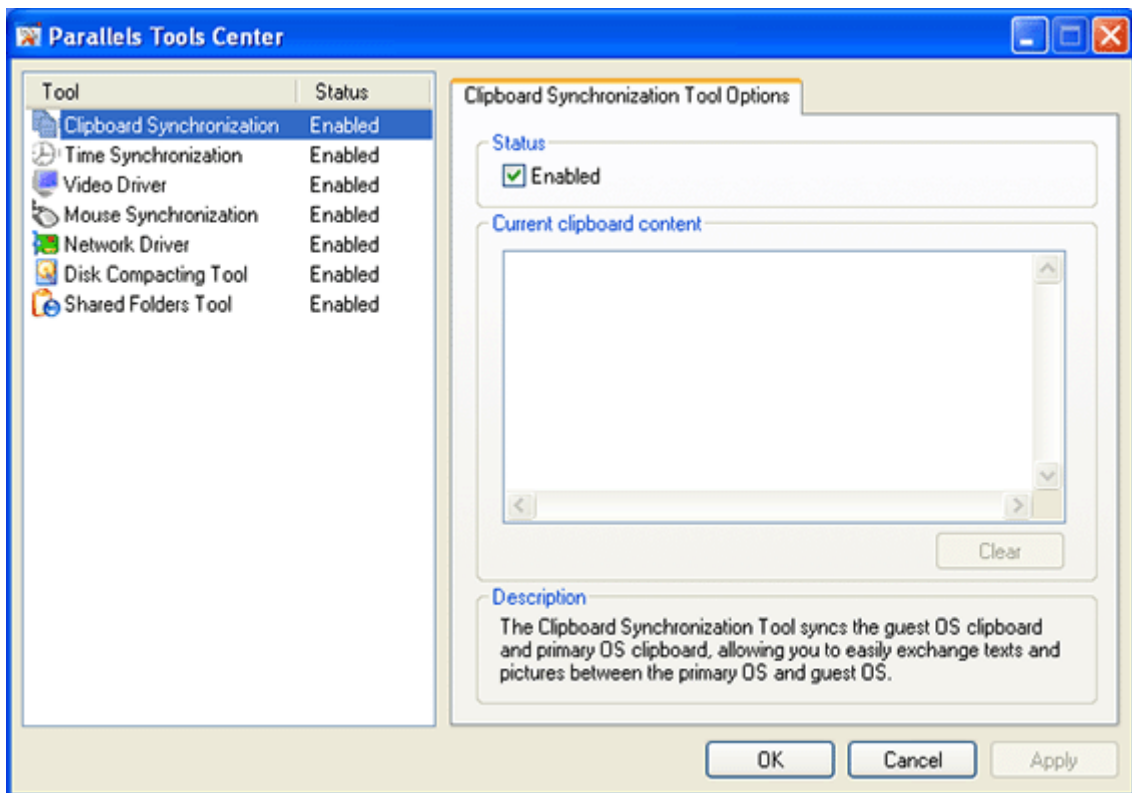
To restart Parallels Tools Center after disabling:

- Locate the `ParallelsToolsCenter.exe` file in the folder where you have installed the Parallels Tools and launch it.

If you installed the Parallels Tools into the default folder, this file has the following pathname:

```
C:/Program Files/Parallels/Parallels  
Tools/ParallelsToolsCenter.exe.
```

## Clipboard Synchronization Tool Options



### Status:

- **Enabled** shows the current status of the Clipboard Synchronization Tool. To temporarily disable this tool, deselect this check box. You can enable the Clipboard Synchronization Tool by selecting this check box later.

### Current clipboard content:

- This field displays the current clipboard contents that can be scrolled.
- The Clear button empties the clipboard contents.

### Description:

- Displays the short description of the tool. For a complete description see the Parallels Tools Overview (page 72).

### Activating changes:

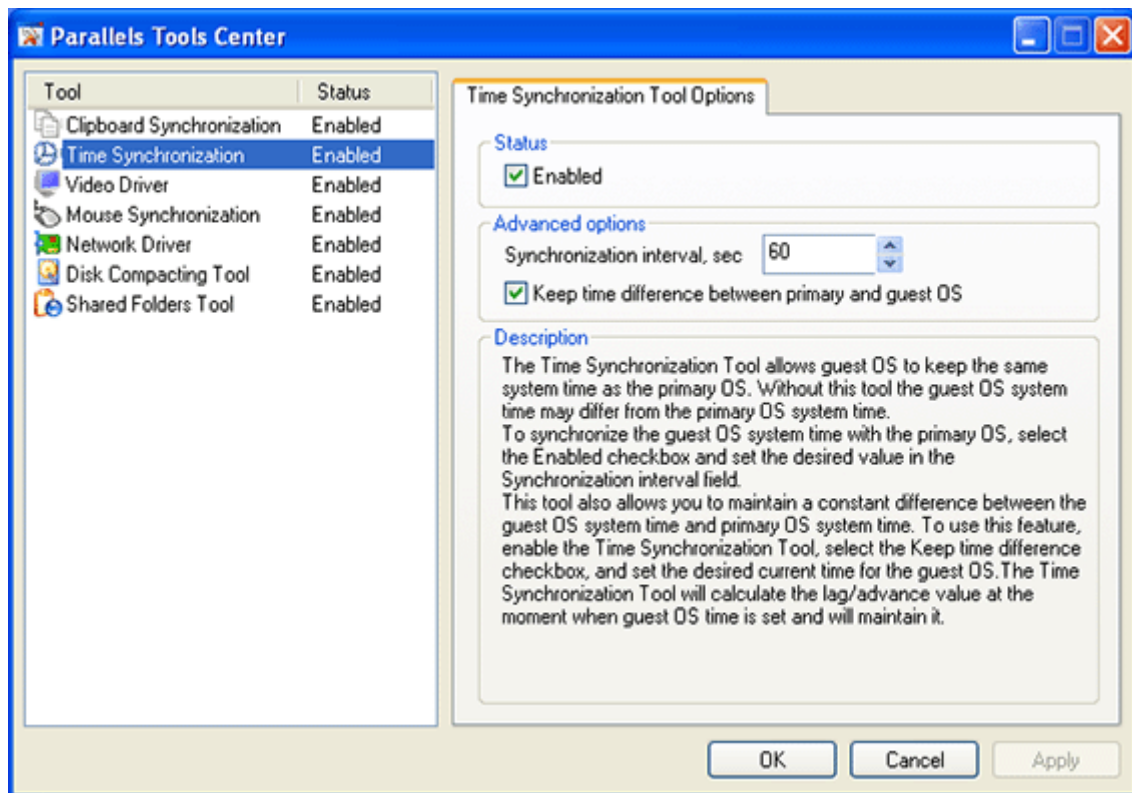
After you have made the desired changes on the tab, do one of the following:

- Click the **Apply** button to activate changes.

Click the OK button to activate changes and hide the Parallels Tools Center.



## Time Synchronization Tool Options



### Status:

- **Enabled** check box shows the current status of the Time Synchronization Tool. To temporarily disable this tool, deselect this check box. You can enable the Time Synchronization Tool by selecting this check box later.

---

**Note:** Before starting the Time Synchronization Tool, please stop all other time synchronization services in order to avoid potential conflicts.

---

### Advanced options:

- **Synchronization interval, sec.** contains the period of time between two synchronization operations. Use scroll buttons in the field to set the desired value or simply enter it into the field. The interval value should be from 10 to 3600 seconds.

To synchronize the guest OS system time with the primary OS:

1. select this check box,
2. set the desired value of the synchronization interval in the **Synchronization Interval** field.

- **Keep time difference between primary and guest OS** check box allows you to maintain a constant difference between the guest OS system time and primary OS system time.

To use this feature:

1. select the **Enabled** check box,
2. select the **Keep Time Difference** option,
3. in the guest OS, set the desired current time.

The Time Synchronization Tool will calculate the lag/advance value at the moment when the guest OS time is set and will maintain it.

**Description:**

- Displays the short description of the tool. For a complete description see the Parallels Tools Overview (page 72).

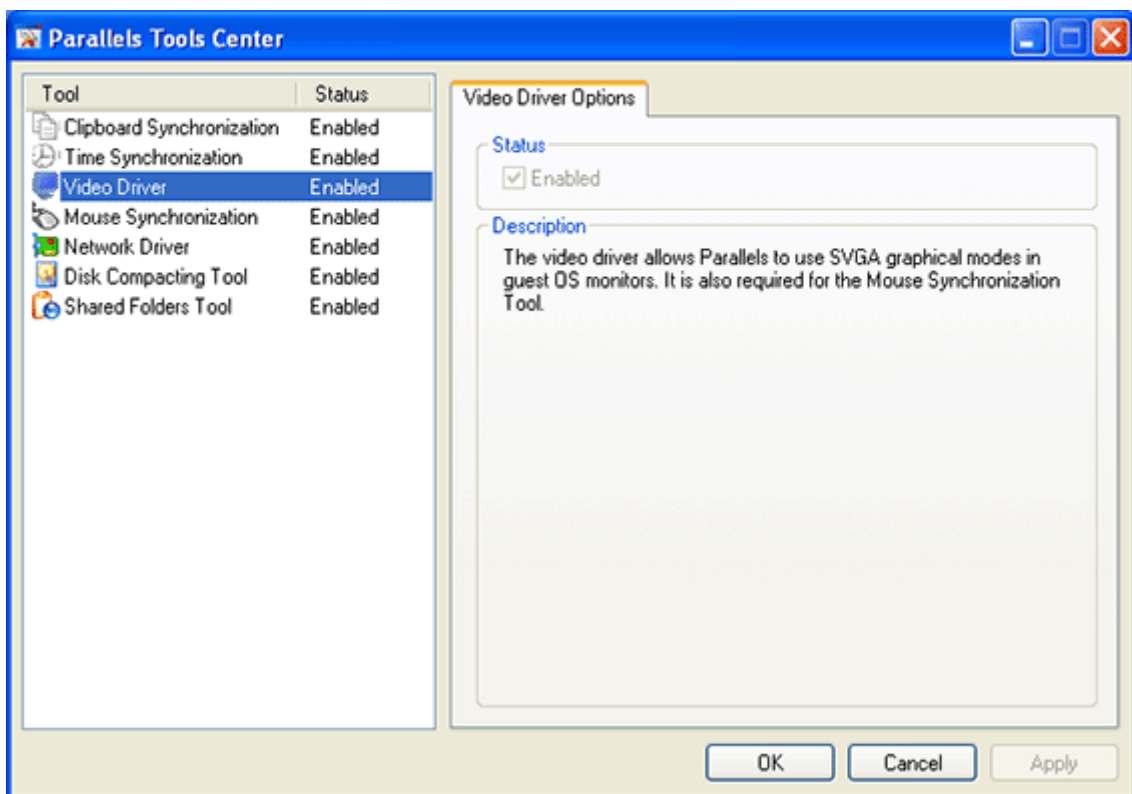
**Activating changes:**

After you have made the desired changes on the tab, do the following:

- Click the **Apply** button to activate changes.

Click the OK button to activate changes and hide the Parallels Tools Center.

## Video Driver Options



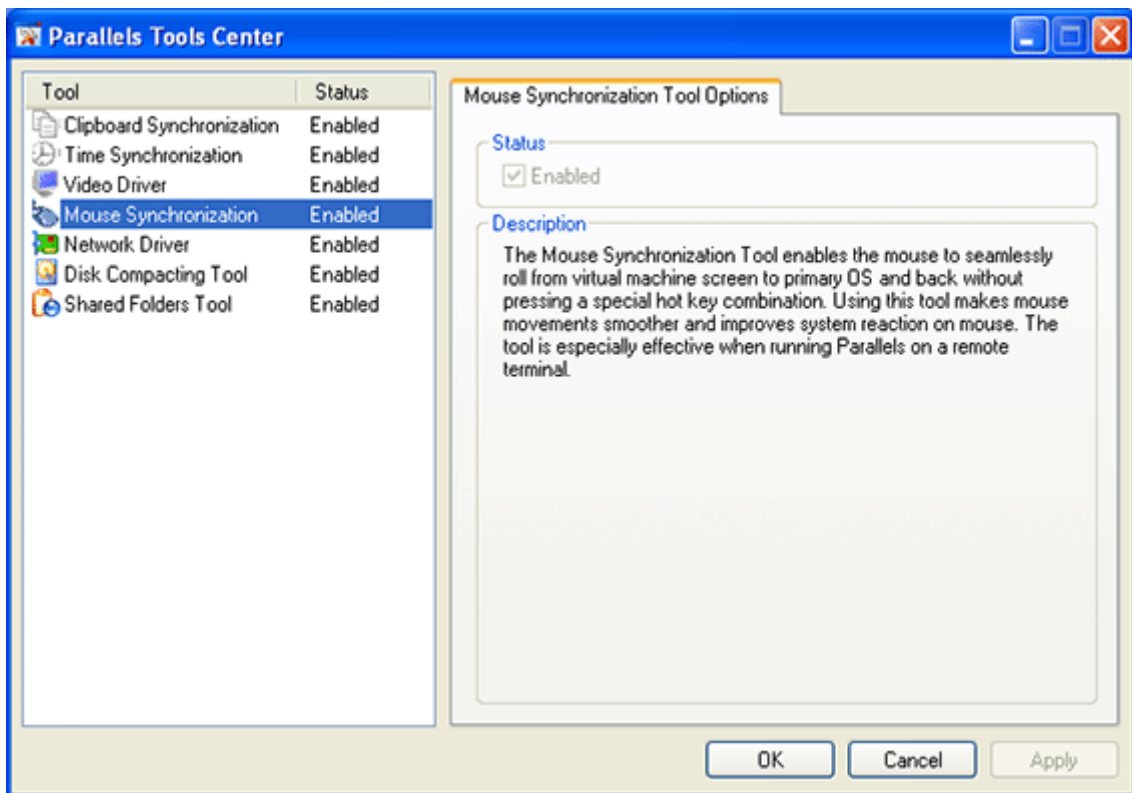
**Status:**

- **Enabled** check box shows the tool's current status but is inaccessible for editing.

**Description:**

- Displays the short description of the tool. For a complete description see the Parallels Tools Overview (page 72).

## Mouse Synchronization Tool Options



Status:

- Enabled check box shows the tool's current status but is inaccessible for editing.

Description:

- Displays the short description of the tool. For a complete description see the Parallels Tools Overview (page 72).

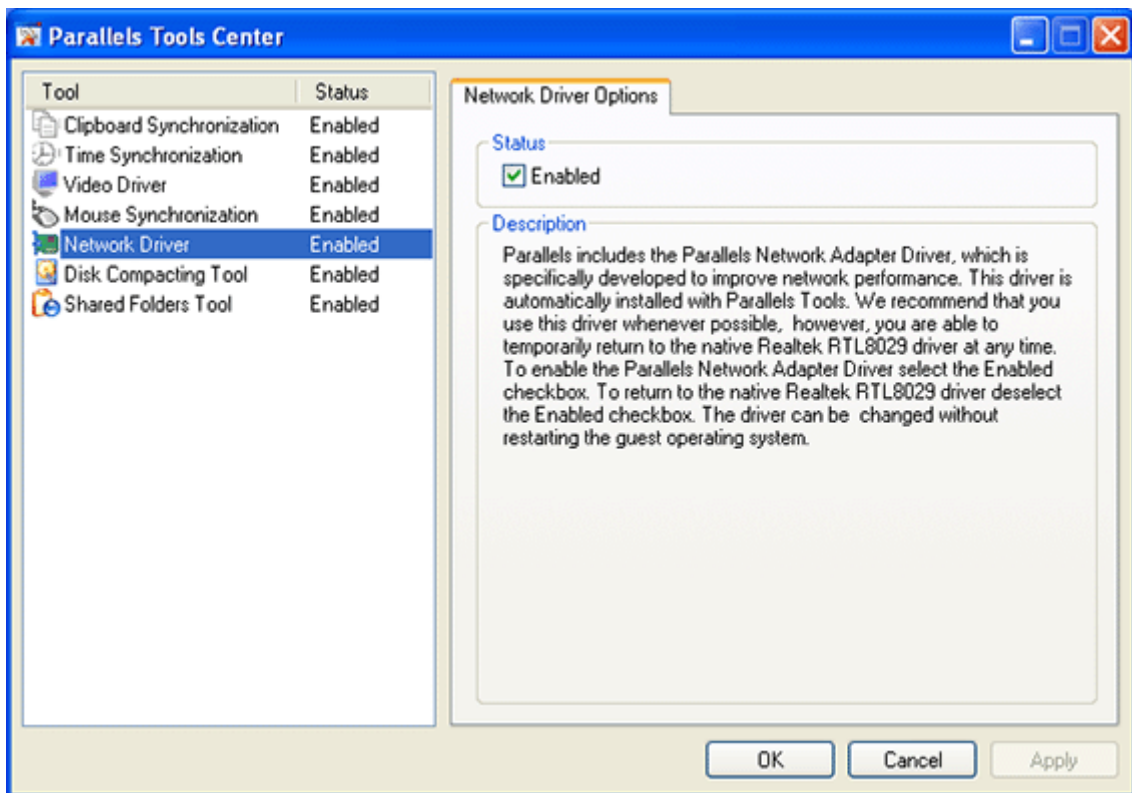
## Coherence Tool

Available only for Windows 2000/2003/XP guest operating systems. Coherence Tool provides the possibility to seemingly integrate guest applications to Mac OS X. Coherence will make you forget that you are running Windows applications inside a virtual machine. On desktop of your Mac you will have Microsoft Windows applications along with Mac OS X applications, and you will be able to switch between them just pointing at the application windows and clicking in this window.

To turn on/off Illusion mode when the virtual machine is running do one of the following:

- select View -->Switch to Coherence in menu
- click the Coherence  icon on the toolbar

## Network Driver Options



### Status:

- **Enabled** check box shows the current status of the Parallels Network Adapter Driver. If this check box is selected, it means the Parallels Network Adapter Driver is active. We recommend that you use this driver whenever possible, however, you are able to temporarily return to the native Realtek RTL8029 driver at any time.

To enable the Parallels Network Adapter Driver select the **Enabled** check box. To return to the native Realtek RTL8029 driver deselect the **Enabled** check box. Drivers can be changed without restarting the guest operating system, however your network connection may be temporarily lost.

### Description:

- Displays the short description of the tool. For a complete description see the Parallels Tools Overview (page 72).

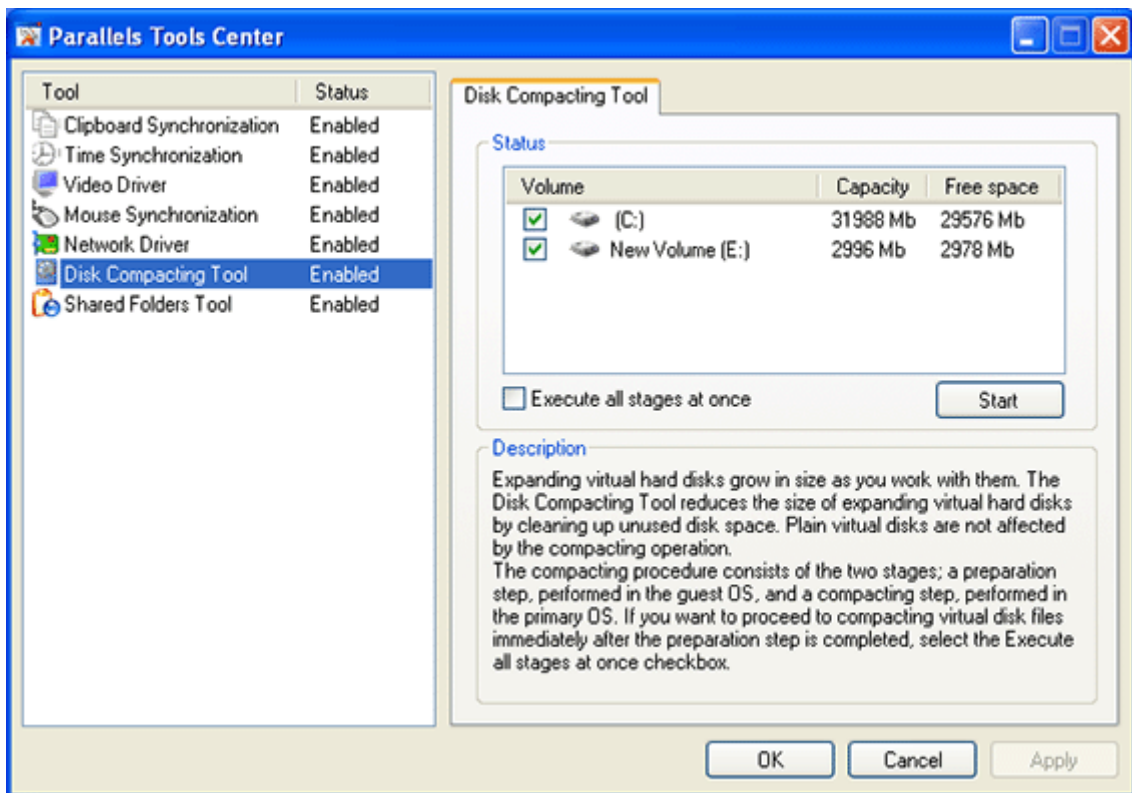
### Activating changes:

After you have made the desired changes on the tab, do one of the following:

- Click the **Apply** button to activate changes.

Click the **OK** button to activate changes and hide the Parallels Tools Center.

## Disk Compacting Tool Options



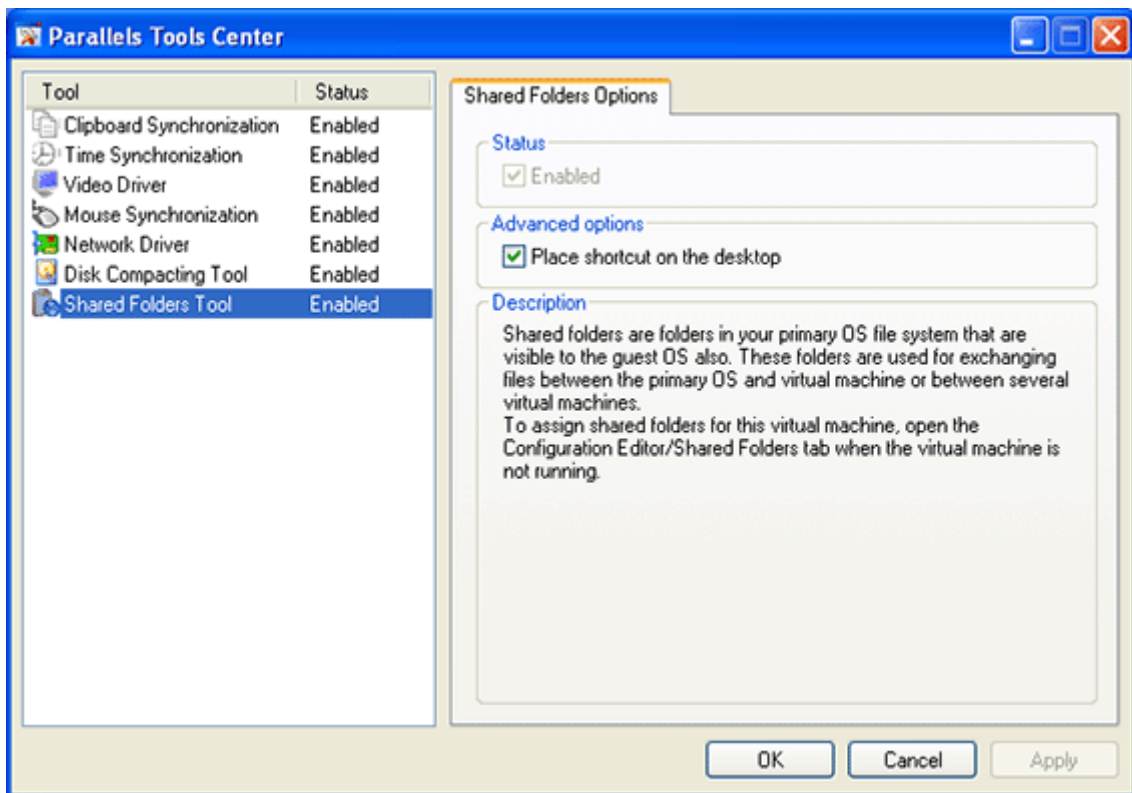
### Status:

- The table displays the list of volumes located on the expanding virtual hard disks connected to your virtual machine and formatted to Windows file systems. Volumes formatted to other file systems are not displayed even though they are located on the expanding virtual hard disks. In the table you can select the volumes to be processed by the Disk Compacting Tool.
- **Execute all stages at once.** Select this option if you want to perform both stages of the compacting at once. See the description of the two stages of the compacting process in the *Compacting Virtual Disk* (page 167) topic.
- **Start button** starts the process of preparing the virtual hard disks for compacting.

### Description:

- Displays the short description of the tool. See the complete description and guidelines in the *Compacting Virtual Disk* (page 167) topic.

## Shared Folders Options



### Status:

- Enabled check box shows the tool's current status but is inaccessible for editing.

### Advanced Options:

- Place shortcut on the desktop option controls the presence of the Parallels Tools Center shortcut on the guest OS desktop.

### Description:

- Displays the short description of the tool. For a complete description see the Parallels Tools Overview (page 72).

---

# Compacting Virtual Disks

Expanding virtual disks grow in size as you work with them even if you delete unnecessary and temporary files periodically. The built-in Disk Compacting Tool cleans up the unused disk space on a virtual hard disk and cuts off the cleaned free space thus reducing the size of the virtual hard disk image file in Mac OS X. We recommend that you use Disk Compacting Tool on your virtual machines from time to time to save space on the host hard disk.

---

**Note.** The Disk Compacting Tool does NOT processes plain virtual disks.

---

## Disk Compacting Procedure

In general, the compacting procedure consists of two stages:

- 1 A preparatory stage, performed in the guest OS. This stage is supported only for Windows 95/98/NT/ME/2000/XP/2003/Vista guest OSes only after Parallels Tools (page 72) are installed. All types of partitions: FAT 16, FAT 32, and NTFS, can be processed. During this stage, the unused space is being cleaned.
- 2 A compacting stage, performed in the primary OS, the procedure of "removing" of clean unused space from the virtual disk file. Available for VMs with any guest OSes.

## Two-Stage Disk Compacting in Windows Guest OSes

To compact disks in Windows 95/98/NT/ME/2000/XP/2003/Vista guest OSes:

- 1 When the virtual machine is running, open the Parallels Tools Center, just click its icon on the status bar.
- 2 In the Parallels Tools Center, open the Disk Compacting Tool tab.
- 3 On the Disk Compacting Tool Options (page 165) tab, the table in the Status group displays the list of volumes (disks and partitions) that can be compacted. Select the volumes you want to compact. Note that compacting will be more effective, if you select all partitions on the virtual disk.

If you want to perform both stages of compacting at once, select the **Execute all stages at once** option.

Click **Start**. All the selected disks will be processed one-by-one.

- 4 The first stage may take a significant time...
- 5 If you have selected the **Execute all stages at once** option:

When the disks are ready for compacting, the Disk Compacting Tool pauses the virtual machine and proceeds with compacting. The **Compacting virtual hard disk** dialog is displayed. Click **Cancel** to stop compacting, in this case, compacting will not be effective.

When the process of compacting is successfully completed, click **OK**.

- 6 If you have NOT selected the **Execute all stages at once** option:

When the first stage of processing disks is complete, you get the following message: "You are able either start compacting right now or do it when the virtual machine is powered off".

If you select to start compacting, the Disk Compacting Tool performs compacting as described in step 5.

You may select to perform compacting later.

### One-Stage Disk Compacting in Any Guest OS:

The one-stage disk compacting is not that effective as the two-stage compacting, because it doesn't clean unused space.

To perform disk compacting

- 1 When the virtual machine is stopped, click the **Hard Disk** link on the Property Page.
- 2 Then click the **Compact** button on the Advanced tab of the **Hard Disk Options**.
- 3 While compacting is being performed, the **Compacting virtual hard disk** dialog is displayed.
- 4 If there are several hard disks, repeat for each expanding-type virtual disk that you want to compact.

---

## Setup a Printer in a Virtual Machine

There are three principal methods of configuring printing in a virtual machine:

- Setup a network printer.  
We recommend that you use this method since it provides the most stable work.
- Setup a USB printer.
- Setup a printer via Apple's Bonjour Printer assistant.  
This method is available in Windows guest OSes only.

Configuring a virtual machine for either method of printing is described below.



## Setting Up a Network Printer

Before installing a network printer in a guest OS make sure that your primary OS and the virtual machine meet the following requirements:

- Networking in your primary operating system is configured.
- Virtual machine configuration includes the network adapter which is connected to a real network adapter of your computer. See the Network Adapter Options (page 116) of your virtual machine; make sure that the **Enabled** and the **Connect at startup** options are selected in the **Device Status** group. In the **Emulation** group the **Bridged Ethernet** option should be selected and the real network interface should be chosen in the **Network Adapters** list.
- Networking in the guest OS is configured.
- User account from which you will setup the printer has permission to access the network printer.

### 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 <http://cups.org/documentation.php>;
- Samba service. Installation instructions can be found at Samba site <http://us4.samba.org/samba/docs/man/Samba-HOWTO-Collection/install.html>;
- A Web browser, since we consider controlling CUPS via web interface;
- Also you have to know the `root` password.

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

- 1 Start your Linux or FreeBSD guest operating system.
- 2 Start Common UNIX Printing System.

In a terminal, issue the command:

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

- 3 Start a Web browser and open either the IP address of your virtual machine or `http://127.0.0.1:631`.
- 4 Select **Printers** in menu. Click the **Add printer** button below the list of available printers (if any).
- 5 You are asked for the `root` password. Enter it to be able to proceed.
- 6 In the **Add New Printer** screen enter the information for easy identification of the printer: an informative printer name, location, and description.
- 7 In the **Device for <Printer Name>** screen select the *Windows Printer via Samba*.
- 8 In the **Device URI for <Printer Name>** screen specify the path to the network printer in the following format:  

```
smb://<computer name>/<printer name>
```
- 9 In the **Model/Driver for <Printer Name>** screen select the model of your printer.
- 10 CUPS performs installation. If installation is successful, the "Printer <name> has been added successfully" message is displayed.

## In a Windows Guest Operating System

To add a network printer in a Windows guest OS:

- Start the Windows guest operating system and log in the proper account.
- Open Windows **Start** menu, select **Settings** and then the **Printers and Faxes** (or simply **Printers**) item.
- Open the Add Printer assistant:
  - In Windows 95/98/NT/ME/2000/2003 double-click the **Add printer** icon.
  - In Windows XP click the **Add a printer** link.
- In the Add Printer assistant:
  - In Windows 2000/XP/2003:
    - click **Next** in the assistant's first screen,
    - in the **Local or Network Printer** screen, click **A network printer, or a printer attached to another computer**.
  - In Windows 98/ME:
    - click **Next** in the assistant's first screen,
    - the assistant's next screen asks: **How is this printer attached to your computer?** Click the **Network printer** option.
  - In Windows 95/NT:
    - click **Network printer/server**.
- Continue an ordinary network printer installation.

## Setting Up a USB Printer

To setup a USB printer:

- 1** Open the virtual machine configuration in the Configuration Editor (page 102), and make sure that the configuration includes a USB controller; if necessary add it.
- 2** Open the USB Options (page 121), and make sure that the **Enabled** option is selected. Select the **Autoconnect at startup** if you want the printer to be automatically captured by the virtual machine.
- 3** Save the virtual machine configuration (see *Saving Virtual Machine Configuration*) and start the guest operating system.
- 4** Connect the USB printer as a normal USB device. See the *Connecting USB Devices* (page 158) topic.
- 5** Install the native driver for the printer in the guest OS.

## Setting Up a Printer via Bonjour

---

**Note.** This method of configuring a printer is only available in Windows guest OSes.

---

To setup a printer using the Bonjour Printer assistant:

- 1** Start your Windows virtual machine and log in.
- 2** In the virtual machine, download the Bonjour for Windows installation package from the Apple site <http://www.apple.com/macosx/features/bonjour/>.
- 3** Install Bonjour for Windows by launching the `BonjourSetup.exe` file from the folder where place it was downloaded.
- 4** Start the Bonjour Printer assistant either by clicking its icon on the desktop or by selecting **Start -> Programs -> Bonjour -> Bonjour Printer assistant**.
- 5** Follow the installation steps until the **Install Bonjour Printer** screen appears.
- 6** In the **Install Bonjour Printer** screen, select **Generic** in the **Manufacturer** list and then **Generic / Postscript** in the **Model** list. This step is the same for any printer model you have.
- 7** Follow the rest of installation steps.

## CHAPTER 7

# Using Boot Camp Windows Installation

This chapter provides all the information necessary to use Boot Camp Windows installation via Parallels Desktop.

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Creating a Virtual Machine for Boot Camp .....	174
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---

## Overview

In the current version of Parallels Desktop you can use your Boot Camp Windows XP (SP2) installation as a bootable disk or as a data disk in virtual machines.

### Using Boot Camp 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 virtual machine.

Windows XP and Windows Vista will automatically recognize it as a new disk.

### Using Boot Camp as a bootable disk

If you want to use your existing Boot Camp Windows installation as a bootable disk with Windows XP in a virtual machine, you should perform the following preparatory steps:

- boot into Windows XP via Boot Camp and install Parallels Tools for Boot Camp,
- boot into Mac OS X and create a virtual machine for Windows XP with Boot Camp as a hard disk.

After that you can use Boot Camp as before to boot into Windows XP or you can boot into it via Parallels virtual machine, see Booting via Parallels.

---

# Installing Parallels Tools for Boot Camp

To use Boot Camp Windows installation in a virtual machine you have to install Parallels Tools for Boot Camp on it.

**Warning.** You CANNOT install Parallels Tools for Boot Camp from inside the virtual machine!

- 1 Boot into Windows XP via Boot Camp.
- 2 Launch Internet Explorer and download the Parallels Tools for Boot Camp .exe file from Parallels web site.
- 3 Install Parallels Tools for Boot Camp. The installation is easy, it is not required to make any choices.
- 4 When installation is complete, reboot your Mac.

## Uninstalling Parallels Tools for Boot Camp

If you decide to stop using Boot Camp Windows installation via virtual machine, you can uninstall Parallels Tools for Boot Camp.

- 1 First of all, you must uninstall Parallels Tools (NOT Parallels Tools for Boot Camp) while you run the virtual machine. For this, select Start--> Programs-->Parallels-->Uninstall Parallels Tools.
- 2 Shut down your virtual machine.

**Warning.** You CANNOT uninstall Parallels Tools for Boot Camp from inside the virtual machine!

- 1 Boot into Windows XP via Boot Camp. Locate the Parallels Tools for Boot Camp .exe file. Click it and choose uninstall Parallels Tools for Boot Camp.
- 2 Or click Start-->Programs-->Parallels-->Parallels Tools for Boot Camp -->Uninstall
- 3 When uninstallation is complete, reboot your Mac.

---

## Creating a Virtual Machine for Boot Camp

Now you can use your Boot Camp Windows installation to boot in natively (via Boot Camp) or with Parallels Desktop as a bootable disk or as a data disk in virtual machines.

For using the Boot Camp Windows XP installation in Parallels virtual machines you have two options:

- Add Boot Camp partition as a hard disk to an existing virtual machine to use it as a data disk. Windows XP and Windows Vista will automatically recognize it as a new disk.
- Create a new virtual machine and choose the **Use Boot Camp** option for the virtual hard disk. Boot Camp Windows partition will be used as a bootable volume. Before you start this virtual machine for the first time, you must install Parallels Tools for Boot Camp on a Boot Camp Windows partition. For details see [Using Boot Camp Windows Installation \(page 172\)](#) chapter.

To use Boot Camp Windows installation in a virtual machine you have to install Parallels Tools for Boot Camp on it. Parallels Tools and Parallels Tools for Boot Camp will not interfere with the system when you boot into it via Boot Camp.

**Warning.** Using Boot Camp, boot into Windows XP and install Parallels Tools for Boot Camp (page 173). It is a necessary preparatory step for using the partition as a hard disk in a virtual machine.

Create a new virtual machine for using Boot Camp Windows XP installation.

- 1 Boot into Mac OS X.
- 2 Open Parallels Desktop, select **New**.
- 3 When OS Installation Assistant starts, select **Custom** mode of OS installation.

- 4 When prompted to select virtual hard disk option, select Use Boot Camp.



- 5 Then proceed as described in the Custom Installation (page 56).

**Warning.** Clear the check box for the Start <guest OS> installation option. DO NOT start the installation.

---

## Booting via Parallels Virtual Machine

To boot into Boot Camp Windows XP via the virtual machine do the following:

- 1 Start your Mac, boot into Mac OS X.
- 2 Start Parallels Desktop and open the Windows XP virtual machine.
- 3 You may be prompted to authenticate using your user name and password.
- 4 Power on the virtual machine.
- 5 First, you will see the black screen and a choice of available configurations on it. You will have at least two options:
  - Parallels configuration
  - Boot Camp Windows

- Choose Parallels Configuration. Use Up and Down arrows to highlight the desired option, press `Enter` to select.
- 6 On the Hardware Profile / Configuration Recovery Menu screen, the list of available profiles is displayed:
    - Parallels Profile
    - Profile 1Choose Parallels Profile. Use Up and Down arrows to highlight the desired option, press `Enter` to select.
  - 7 You'll see Windows XP starting up. You may notice problems with the mouse. Use the keys on the keyboard instead.
  - 8 Wait while Windows completes installation of new devices. REBOOT virtual machine when prompted.
  - 9 When the system is fully loaded and you are logged in, install Parallels Tools, by selecting `Actions-->Install Parallels Tools` from menu.
  - 10 Select `OK` when prompted to restart your virtual machine to complete the installation of Parallels Tools. (Use right and left arrow keys on the keyboard to select `OK` and press `Enter`). After restart, the mouse will work fine.

**Warning.** Make sure that you choose the correct configuration and profile files for booting via Parallels Desktop.

---

## Booting via Boot Camp

To boot into Boot Camp Windows XP via Boot Camp as usually, do the following:

- 1 Start your Mac, press the required hot keys to boot into Boot Camp.
- 2 You will see the black screen and a choice of available configurations on it. You will have at least two options:
  - Parallels configuration
  - Boot Camp WindowsChoose Boot Camp Windows. Use Up and Down arrows to highlight the desired option, press `Enter` to select.
- 3 On the Hardware Profile / Configuration Recovery Menu screen, the list of available profiles is displayed:
  - Profile 1
  - Parallels ProfileChoose **Profile 1**. Use Up and Down arrows to highlight the desired option, press `Enter` to select.
- 4 You'll see Windows XP starting up.



Parallels Tools and Parallels Tools for Boot Camp installation will not affect Windows XP itself, they only help you work with this Windows XP via virtual machine.

**Warning.** Make sure that you choose the correct configuration and profile files for booting via Boot Camp.

## CHAPTER 8

# Using Parallels Compressor

Parallels Compressor™ is a new, easy-to-use Parallels tool which will help you keep your virtual machines efficient for many purposes.

Parallels Compressor allows users to:

- effectively clean up disk space in a virtual machine
- significantly reduce the size of virtual hard disks
- efficiently use the real hard disk resources
- easily share smaller virtual disks by burning them to CD/DVDs or moving them over a network.

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---

## How Does Parallels Compressor Process a Virtual Machine?

Compressor processes a virtual machine in the following way:

- Deletes unnecessary files on the current system.
- Defragments virtual disks of all formats and cleans up unused space.
- Compacts expanding disks.

The actions performed on your particular virtual machine depend upon the running mode: *automatic* or *manual* :

- In *automatic* mode Parallels Compressor compresses only the current system disk performing the pre-defined set of actions. If this disk is plain, it will not be compacted.
- In *manual* mode you are able to choose disks to compress and actions to perform.

More about running modes and other Compressor properties can be found in the Options of Parallels Compressor (page 192) section.

### Steps of the Compression Procedure

Parallels Compressor is designed to perform the most efficient compression of a virtual machine, including compacting of virtual disks that can significantly increase the ratio of useful data in your virtual machine. The procedure consists of two steps:

- a preparatory step performed in the guest operating system (deleting of temporary and unnecessary files, cleaning up of unused disk space); and
- a compacting step (reducing virtual disk size) performed in the primary operating system.

---

## Requirements for the Guest Operating System

To run Parallels Compressor your virtual machine should have one of the following guest operating systems installed:

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

In other guest operating systems we recommend using the Disk Compacting Tool (page 167).

---

## How to Run Parallels Compressor

### Before Starting Parallels Compressor

Before starting Parallels Compressor perform the following steps:

- 1 Back up your virtual machine by cloning it or by copying its hard disk files to a safe location.

This enables you to restore your VM in case you do not like the results of the compression, as this operation is irreversible.

---

**Note.** The result of virtual machine compression is irreversible. Before starting Parallels Compressor please back up your virtual machine.

---

- 2 Make sure your virtual machine configuration includes the CD/DVD-ROM drive.

If it does not:

- power off the virtual machine,
- open the Configuration Editor (page 102),
- add a CD/DVD-ROM drive into the configuration if it is not included. Refer to Adding New Devices to Virtual Machine (page 122) for details,
- on the CD/DVD-ROM Options (page 114) tab make sure that the **Enabled** check box is selected.

## How to Start Parallels Compressor

To start Parallels Compressor:

- 1 Power on the virtual machine you want to compress.
- 2 Log in to the guest operating system as a user with administrator rights.

---

**Note.** To run Parallels Compressor in a virtual machine you must have administrator rights in the guest operating system.

---

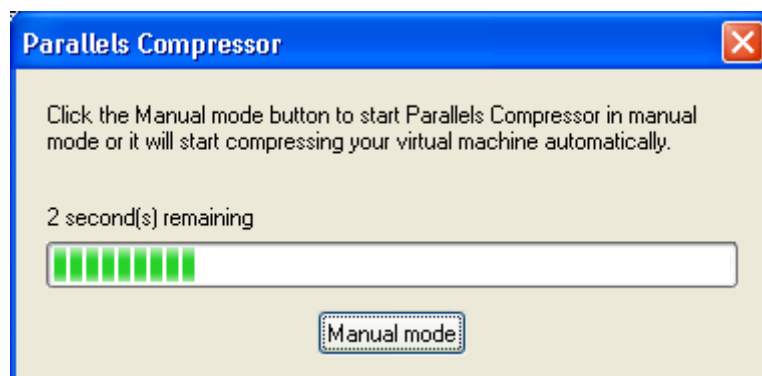
- 3 Select VM -> Run Parallels Compressor in the menu.

## Running Parallels Compressor

Parallels Compressor has the following running modes:

- *automatic* (page 193), the default mode. In this mode Compressor uses the default compression options.
- *manual* (page 193), Parallels Compressor runs as a wizard which helps you select the options of virtual machine compression.

When you start Parallels Compressor, the ISO file with Compressor is connected to the virtual CD/DVD-ROM and displays the dialog box with a time indicator. The time indicator shows the time remaining until Parallels Compressor will run in automatic mode (timeout is about 10 seconds).



To run Parallels Compressor:

- in *automatic* mode, don't do anything, just wait until the timeout expires. Detailed information about running Compressor in this mode is given in the Compression in Automatic Mode (page 183) topic.
- in *manual* mode, press the ESC key or click the **Manual Mode** button on the dialog box before the timeout expires. Detailed information about running Compressor in this mode is given in the Parallels Compressor assistant (page 187) topic.

### After Compressing Is Finished

When Parallels Compressor finishes its work, it disconnects the ISO with Parallels Compressor from the virtual machine and restores the previously existed connection. If the connection is not restored automatically:

- select **VM / Cancel Parallels Compressor** in the menu.

---

**Note.** Do not perform this command when Parallels Compressor is running. If the ISO file is disconnected during the process, the virtual machine may behave unpredictably.

---

Also refer to Further Reducing Disk Size (page 196) to get an idea of what else you can do to compress virtual hard disks.

---

## Compression in Automatic Mode

In *automatic* mode Compressor uses the following default options:

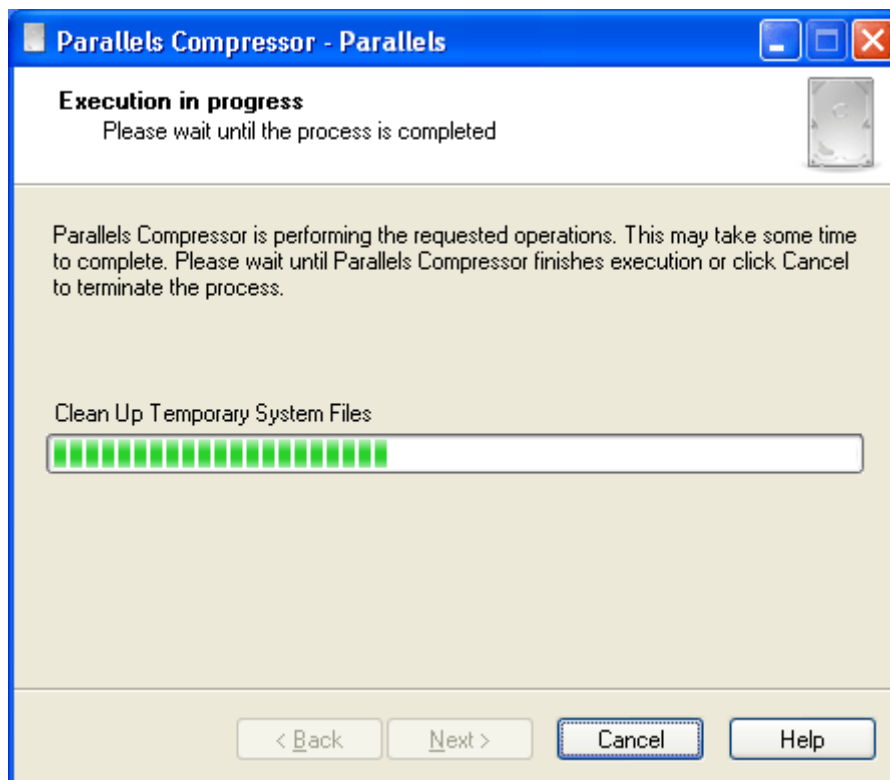
- only one virtual system disk is being processed (if the virtual machine has several system disks, the current system disk will be compressed);
- compression is performed at the High level (page 195), and all compression tasks will be executed, except for Clean up Drivers Cache, which will be skipped.

---

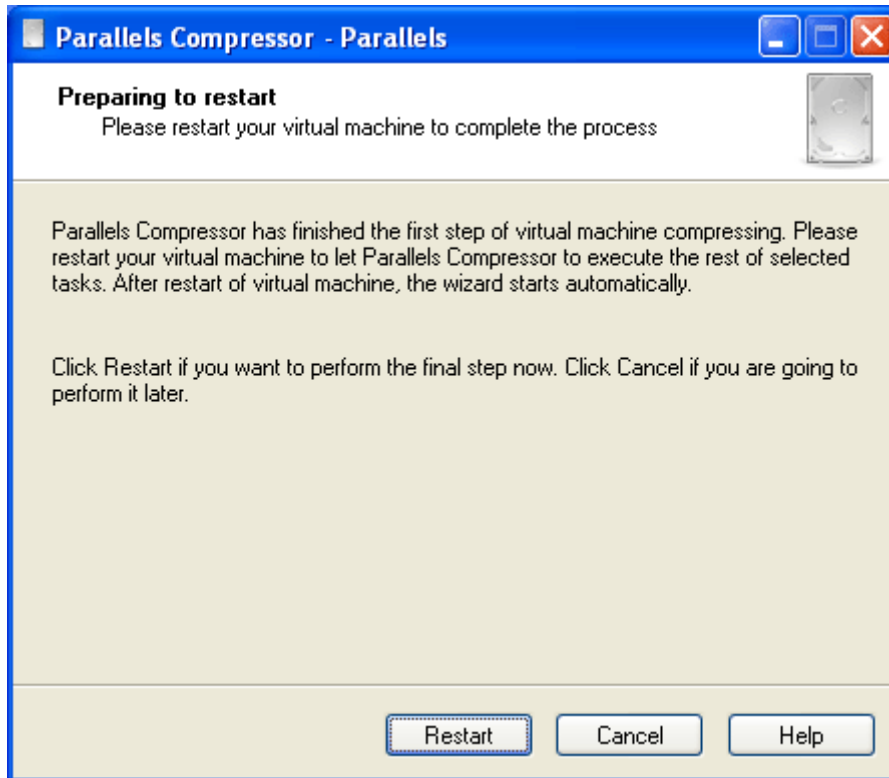
**Note.** During the process, Compressor displays several dialog boxes. Although they are used for information purposes, you can click **Cancel** at any time to stop Compressor or click the **Help** button to get necessary information.

---

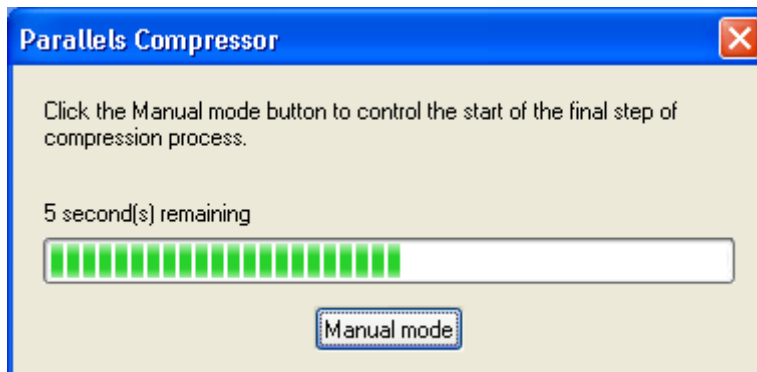
- 1 Compressor displays the Execution in progress dialog box that informs you what tasks are being executed.



- 2 The next screen states that Compressor is going to restart the virtual machine.

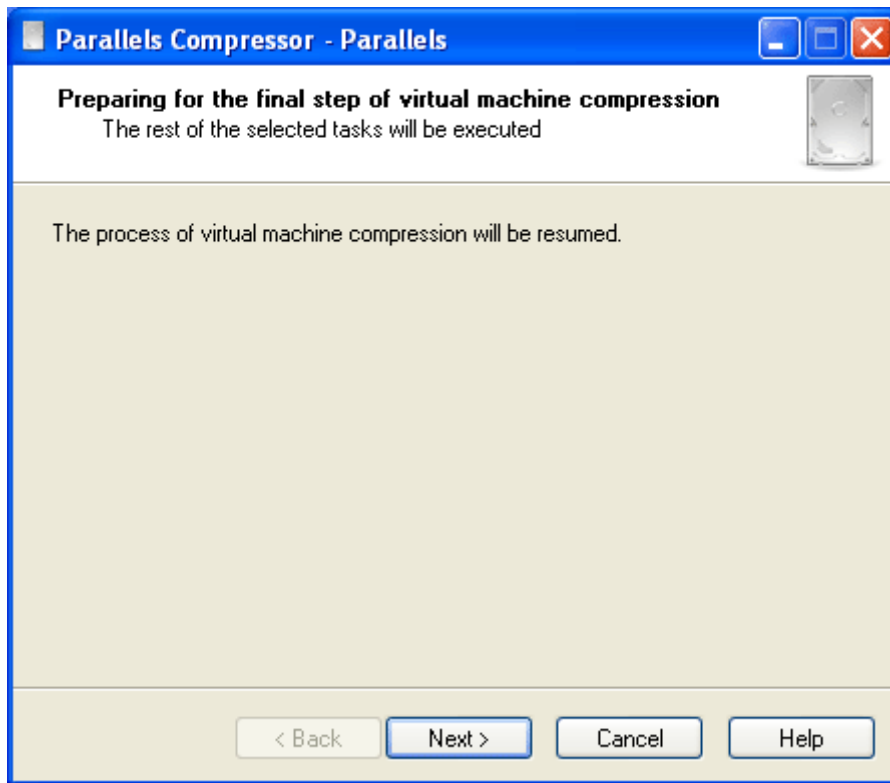


- 3 Compressor restarts the virtual machine.
- 4 After the restart, it displays the dialog box with the time indicator which shows the time remaining until Compressor will continue the execution of compression tasks.



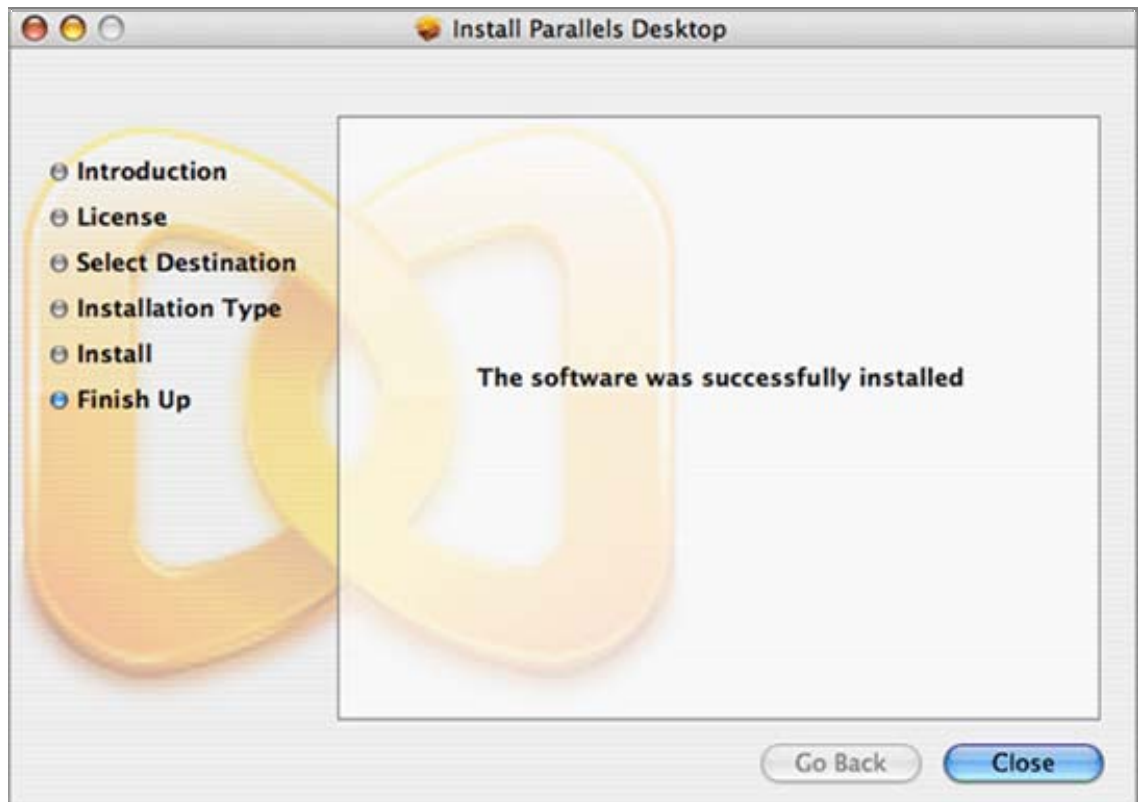


If you click the **Manual mode** button before the timeout expires, you can postpone the execution of the remaining tasks. In this case you will see the dialog box shown below. Click **Next** at any time to let Compressor continue the compression.



- 5 Compressor resumes the execution of the compression tasks and informs you of the tasks currently being performed in the Execution in progress dialog box.

- 6 When Compressor successfully finishes its work, you will see the following dialog box.



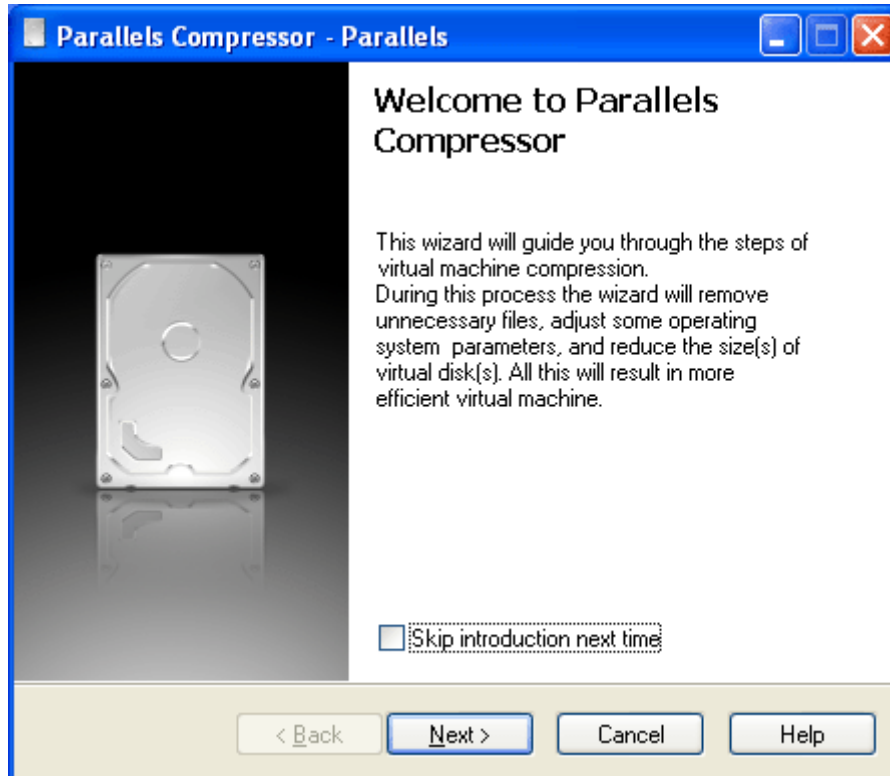
Click Finish to exit Parallels Compressor.

---

# Parallels Compressor Wizard

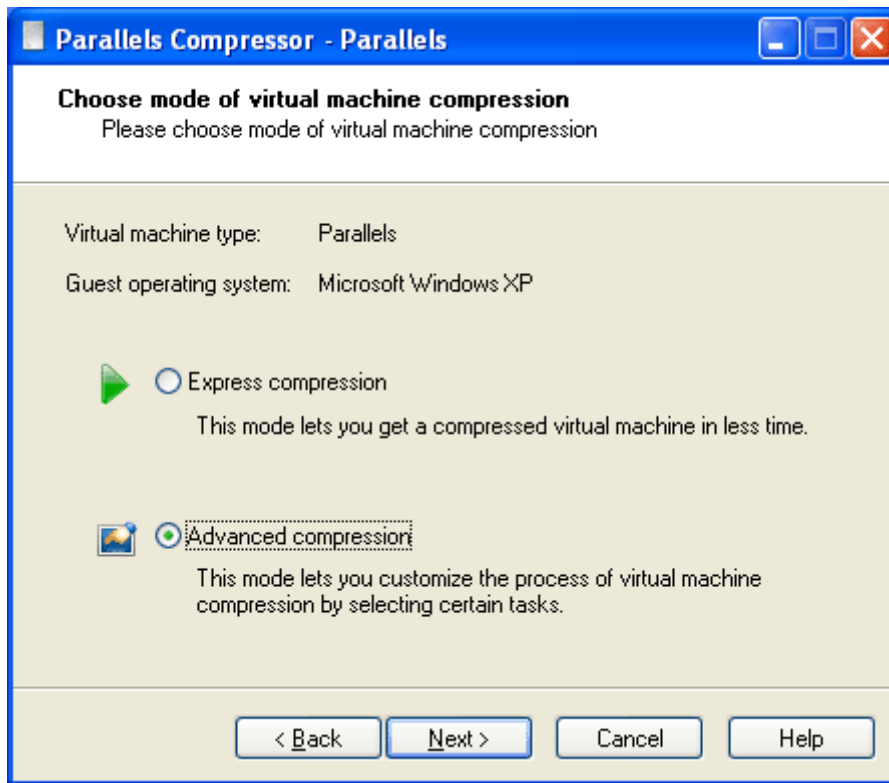
In *manual* mode, Compressor starts as a wizard.

- 1 The wizard displays the Welcome screen.



If you'd like to skip the Welcome screen next time you run the wizard, select the Skip introduction next time check box. Click Next to continue.

- 2 Choose mode of virtual machine compression. At this step, the wizard detects the type of the guest operating system. The wizard prompts you to choose between Express and Advanced compression (page 193).

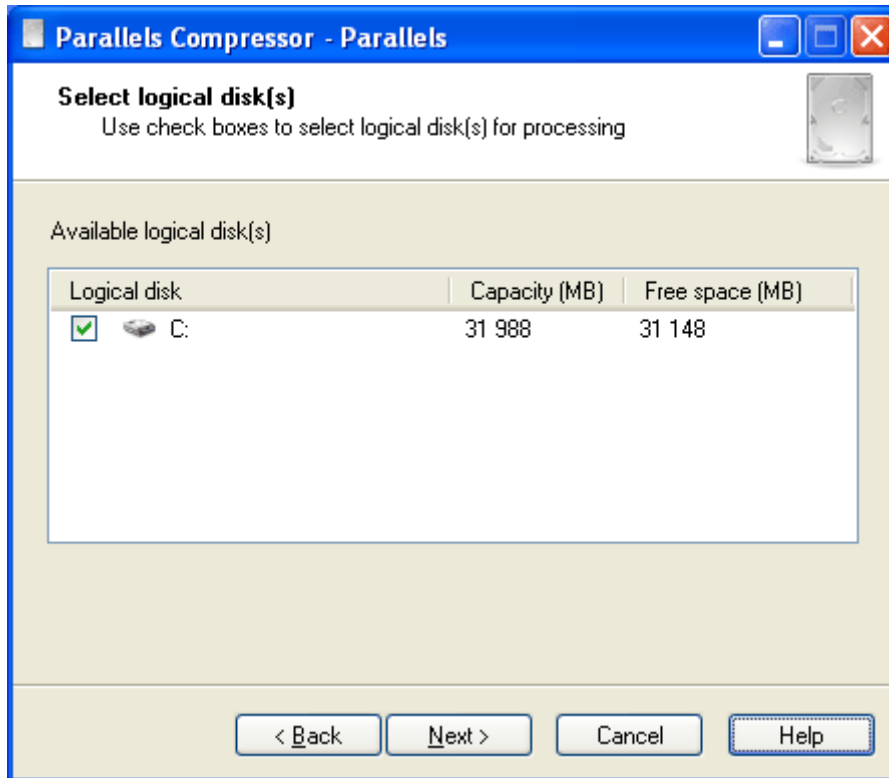


If you choose Express compression, the wizard will use the default compression options.

If you choose Advanced compression, you will be able to select certain options of compression.

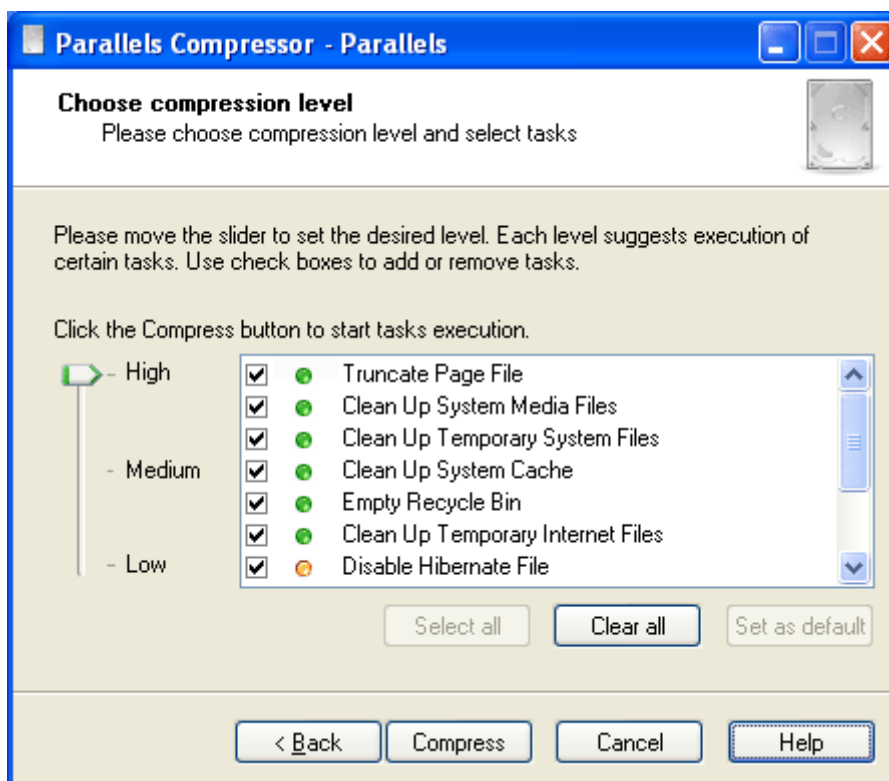
- 3 Select Logical Disk(s). The wizard determines what hard disks are available in your virtual machine. Please read the Selecting Logical Disks for Compression (page 194) topic if you are not sure what disk formats are supported.

Use check boxes to select a disk or disks.



Click Next. If you selected Express compression (page 193) in the Step 3, skip Step 4 and Step 5.

#### 4 Choose Compression Level.



The wizard prompts you to choose the Compression level (page 195). There are three levels: *High*, *Medium*, *Low*.

To choose the level, place the cursor over the level slider and smoothly move the slider to the desired level or just click the levels consecutively starting from *High* until the slider reaches the desired level.

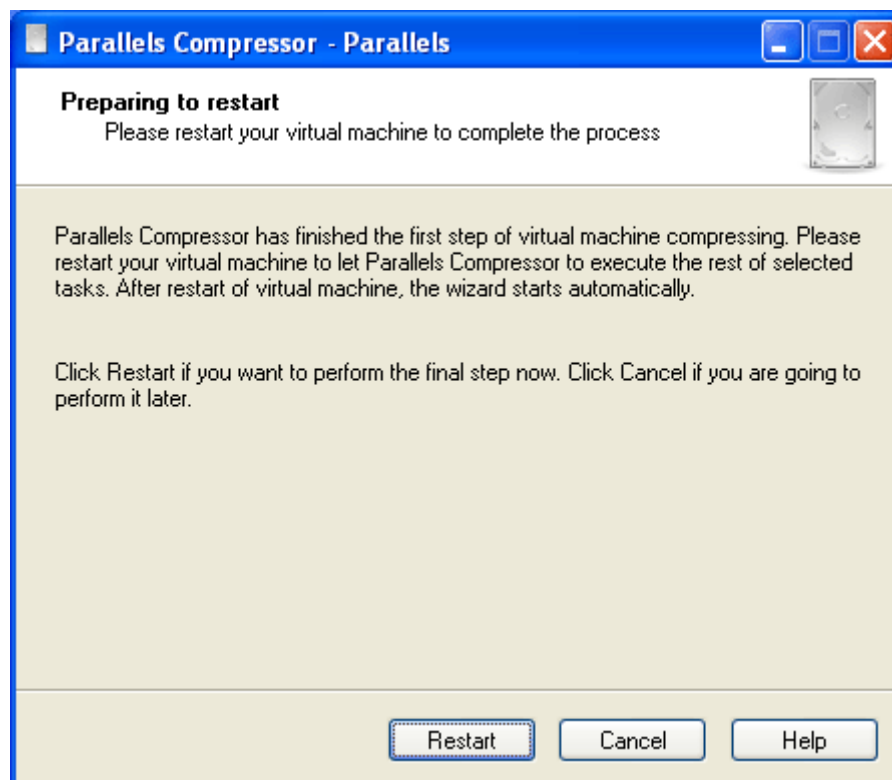
For each level certain tasks (page 195) are suggested, but you can select check boxes for tasks you want to be executed and clear the check boxes for tasks you don't want to be executed. You can also click the **Select all** button to select all tasks or click **Clear all** to clear all check boxes. Click **Set as default** to restore the default selection of tasks for the chosen level.

The check box for the **Compact virtual disk** task is always disabled.

Click the **Compress** button. The wizard starts execution of the selected tasks, and you can see the progress of the operation.

If you cleared the check box for the **Truncate page file** option, the wizard skips **Step 5** and **Step 6**.

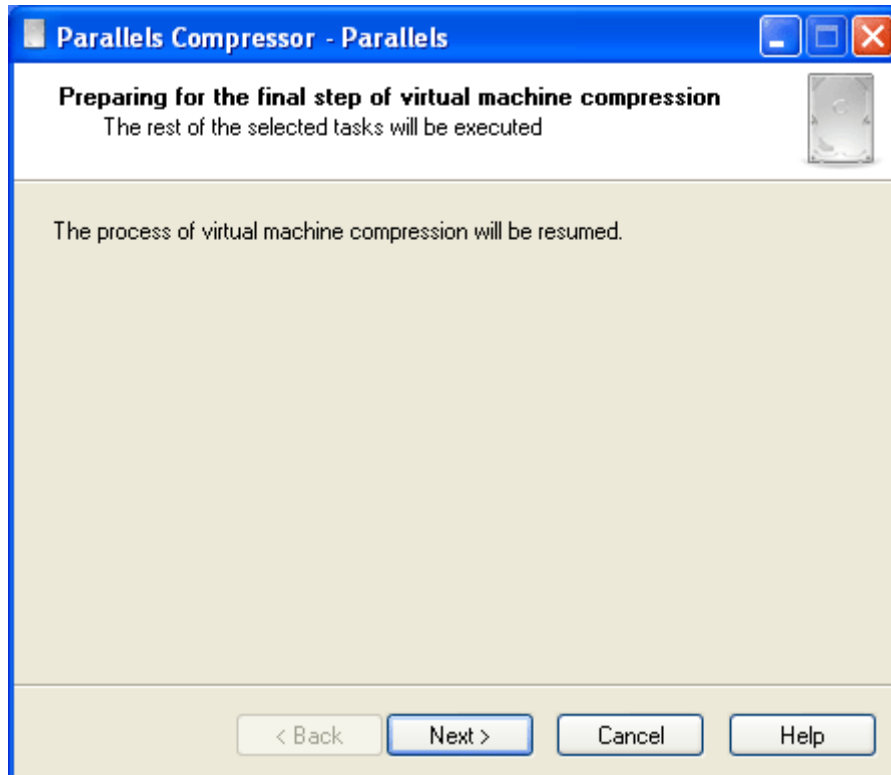
- 5 **Preparing to restart.** Depending on the tasks you have selected on the previous step, the wizard may require to restart the computer.



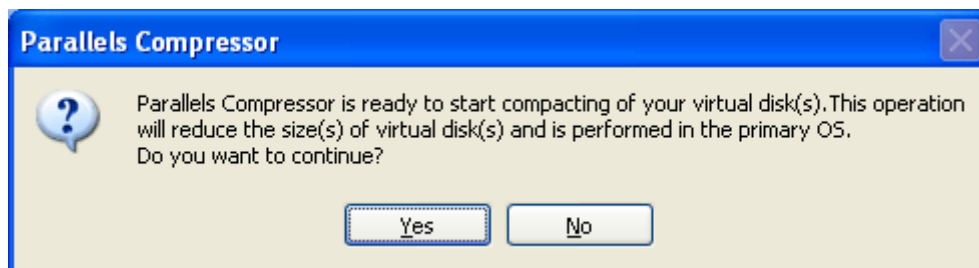
Click **Next** to restart your virtual machine.

If you click **Cancel**, the process of virtual machine compression will be resumed automatically the next time you start your virtual machine.

- 6 When the restart is completed, the wizard is ready to resume the execution of tasks. Click Next.



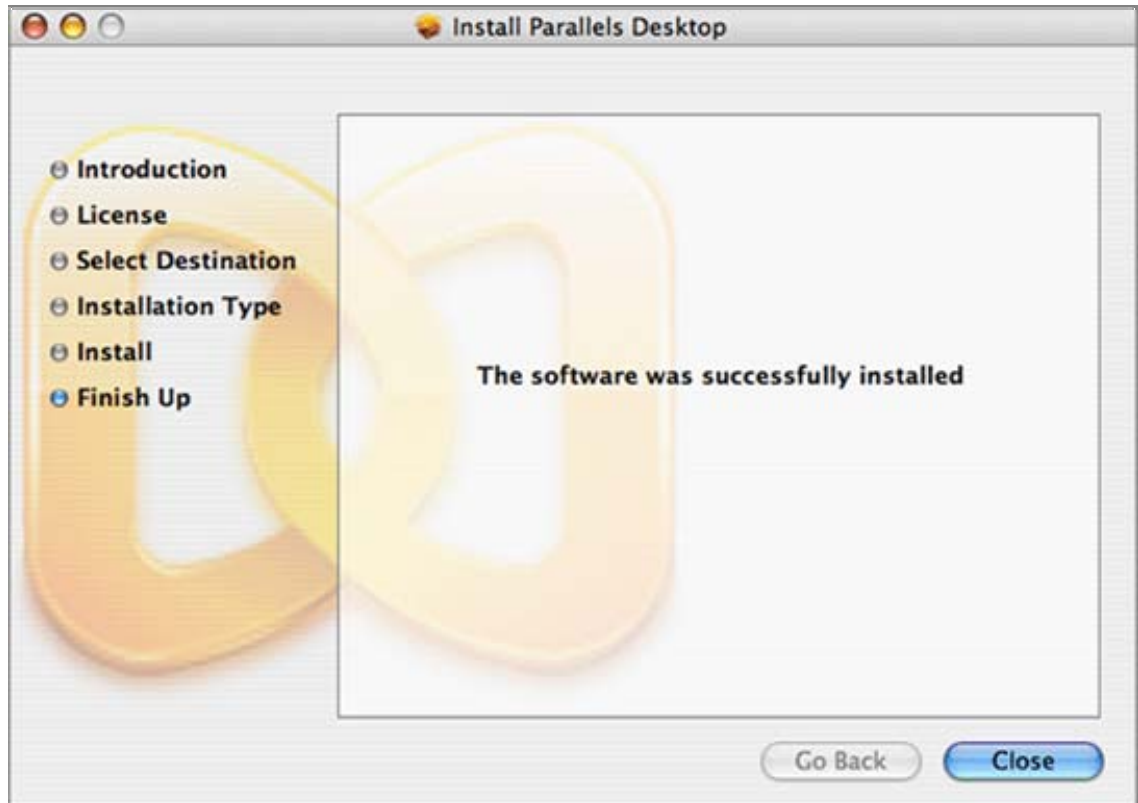
- 7 On the wizard's next dialog box, you can see the progress of operations. If you have chosen Express compression, the wizard performs the disk compacting without prompting you to confirm this operation.
- 8 Disks compacting is the final step of compression.



Click Yes to perform the operation. Click No to skip disk compacting.

The compacting of the selected virtual disk will not be performed if a selected disk is in plain format. For more information please refer to the Selecting Logical Disks for Compression (page 194) topic.

- 9 Now, compression of the virtual machine is completed.



Your virtual machine is compressed, and its expanding disks are significantly reduced in size.

Click Finish to exit Parallels Compressor.

---

## Options of Parallels Compressor

This Section describes in detail all the options of Parallels Compressor available in *manual* mode.



## Running Modes

Parallel Compressor has two running modes:

- **Automatic.** Default running mode. In automatic mode, Compressor performs Express Compression (page 193) without prompting the user to confirm operations.
- **Manual.** Compressor runs as a wizard (page 187) which helps you choose various compression options.

Once launched, Compressor displays the dialog box with a time indicator showing the time remaining until Compressor will run in automatic mode.

To run Compressor in **automatic** mode don't do anything, just wait.

To run Compressor in **manual** mode press the ESC key or click the **Manual mode** button before the timeout expires.

### Command-line keys for Compressor

The current version of Parallels Compressor has the following keys:

- **/A** - to start the program in automatic running mode;
- **/G <cmdline>** - to start third party defragmentation tool instead of the tool used by Parallels Compressor, <cmdline> stands for the path and name of such tool ;
- **/H** - to open the Help panel with the list of available keys;
- **/S** - to run Compressor in completely non-interactive mode ("silent mode").

### Comments to command-line format

- The program name and key are separated by a space.
- If spaces are used in the <cmdline>, enclose the expression in double quotes as follows:

```
ParallelsCompressor /G"C:\Program Files\...\defrag.exe"
```

- There is no space between the key and its parameter as in the example above.

## Express and Advanced Modes

When launched in manual mode, Parallels Compressor offers to choose the compression mode for processing a virtual machine:

- **Express** compression. Recommended for all users. In this mode, the compression is performed at the *High* level. That means, all compression tasks (page 195) will be executed except for **Clean up Drivers Cache**, which is skipped by default. During Express compression, only one virtual disk is processed, the current system disk.
- **Advanced** compression. Recommended for advanced users only. In **Advanced** compression mode, the wizard lets you select options: logical disks, desired compression level, and tasks to execute.

## Selecting Logical Disks for Compression

A virtual machine may have several virtual disks. In manual (page 193) mode you can select one or more logical disks for compression.

In the **Select Logical Disks** dialog box, Compressor displays the list of virtual machine's disks in expanding and plain formats.

Please take into account the limitations discussed below.

Virtual machine compression is performed in two steps:

- disk cleaning: removing unnecessary files, disk defragmenting
- disk compacting: reducing the size of a virtual disk file performed in the host operating system

### Expanding disks

Both steps can be performed only on a virtual disk in expanding format.












### Plain disks

Compressor performs only a disk cleaning step on the selected plain disks, system or not; disk compacting can not be done on plain disks.







## Compression Levels




Parallels Compressor supports three levels of compression: *Low*, *Medium*, *High*. Each level suggests the execution of certain tasks. The wizard displays the complete list of such tasks.

The complete list includes the following tasks:

-  Truncate Page file (recreates the system page file of smaller size);
-  Clean Up Temporary System Files (deletes temporary files used by the system for acceleration of operations);
-  Clean Up System Cache (deletes temporary data stored by the system on disk to increase performance);
-  Empty Recycle Bin (permanently removes previously deleted files from the Recycle Bin);
-  Clean Up Temporary Internet Files (cleans up the Internet Explorer cache, deletes cookies, history, address bar, temporary files);
-  Disable Hibernate file (disables hibernate file which stores the virtual machine memory when the virtual machine is turned off);
-  Compact virtual disk(s) (reduces the size of disk in host (primary) operating system);
-  Clean Up Temporary Setup Files (deletes installation files used by MS Office and other programs);
-  Clean Up System Media Files (deletes temporary files used by Media Player);
-  Clean up Drivers Cache (empties the cache for the most popular drivers. If you are going to install new hardware, clear this check box);
-  Clean Up System Restore Information (deletes data related to the last successful system loading).

By default, tasks are assigned to the compression level in the following way:

- High level: all tasks on the list (those marked by , , )
- Medium level: all tasks marked by  and 
- Low level: only tasks marked by 

The desired level of compression can be chosen with the help of a slider which has three positions: *Low*, *Medium*, *High*. For each task on the list there is a check box. When the slider is at the *High* position all tasks are selected. Moving the slider from the *High* to *Medium* position, clears check boxes for tasks marked by ; moving the slider to the *Low* position clears check boxes for tasks marked by  and leaves selected only those tasks which are suggested for execution at the *Low* level (.

Additionally, with any level chosen, you can add/remove tasks by selecting or clearing corresponding check boxes. To restore the selection of tasks default for the chosen level, click the **Set as default** button.

---

**Note.** The check box for the **Compact virtual disk(s)** task cannot be cleared; this task is mandatory for each level.

---

In **Express** compression (page 193) mode (or in automatic mode) all tasks are executed as suggested by the *High* level, only the **Clean up Drivers Cache** task is skipped.

Advanced compression (page 193) allows users to select any set of tasks.

---

## Further Reducing the Disk

After you have used Compressor to process your virtual machine, you can reduce the virtual machine's size even further.

If you are going to share the virtual machine hard disk files, then the smaller its disks are, the better. Once Compressor has completed its work, turn off the virtual machine. Running the virtual machine after compression has been completed will increase the size of its system disk file (the system page file increases as the virtual machine is running). As the virtual hard disk is just a file on your computer, you can archive it with WinZip or WinRAR, whatever you prefer. The size can be reduced by 50% or more.

## CHAPTER 9

# Using Parallels Transporter

Parallels Transporter is a new, easy-to-use Parallels tool which will help you migrate the information from other PC computer to a virtual machine on your Mac. This chapter contains all the information necessary to set up the environment and migrate from real computers or convert third party virtual disks into Parallels virtual machines.

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Installing Transporter on Remote Computer.....	200
Migrating from Remote PC to Mac .....	203
Converting Third Party Images into Parallels VM.....	210
Migrating from PC to PC .....	213

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## Overview

Parallels Transporter can migrate the information from live disks of a remote PC computer and create images of such disks which can be used in a Parallels Desktop virtual machine. Here we describe Parallels Transporter usage scenarios.

For all these scenarios you have to download and install on a remote (source) computer the following package (free of charge for all users):

ParallelsTRS-2.0.XXXX-Win.exe

This package contains Parallels Transporter for PC and Parallels Transporter Agent.

**Warning.** If you capture and reconfigure system disks with Windows OS installed on it, beware that there may be activation problems. OS migrated to a virtual machine detects that the hardware changed and may require re-activation.

### To migrate from a remote computer

The operation is supported for the source computers with the following operating systems: Windows 2000 / Windows 2003 / Windows XP.

You have to use Parallels Transporter Client and Agent (for PC) for this operation. Parallels Transporter Client already installed on your Mac along with Parallels Desktop. You only have to start it.

You must download the Parallels Transporter package and install Parallels Transporter Agent on a remote (source) computer.

If you want to use a migrated disk as a boot volume (system disk) in your virtual machine you should have an installation CD for the same OS that runs on the source computer in case Parallels Transporter will need to re-install a few drivers, because hardware on the source computer and default hardware in a virtual machine can be different. You can use an ISO image of such CD.

### To convert a third party image into Parallels virtual machine

This operation is supported for VMware and Virtual PC virtual disks.

This operation is performed on a remote PC computer. To be able to perform this operation you will have to install Parallels Transporter for PC on a remote computer. Installation of Parallels Transporter Agent is not required.

You can use Parallels Transporter for converting third party images into Parallels virtual disks. You can specify as the destination for the resulting images your external USB drive. For your convenience, the configuration file (.pvs) is created along, so after you reconnect your external USB drive to Mac's USB port, you can launch a virtual machine and boot it from the converted disk.

**Note.** You must provide an installation CD for the operating system installed on a VMware or Virtual PC virtual disk.

You also can process an already existing non-bootable Parallels virtual disk image (result of migration from a remote PC), so that this disk can be used as a system disk in a Parallels virtual machine.

### To migrate from a remote computer locally

The operation is supported for the source PC computers with the following operating systems: Windows 2000 / Windows 2003 / Windows XP.

This operation is performed on a remote PC computer. As a destination you can an external USB drive on the same computer in case you don't have local network to transfer the images right to your Mac.

You have to install both Parallels Transporter for PC and Agent on the remote computer.

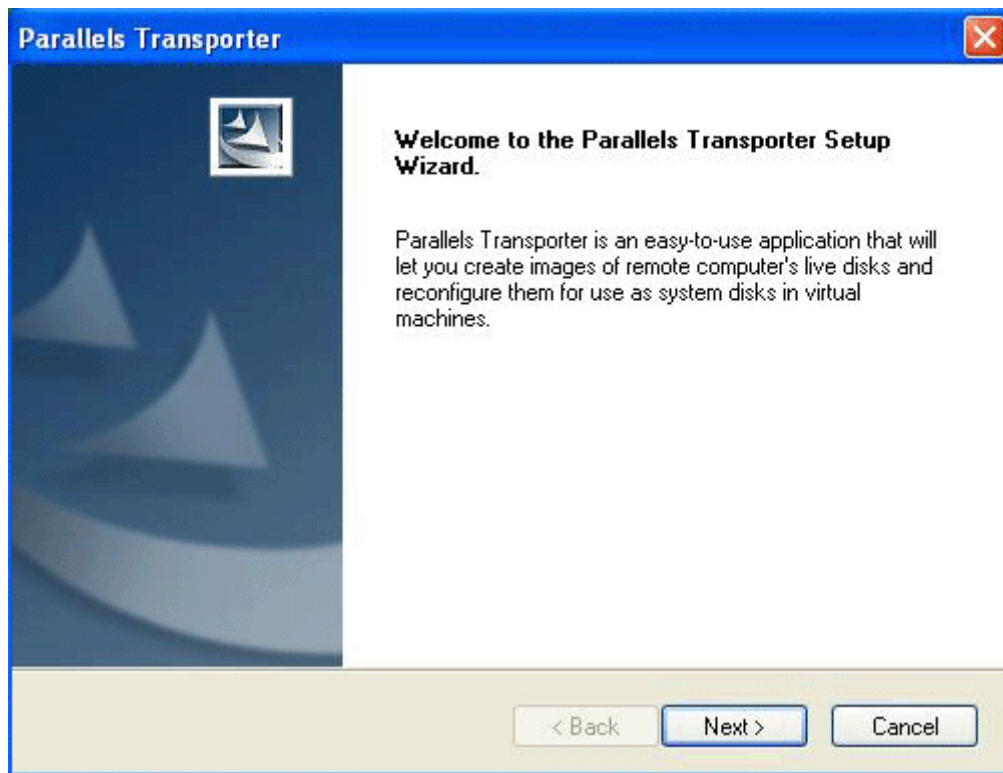
**Note.** If you are going to use a migrated system disk as a system disk in a virtual machine, you may need an installation CD for the OS that were installed on the system partition of that disk.

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## Installing Transporter on Remote Computer

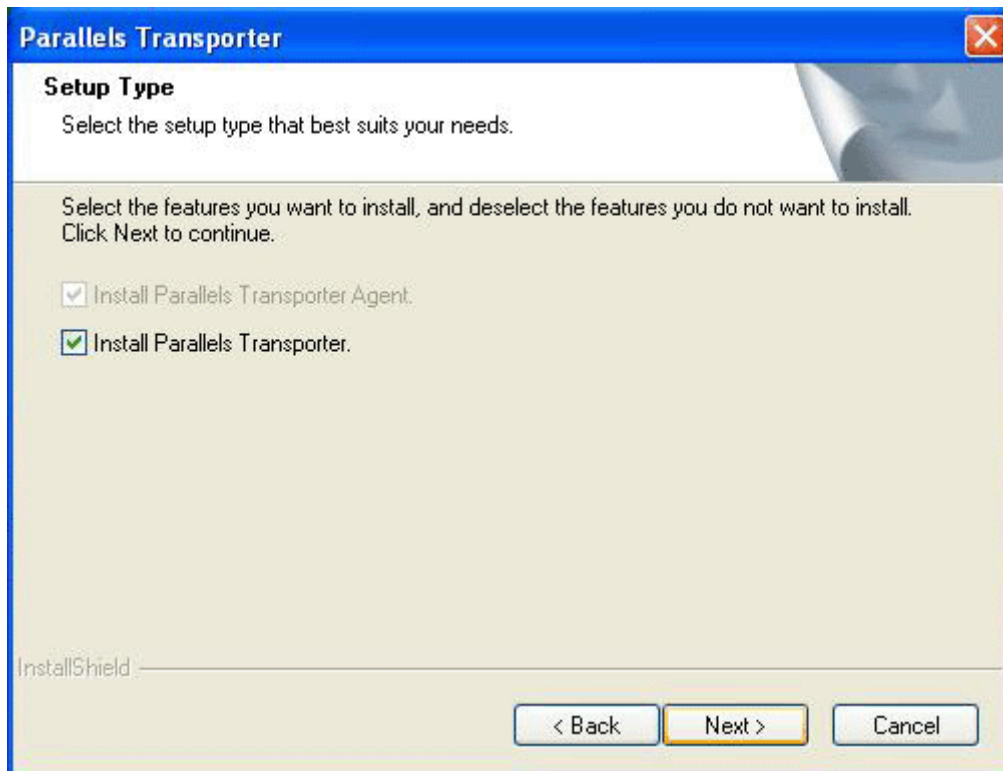
You have to install Parallels Transporter on the remote computer which disks you want to migrate.

- 1 Download the package ParallelsTRS-2.0.XXXX-Win.exe and click it to start installation. Click Next in the Welcome window.

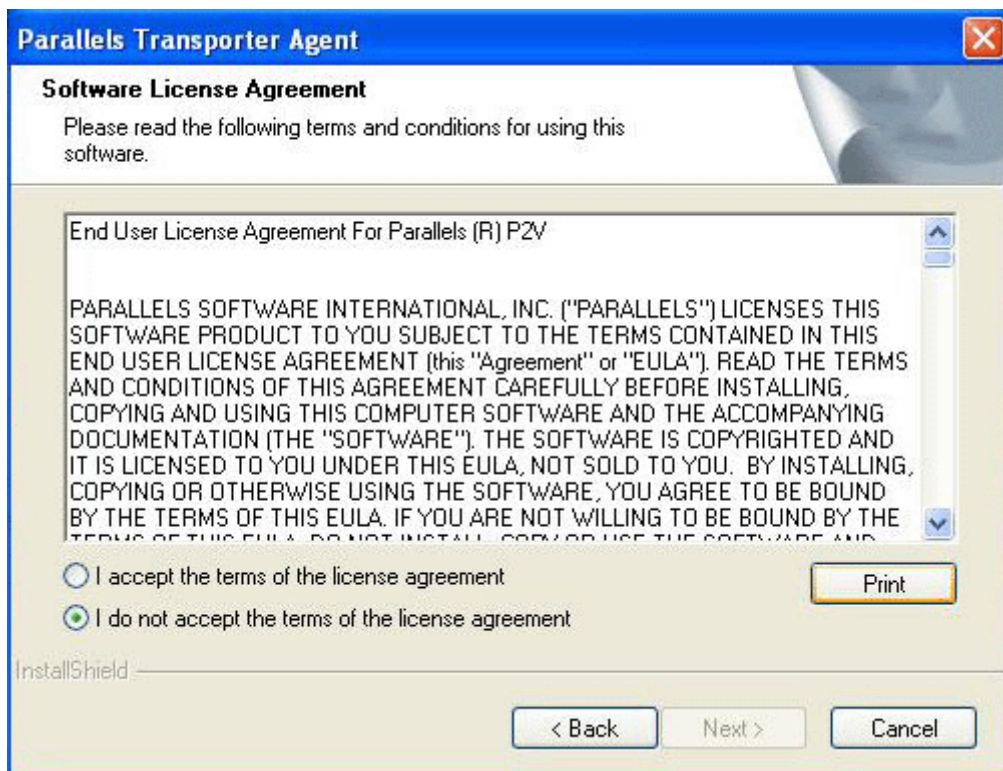




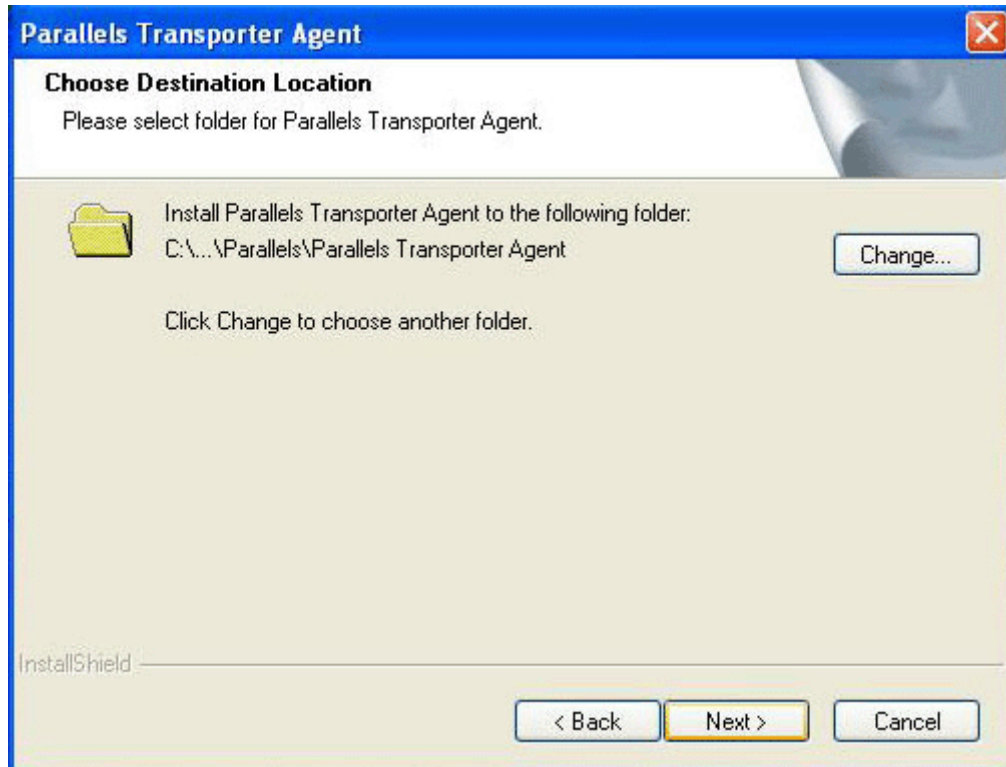
- 2 Is you are going to migrate from other computers using this PC computer or you are going to convert third party virtual images, select both options. Both Client and Agent application will be installed.



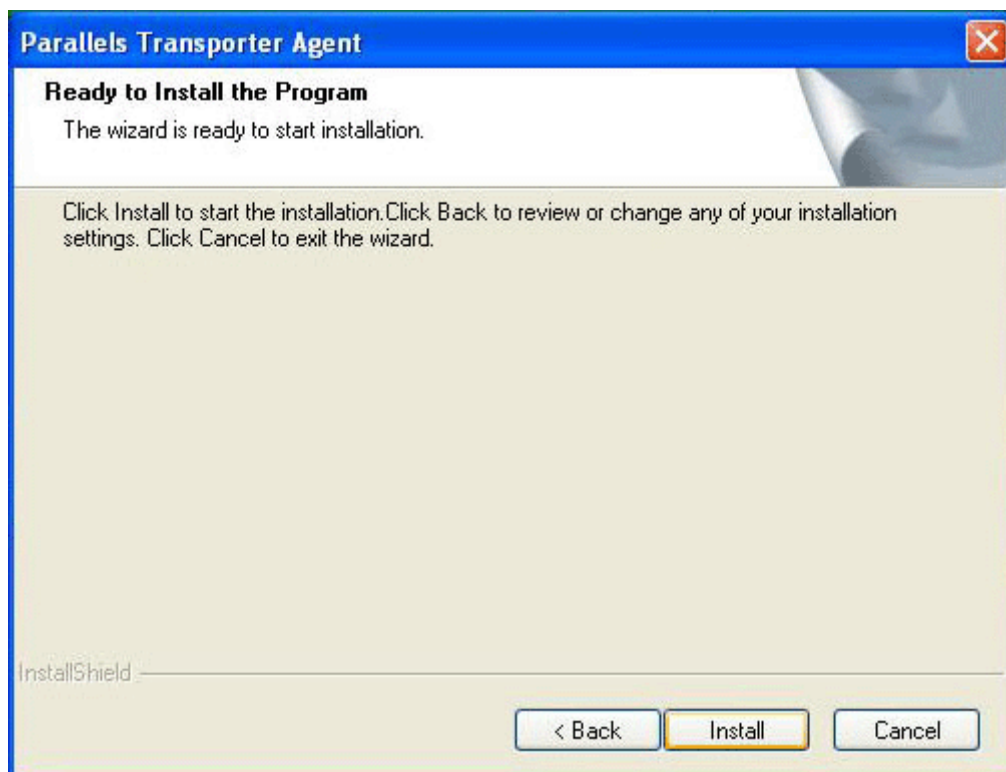
- 3 Read the License Agreement and click I accept.. to agree.



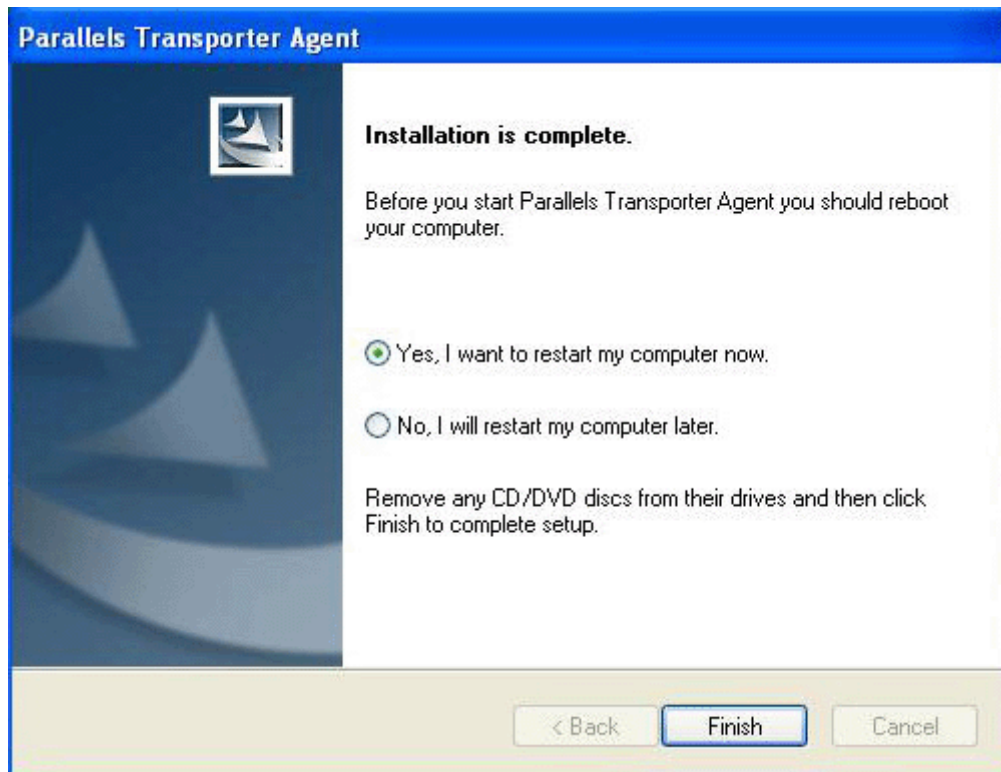
- 4 Select the destination folder for Parallels Transporter Agent.



- 5 The wizard is ready to start installation Click Install.



- 6 Installation is completed successfully. Click Finish. Parallels Transporter Agent starts, and you can proceed with migration.



---

## Migrating from Remote PC to Mac

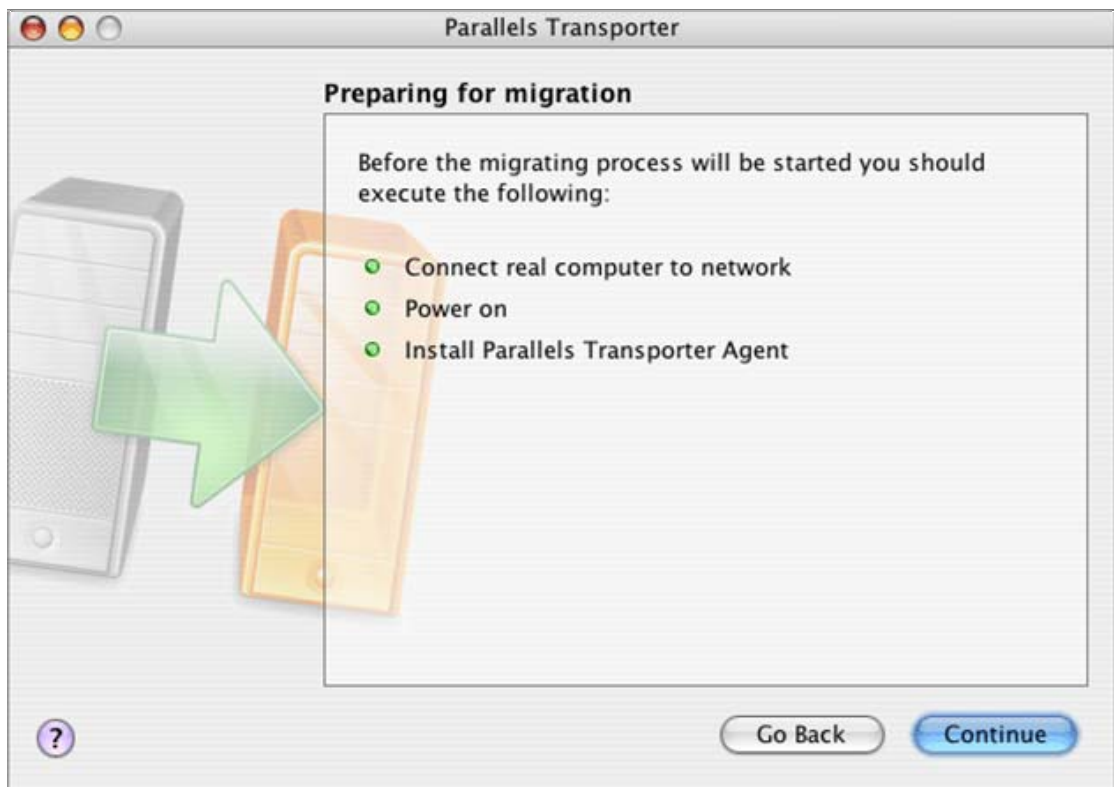
To migrate the data from a remote computer to your Mac do the following:

- 1 Turn on the remote PC and log in. Make sure that your Mac and the remote computer are connected by a network cable. Install Parallels Transporter Agent using the ParallelsTRS-2.0.XXXX-Win.exe package.
- 2 Start Parallels Transporter on your Mac. The application is installed along with Parallels Desktop, and is located in the Applications/Parallels/ folder on your Mac. Just click it to launch.

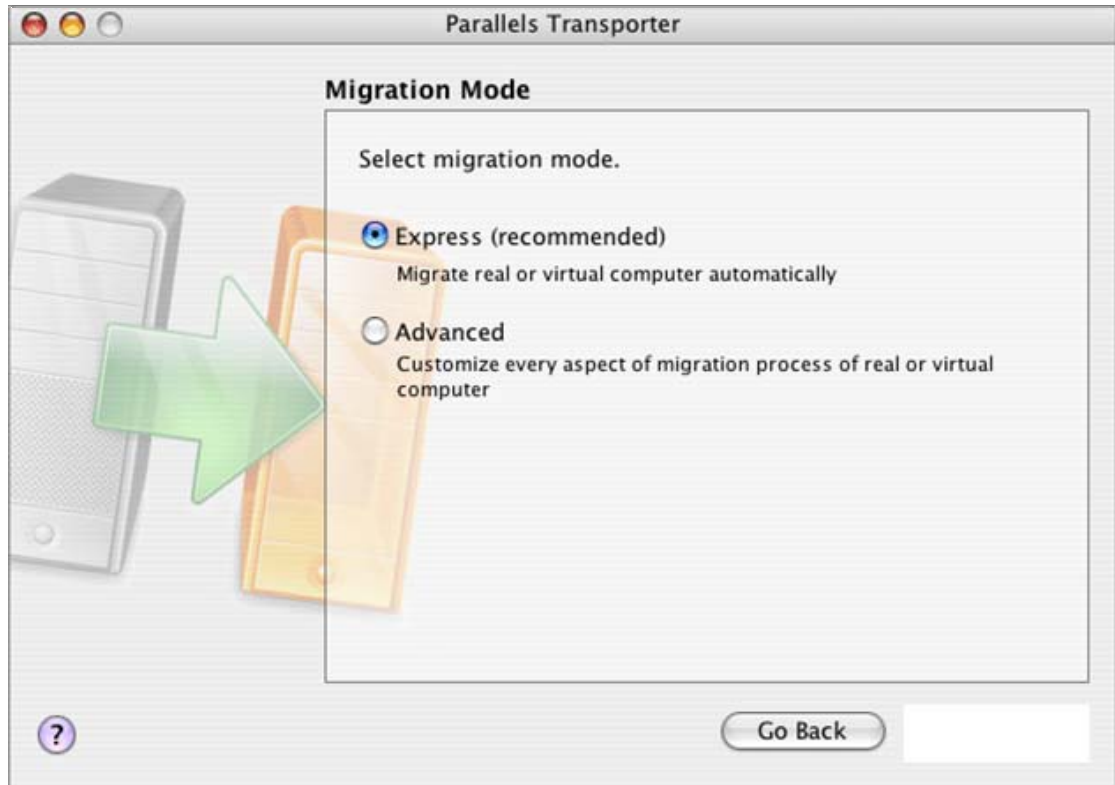
- 3 Parallels Transporter displays the Welcome window. Click Continue.



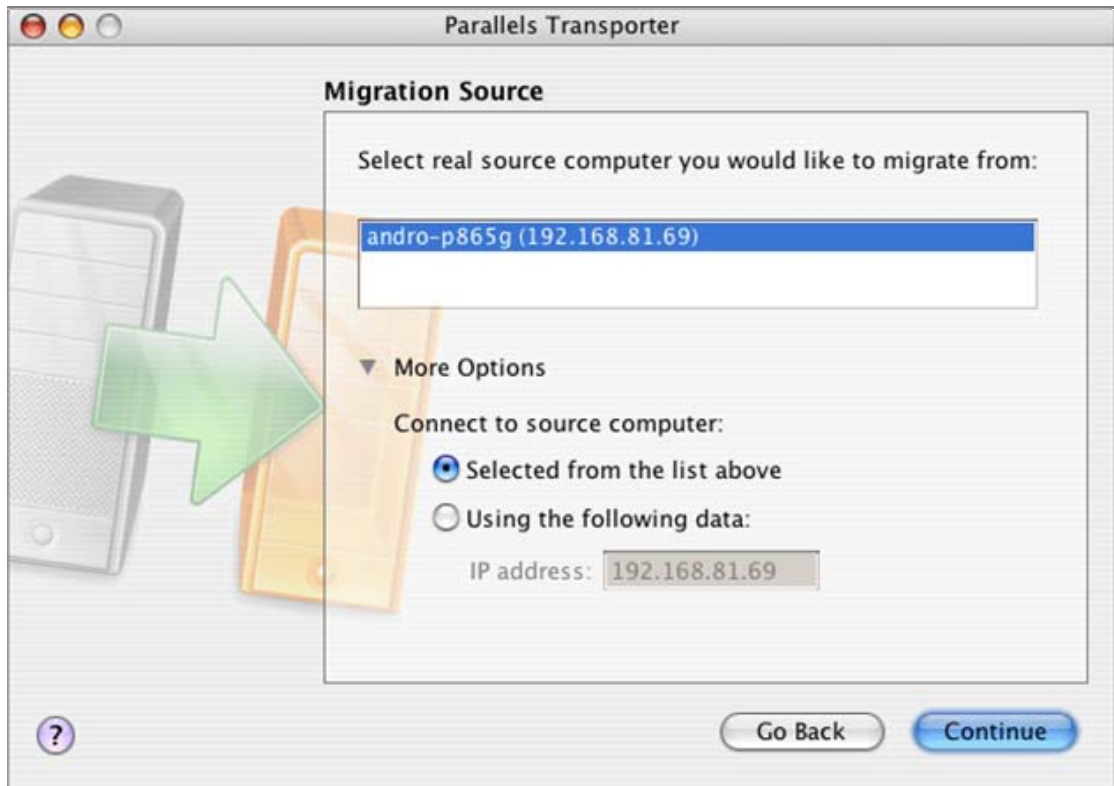
- 4 The next window prompts you to check whether you performed all necessary actions or not.



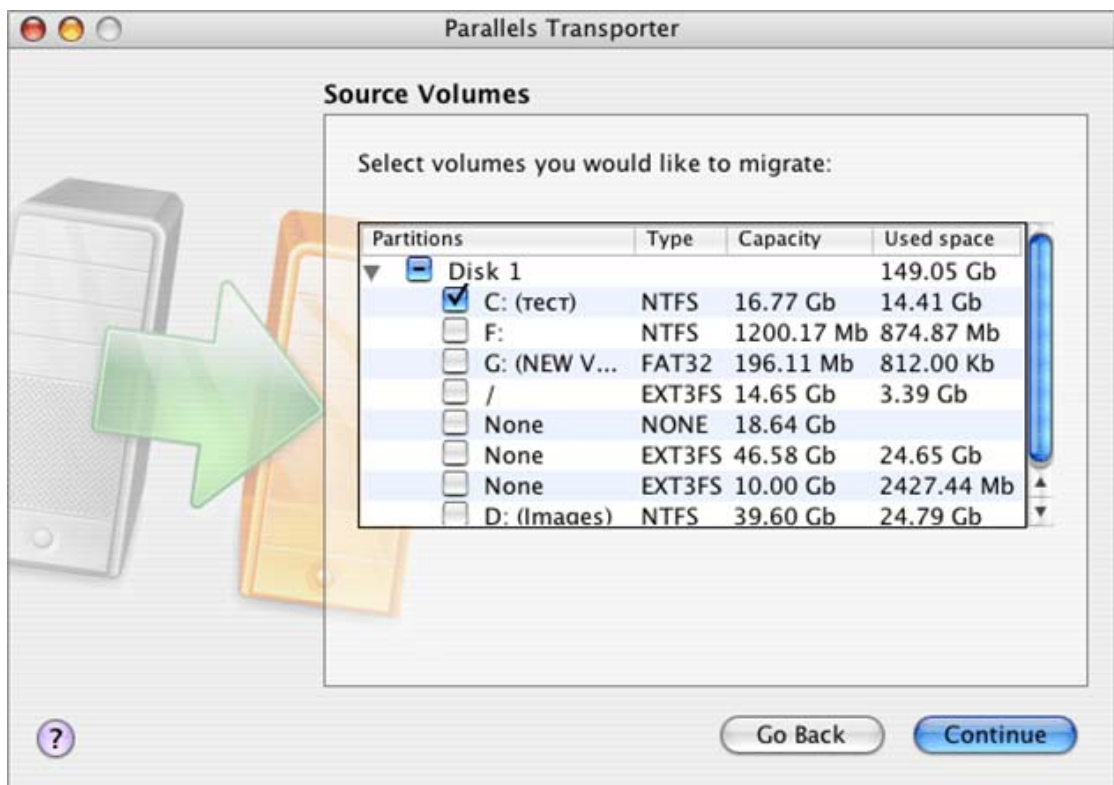
- 5 In the next window you can choose the mode of migration. Choose **Express** mode to migrate the current system volume and apply all necessary changes to the operating system to make the resulting image bootable in Parallels virtual machine. Choose **Advanced** mode to have an opportunity to select options of migration.



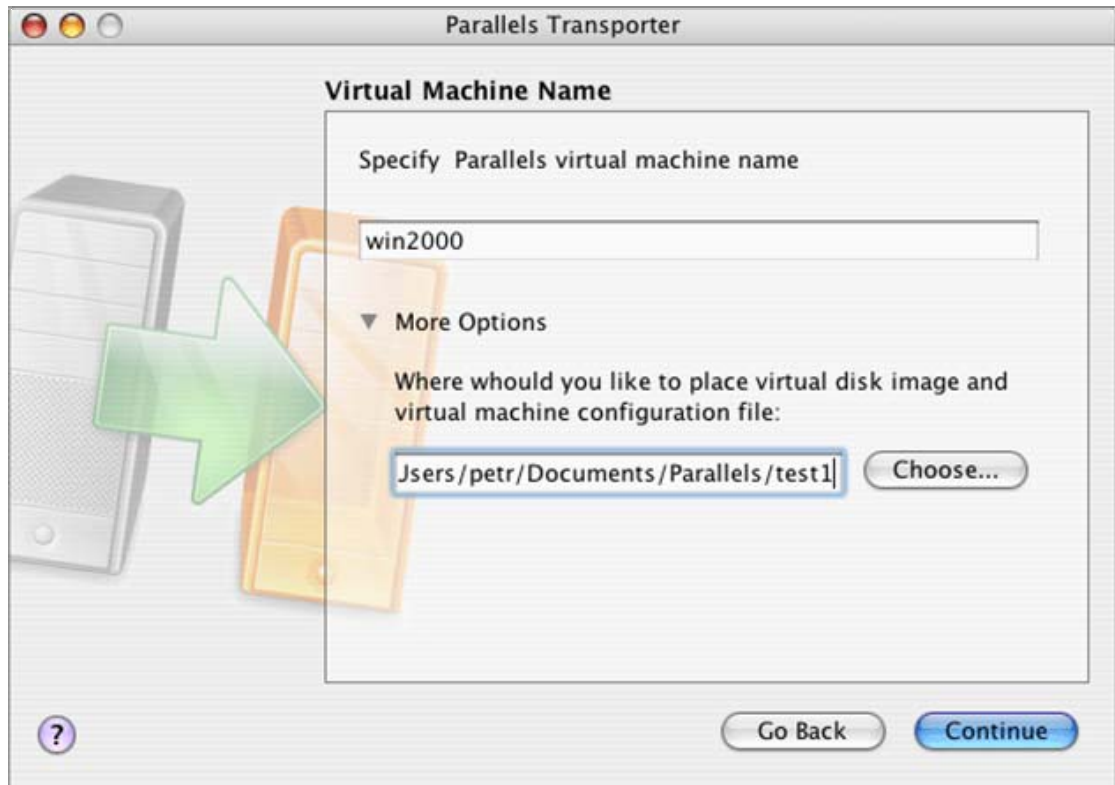
- 6 Choose source computer. Make sure that the desired remote computer is turned on and connected by a network cable. If computer doesn't appear on the list, you can specify it by its network name or by its IP address.



- 7 If you selected Express mode, skip to Step 10. Select the volumes on the source computer that you want to migrate from. Please note, that the only one image will be bootable as a result, the same one with the active operating system.



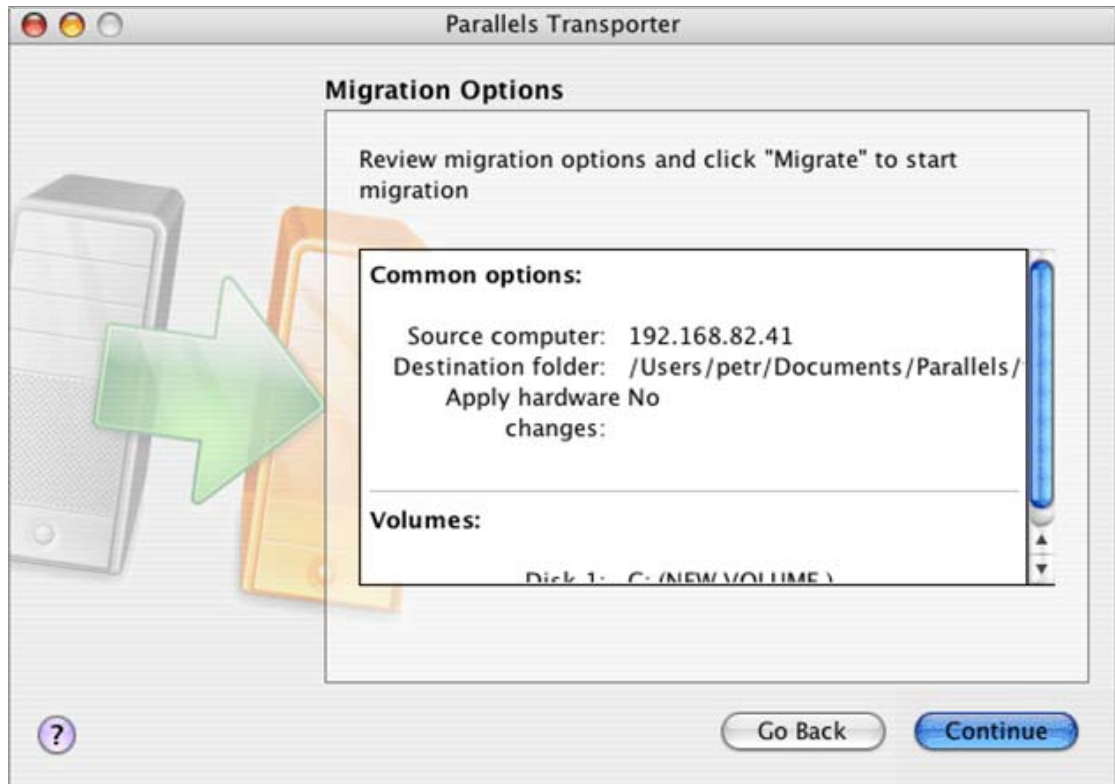
- 8 Select a name for the resulting virtual machine.





- 9 Choose **Boot** from it if you are going to use the system volume as a system disk in a virtual machine. Choose **Use data** from it if you will use all disk images as data disks only.



- 10 Please review the selected options. Click Go back to edit the settings. Click Continue to proceed.

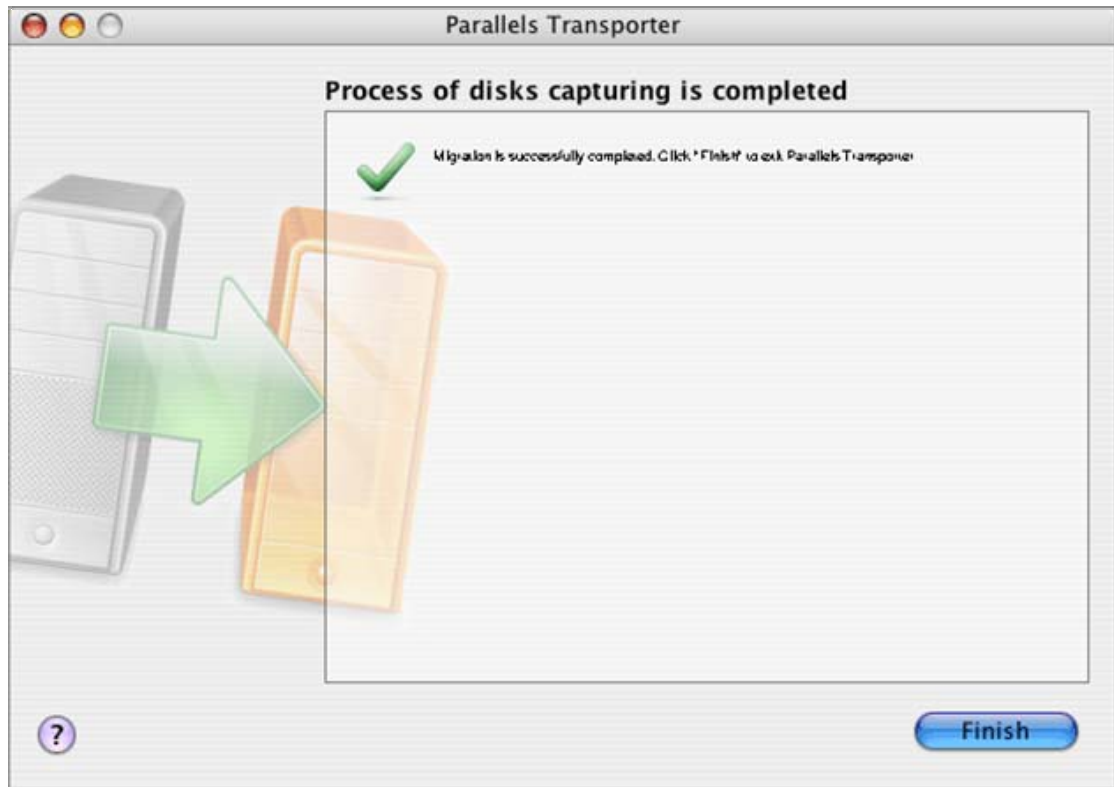


- 11 The process of disks migration can take a considerable time to perform. The Parallels Transporter icon located on the system tray indicates the status of the process.

 - active status, migration is in process;  - migration stopped by some reason.



12 When the process is completed successfully you will see the following window.



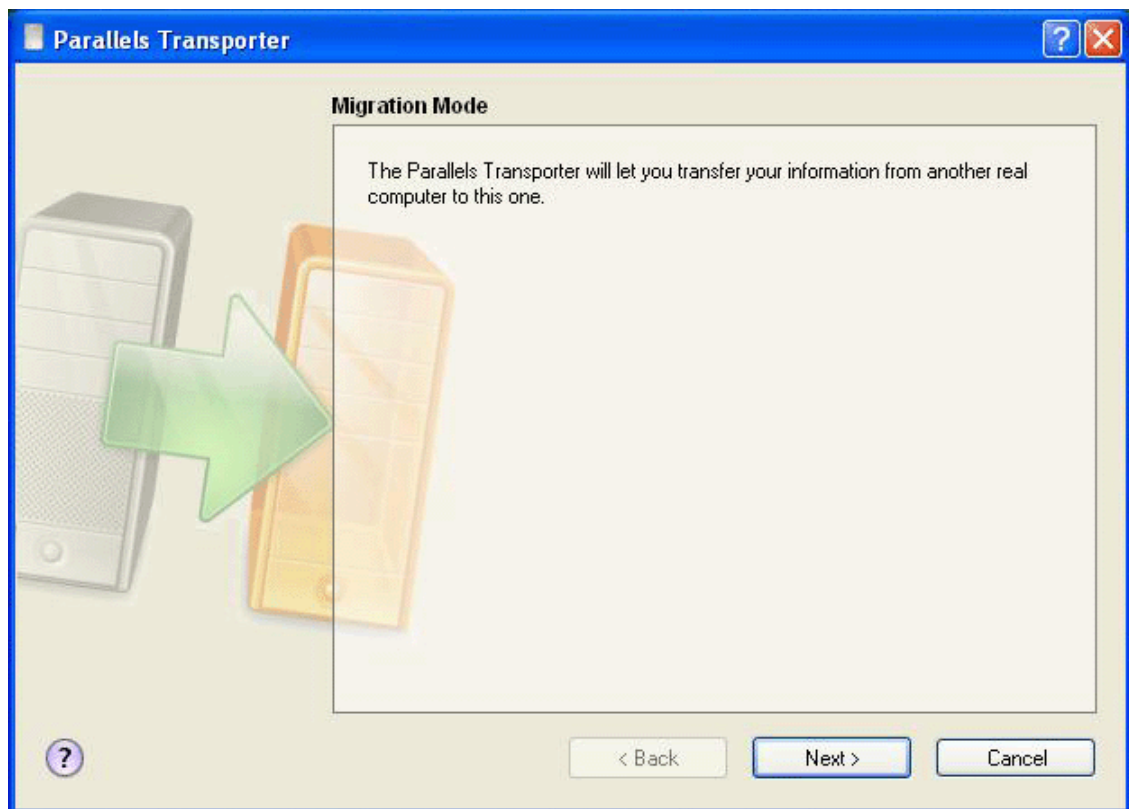
13 Click Finish. If you selected the Express mode, or in Typical mode selected the Boot from it option, the new virtual machine will be open in Parallels Desktop. Otherwise, the Finder will be opened to help you locate the resulted files.

---

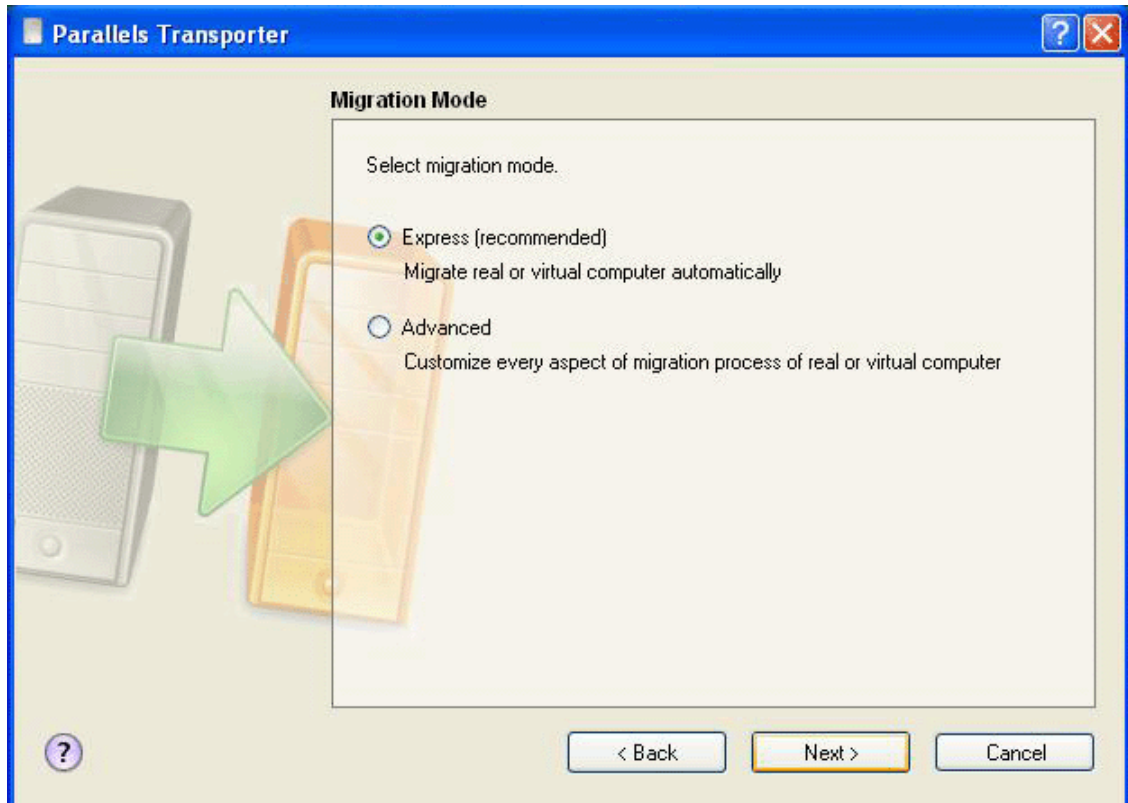
## Converting Third Party Images into Parallels VM

If you are going to convert a third party image into Parallels virtual machine start Parallels Transporter on a remote computer. By default, it is located in `C:/Program Files/Parallels`. Click `Parallels Transporter.exe` to launch it. Insert the installation CD.

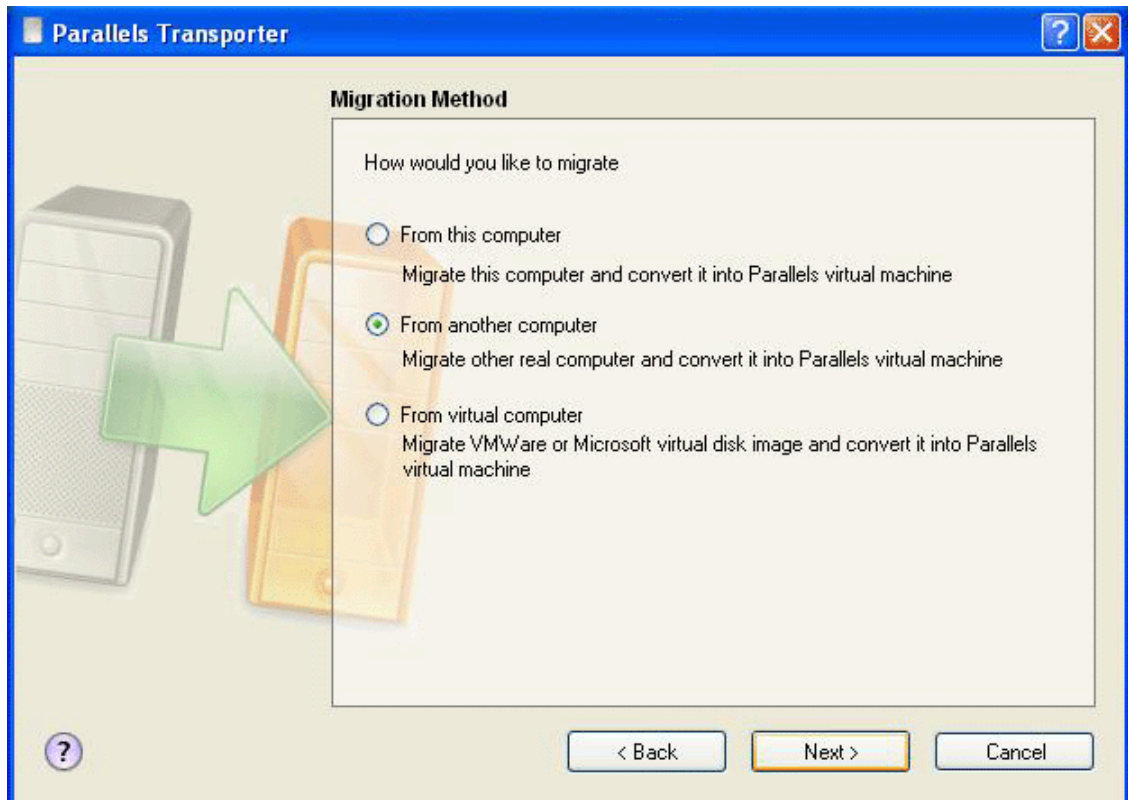
- 1 Parallels Transporter displays the Welcome window. Click **Next**.



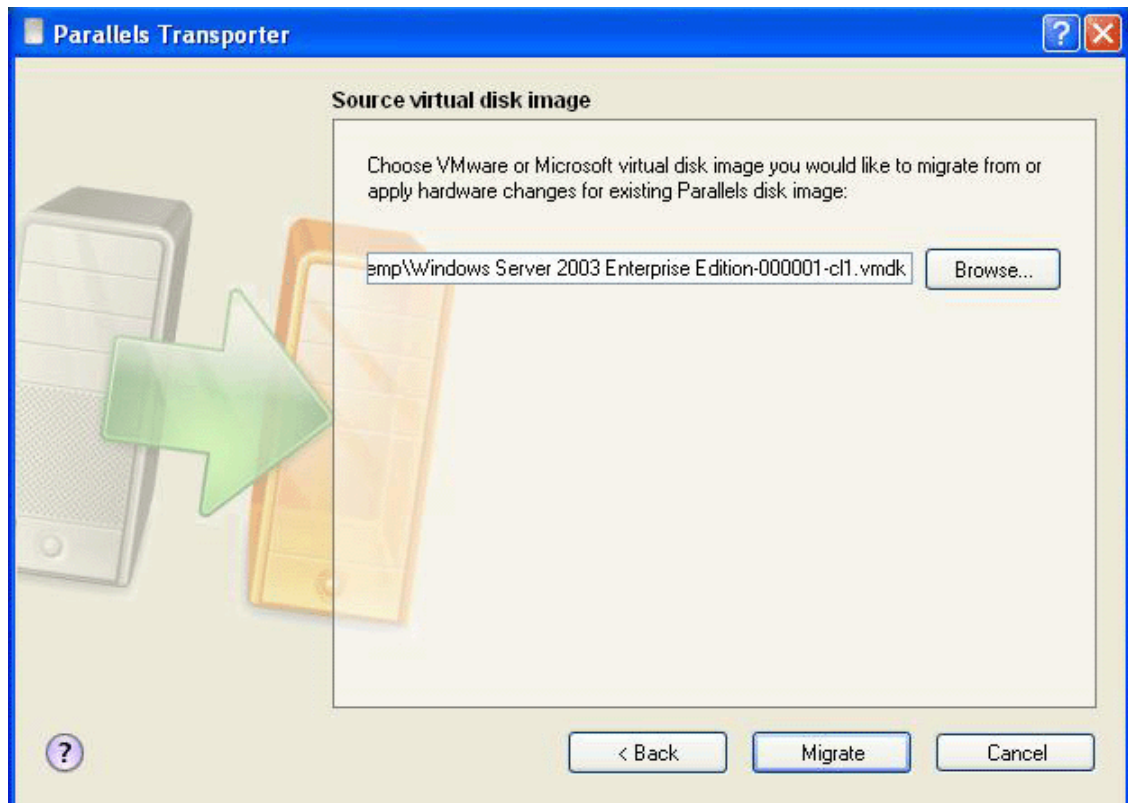
- 2 Select Advanced as the migration mode.



- 3 Select the third option, migration from virtual computer.

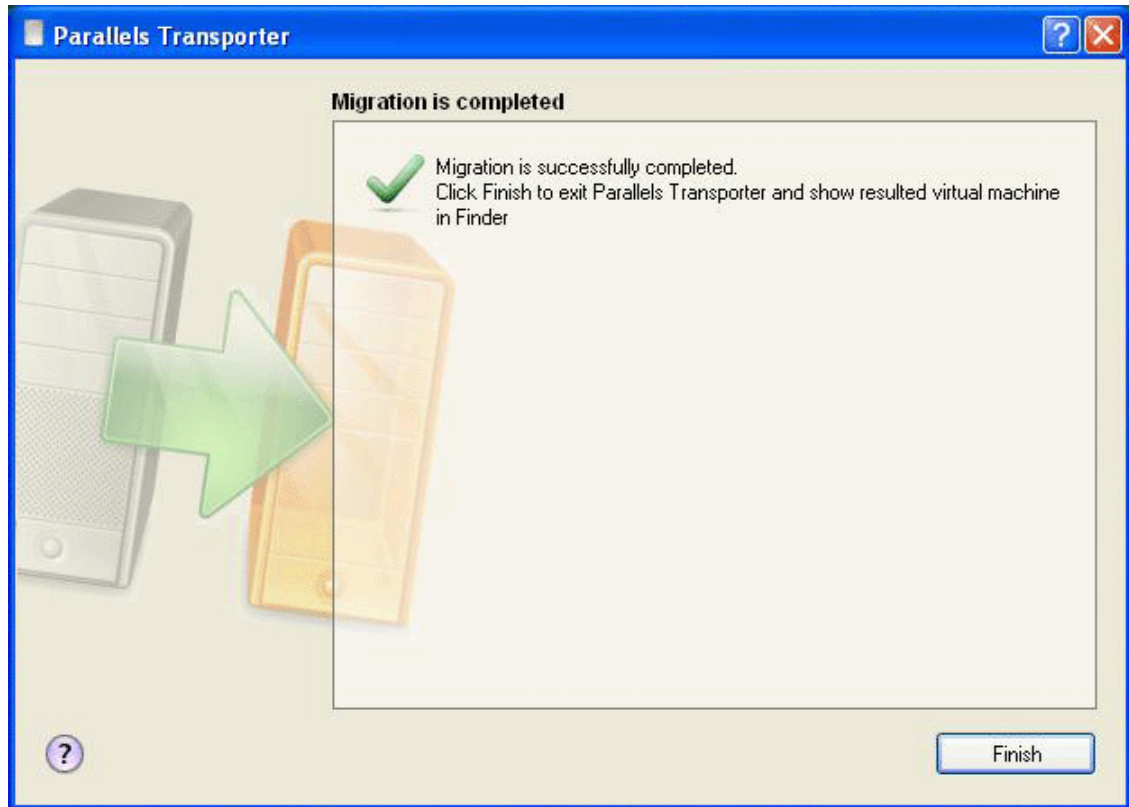


- 4 Locate an image you want to convert using the Browse button or type its complete name with path into the field.



- 5 Select a destination for the resulting virtual machine. As the destination you can select an external USB drive connected to the PC. When the operation will be complete, you can connect it to your Mac and copy it.

- 6 Converting virtual images may take a considerable time to perform.



---

## Migrating from PC to PC

If you installed on a remote computer both Parallels Transporter for PC and Agent you can migrate from this Pc locally.

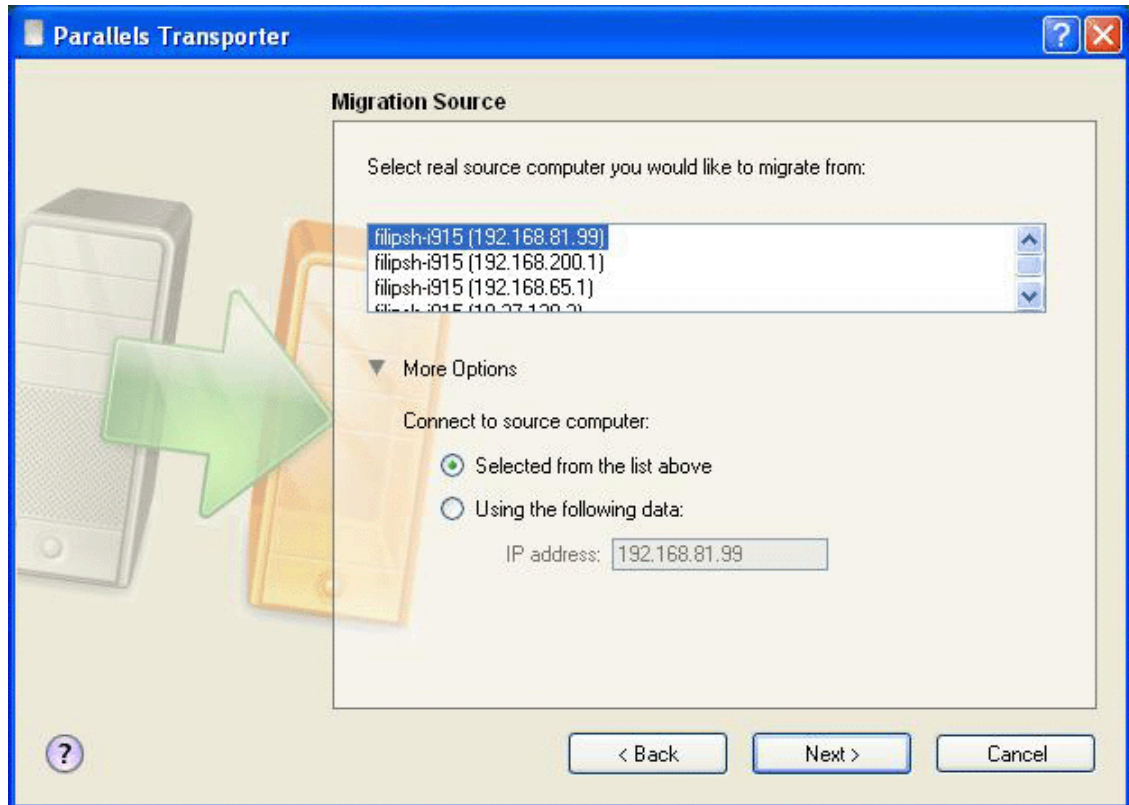
If you installed on the PC Parallels Transporter for PC and installed on other PC (on the same network) Parallels Transporter Agent, you can migrate from this other computer to the first PC.

**Note.** If you don't have local network you can migrate from a PC locally to the same computer and then copy the result to an external USB drive, and then connect this drive to your Mac.

To migrate from PC locally perform the following actions:

- 1 Install Parallels Transporter on the PC, both Transporter for PC and Agent.
- 2 Launch Parallels Transporter. Select Start-->Program Files-->Parallels-->Parallels Transporter.
- 3 Select **Advanced** mode as a migration mode.

- 4 Select the source computer.



- 5 Select a name for the virtual PC.
- 6 Select the destination folder for the virtual PC.
- 7 Review the options. Click **Migrate** to start the process.

# Using Parallels Image Tool

This chapter provides all the information necessary to use Parallels Image Tool. Since a virtual machine operates virtual hard disks which are image files and uses virtual CD/DVDs which are images of real discs, the Parallels Desktop package includes a special tool for creating and supporting images - the Parallels Image Tool, which is automatically installed along with Parallels Desktop.

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---

## Overview

Parallels Image Tool allows you to:

- modify existing images of virtual hard disks including conversion of images to other formats (see the Format of The Virtual Disk (page 95) in the **Hard Disk Images** topic),
- create ISO images of real CDs or DVDs.

The Image Tool can perform the following operations on hard disk images:

- Increase the disk size of a hard disk image.  
Both expanding and plain disks can be enlarged. Note that disk size can not be reduced.
- Convert a plain hard disk image to an image in expanding format.  
The result of the conversion can be saved in the same file as well as in another one.
- Convert an expanding hard disk image to an image in a plain format.  
The result of the conversion can be saved in the same file as well as in another one.
- Defragment an expanding hard disk image.

Parallels Image Tool is designed as a assistant. The assistant guides you through all the steps necessary to perform the required operation on the image. Furthermore, the assistant keeps all your previously selected options between uses in case you often perform the same operation.

---

## How to Start Image Tool

To start the Parallels Image Tool:

- 1 Click on the Finder.
- 2 Select Applications.
- 3 On the list of available applications find the Parallels folder, click to open it.
- 4 Double-click the Image Tool icon.

---

## Modifying Hard Disk Images

**Warning.** Before you start modifying an image of a virtual hard disk, please always back it up.

### Requirements for Source Disk

The modifying operations require that the source hard disk image should not be in use by a running virtual machine.

### Checking Disk Format

When selecting a disk image to modify, make sure that you select the source hard disk image of a proper format.

To check the disk format do the following:

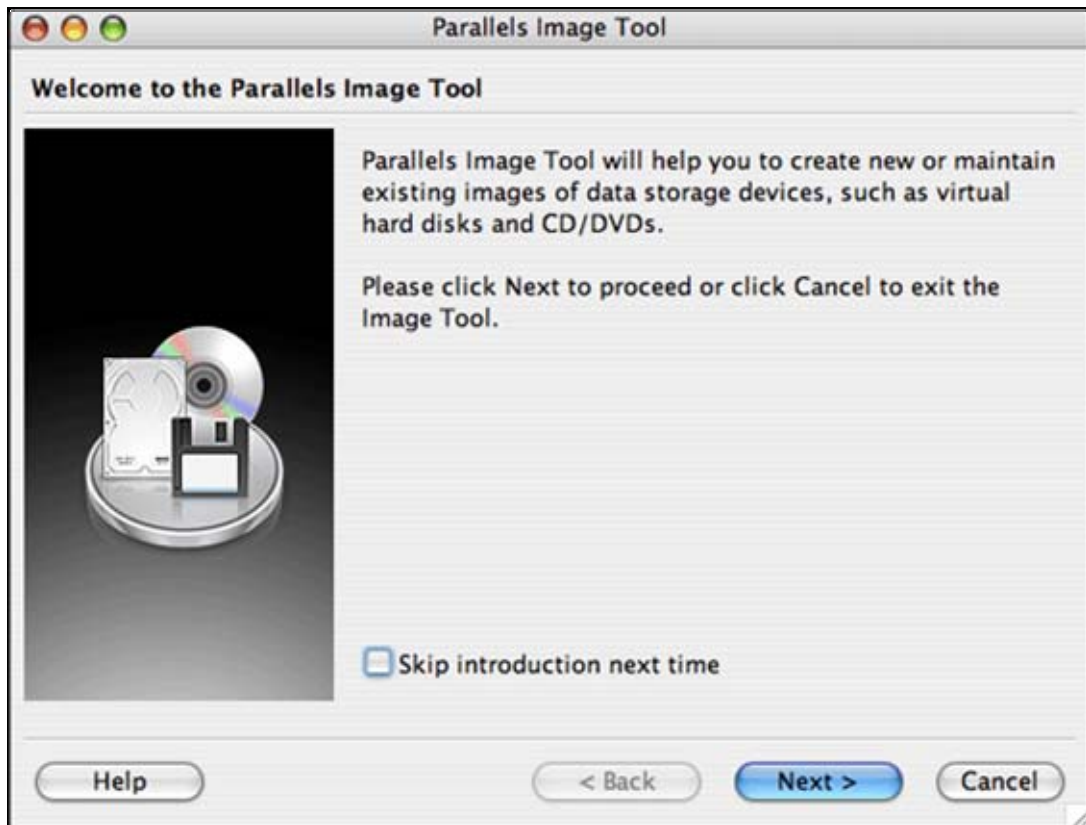
- 1 Open the configuration of any virtual machine that includes this virtual hard disk.
- 2 In the Configuration Editor open the Advanced (page 112) tab of the Hard Disk Options
- 3 You will see the disk format in the Disk format field.

### Using the assistant to Modify an Existing Hard Disk Image

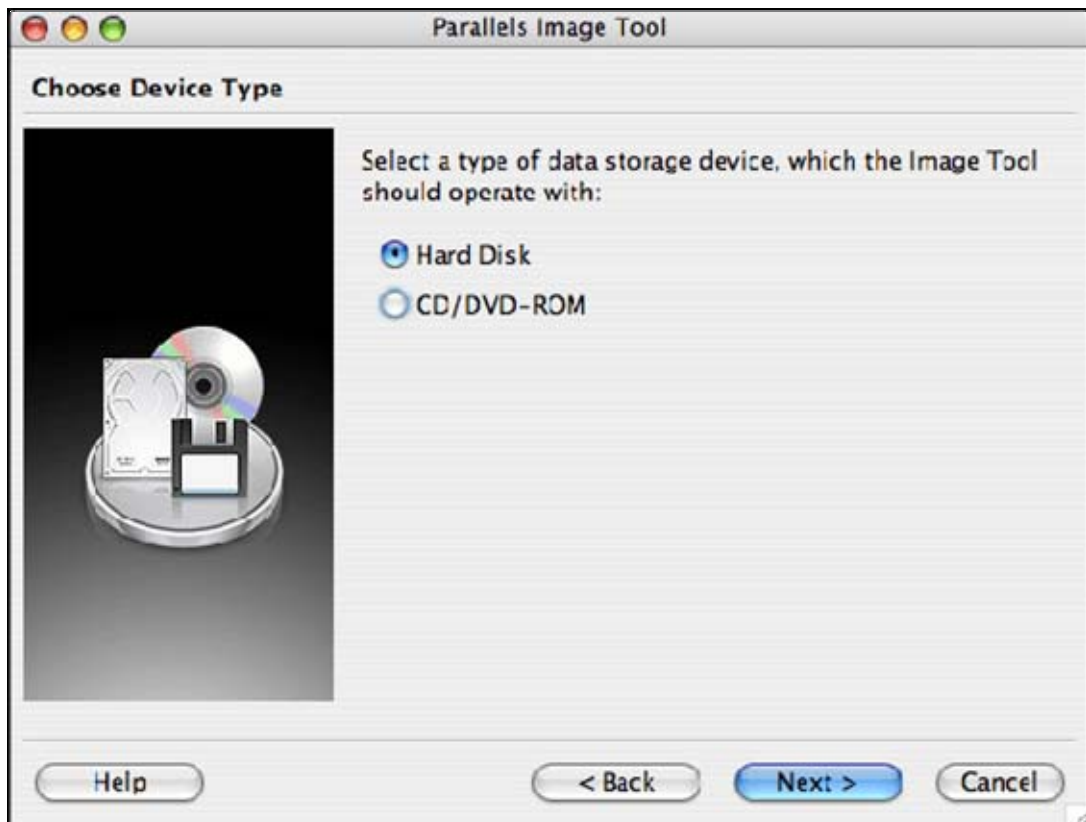
- 1 Start the Parallels Image Tool (page 216). Upon startup, the assistant displays the Welcome screen. If you want to skip this screen next time you run the Image Tool, select the Skip Introduction next time check box.



Click Next.



2 On the Choose device type screen select the Hard Disk option and click Next.

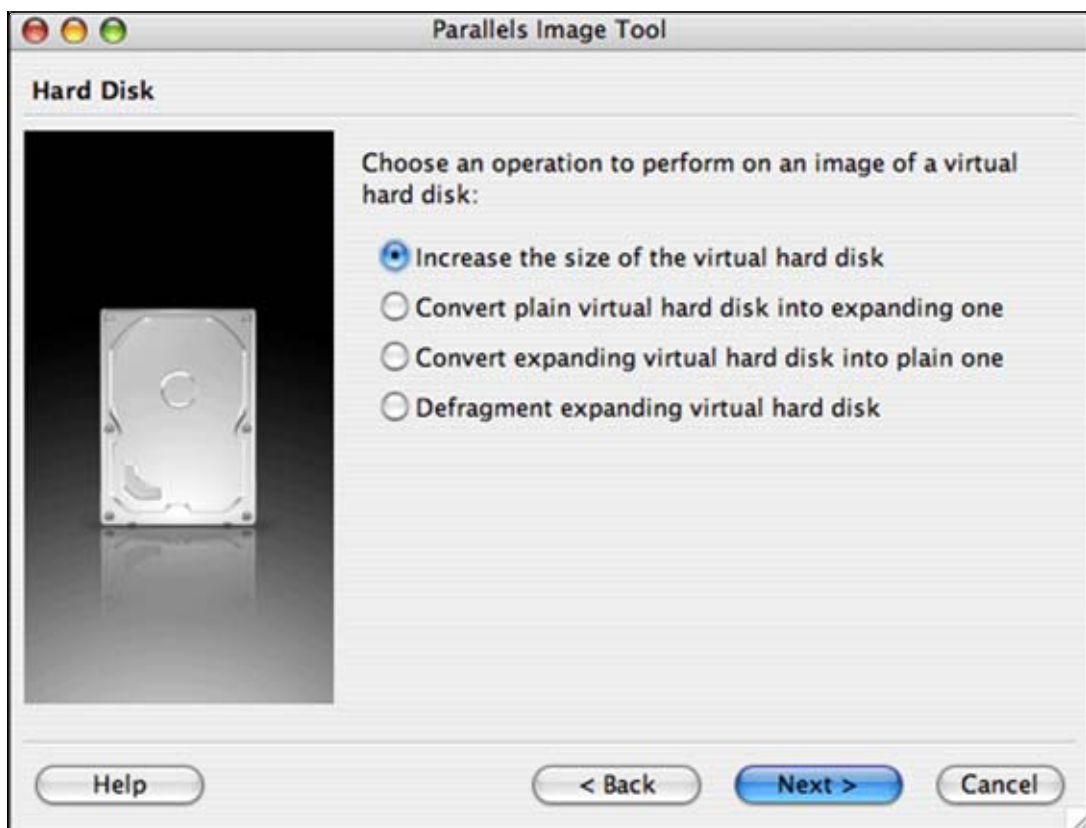


- 3 On the Hard Disk assistant's screen choose the operation you want to perform on the virtual hard disk.

There are four available operations for virtual disks images:

- Increase the size of the virtual hard disk to make a hard disk image larger,
- Convert plain virtual hard disk into expanding one or create an expanding copy of a plain hard disk image,
- Convert expanding virtual hard disk into plain one or create a plain copy of an expanding hard disk image,
- Defragment expanding virtual hard disk to optimize files arrangement on a virtual disk and to increase disk operation speed.

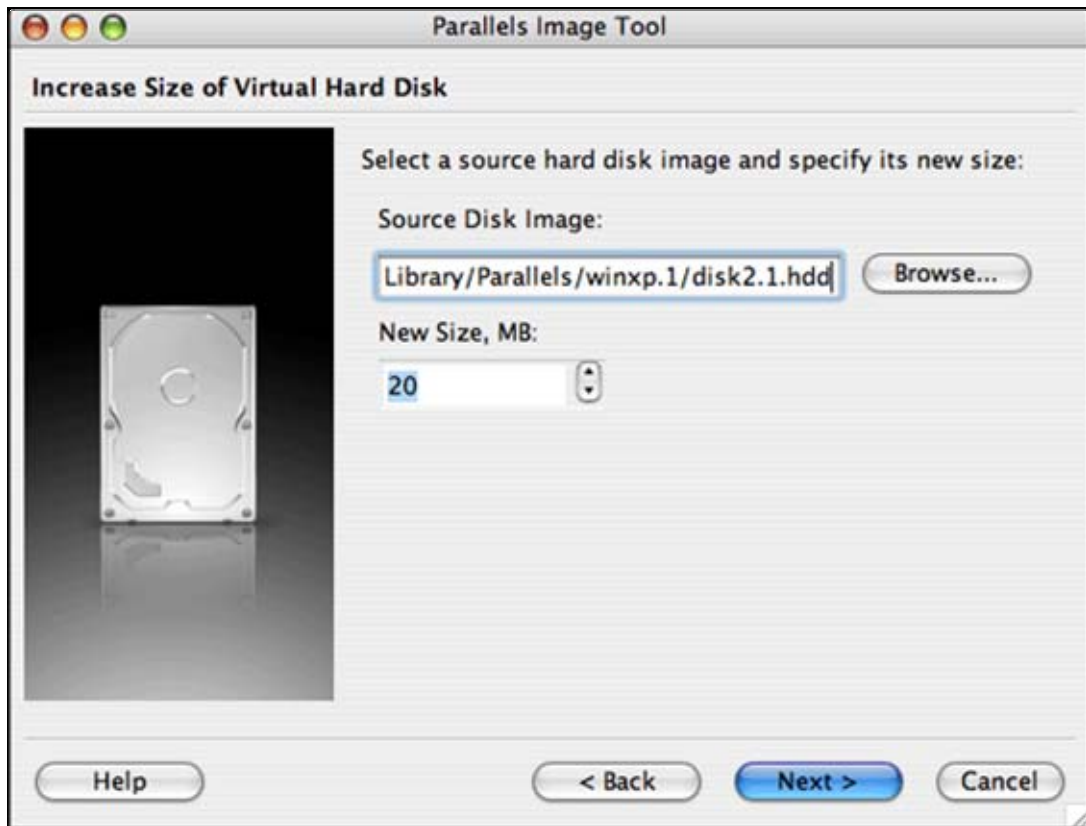
Choose the operation, then click Next.



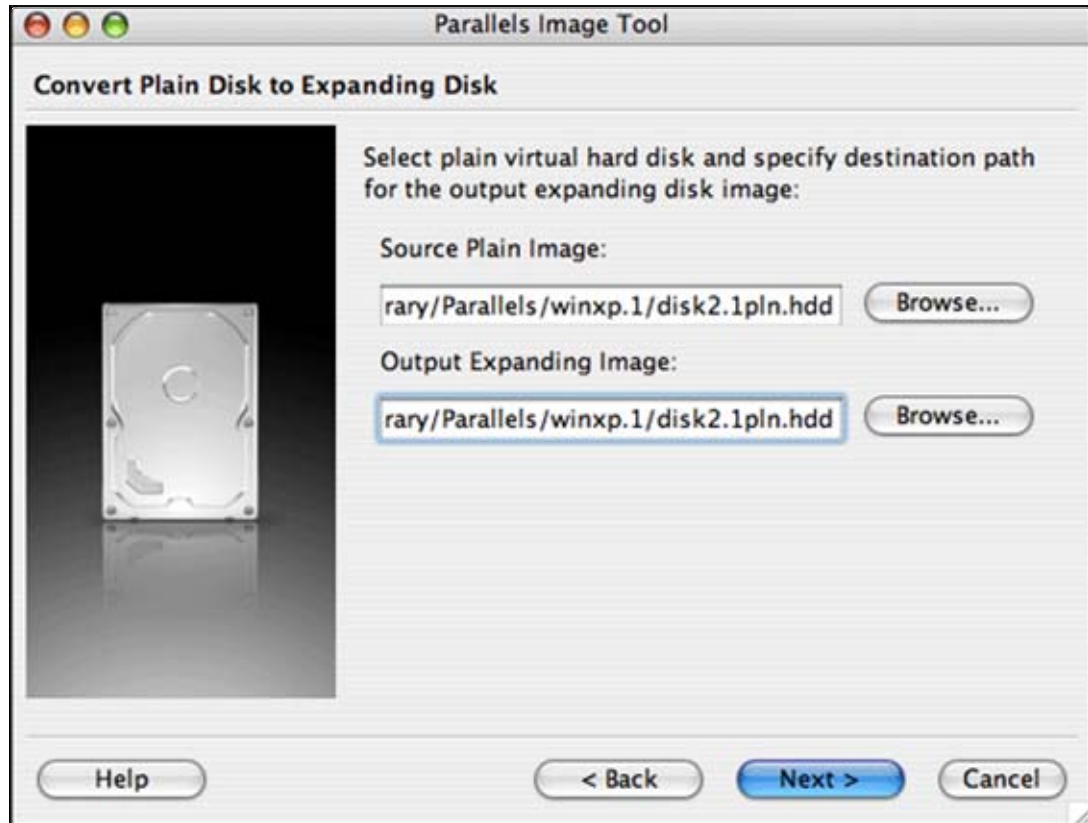
- 4 Next, you have to specify the options for the selected operation.

On the Increase Size of Virtual Hard Disk screen select the source hard disk image and the new size for the disk. Use the **Browse** button to locate a file. Use the spinner buttons next to the **New Size** field to set the required value.

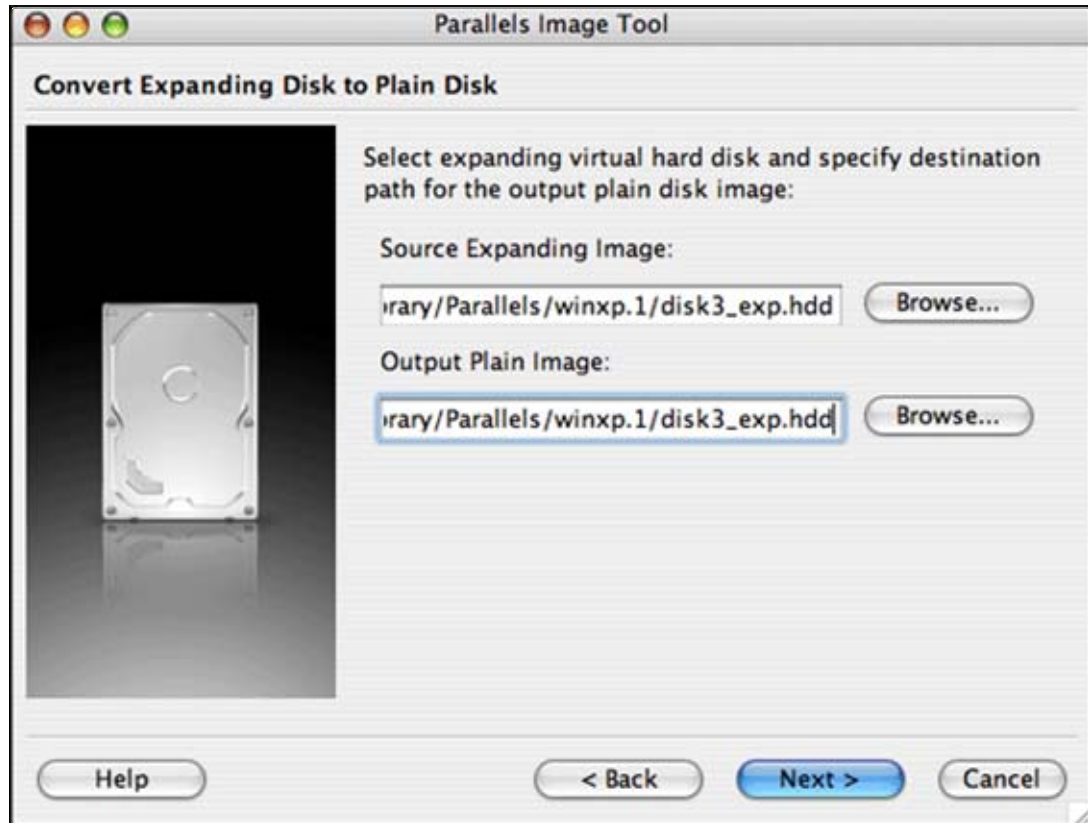
**Note.** Parallels Image Tool doesn't allow you to decrease the image size.



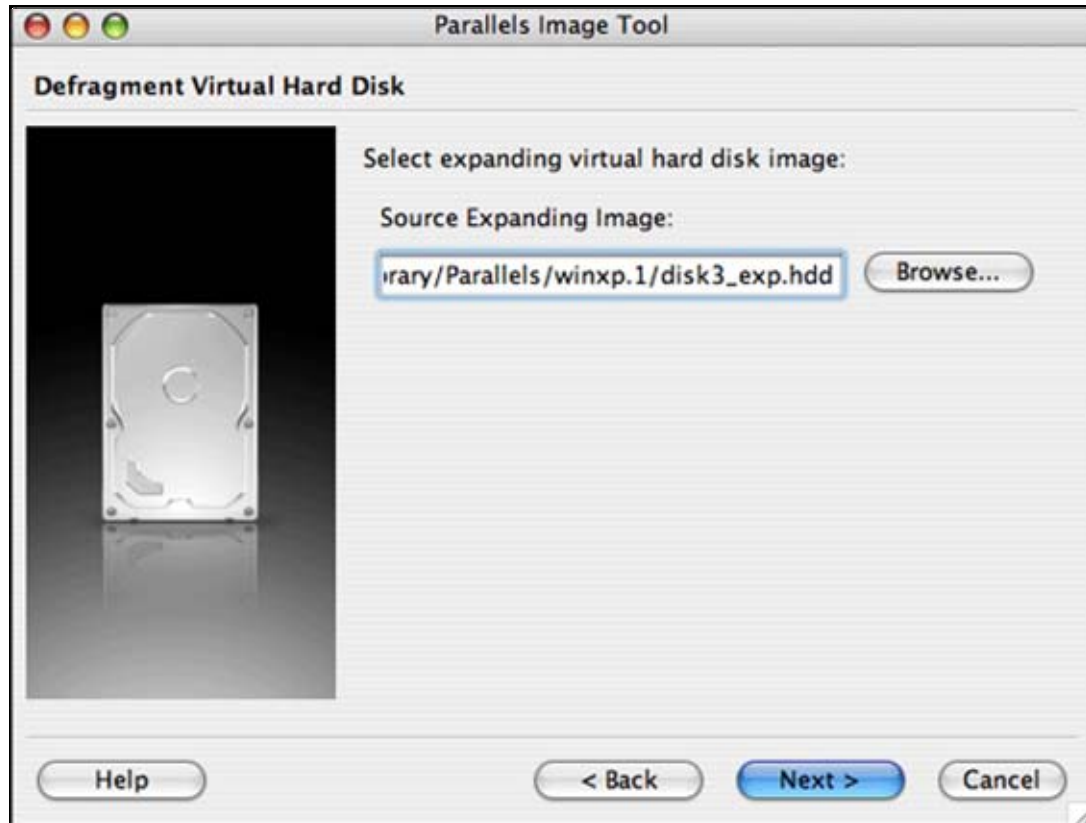
On the Convert Plain Disk to Expanding Disk screen select a source plain disk image using the **Browse** button. Once the source file is selected, the same name appears in the **Output Expanding Image** field. If you want to save the result of the conversion into a different existing or a new file, use the **Browse** button to the right of the field.



On the Convert Expanding Disk to Plain Disk screen select a source expanding disk image using the **Browse** button. Once the source file is selected, the same name appears in the **Output Plain Image** field. If you want to save the result of the conversion into a different existing or a new file, use the **Browse** button to the right of the field.



On the Defragment Virtual Hard Disk screen specify the name of a source hard disk image. Use the Browse button to locate the required file.

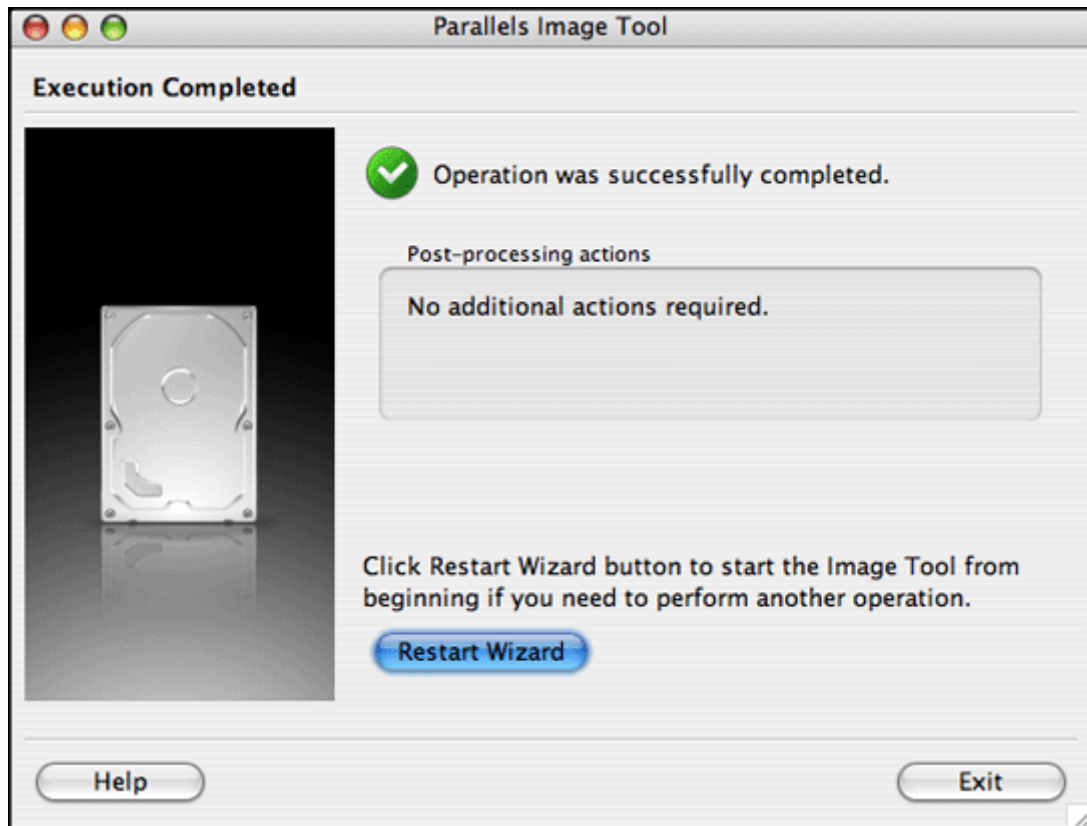


Click Next.

- 5 The assistant will display the chosen operation and selected options on the **Review Processing Options** screen.

Carefully review the settings (operation, source image file, and destination file if present, etc.). If everything is correct, click the **Start** button to start the desired operation.

- 6 While the operation is being performed, the Execution in progress screen is displayed. After the disk image is created, the Execution Completed screen appears. Close the assistant by clicking the Exit button.



The new disk image is ready and you can connect it to a virtual machine in the Configuration Editor. See Adding New Devices to Virtual Machines (page 122) to learn how to connect to a new hard disk image to a virtual machine, or Hard Disk Options (page 111) to learn how to replace one of the currently connected hard disks with the new one.

Also see the Hard Disk Images (page 94) section for ideas on using hard disk images in Parallels Desktop.

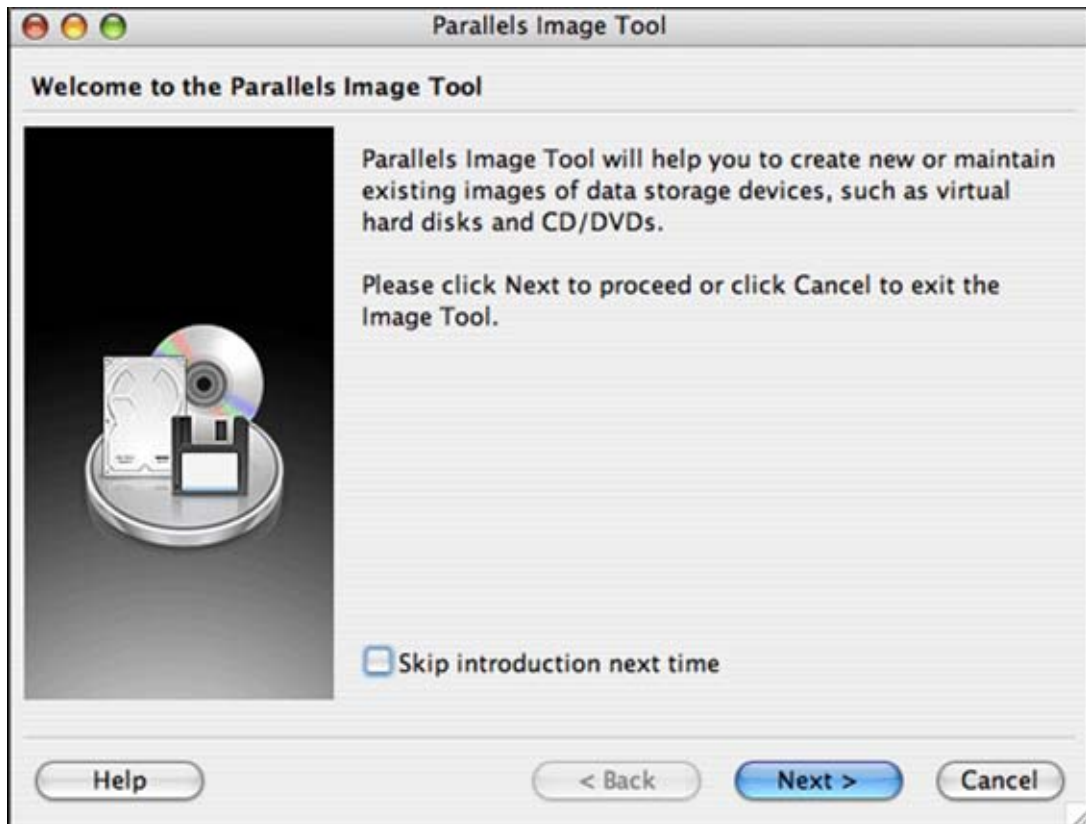
---

## Creating Images of CD/DVD discs

To create an image of a CD/DVD disc follow these steps:

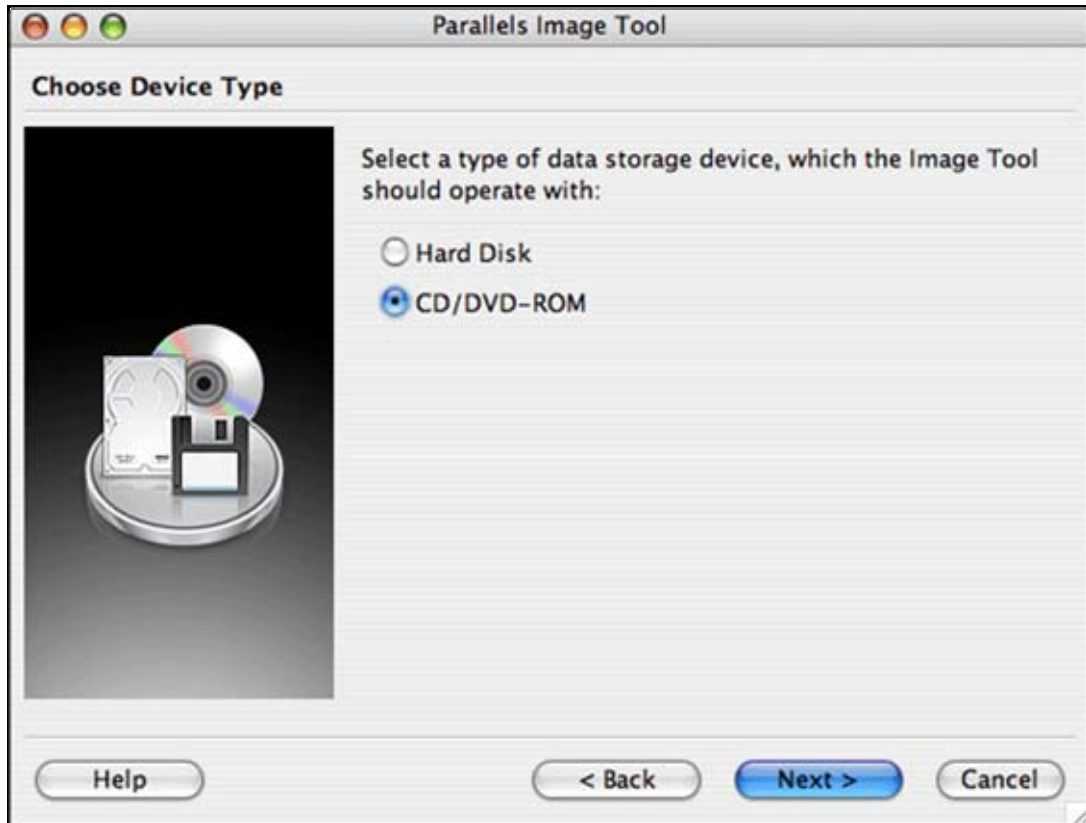
- 1 Insert the required disc into the CD/DVD-ROM drive of your computer.

- 2 Start the Parallels Image Tool (page 216). Upon startup, the assistant displays the Welcome screen. If you want to skip this screen next time you run the Image Tool, select the Skip Introduction next time check box. Click Next.

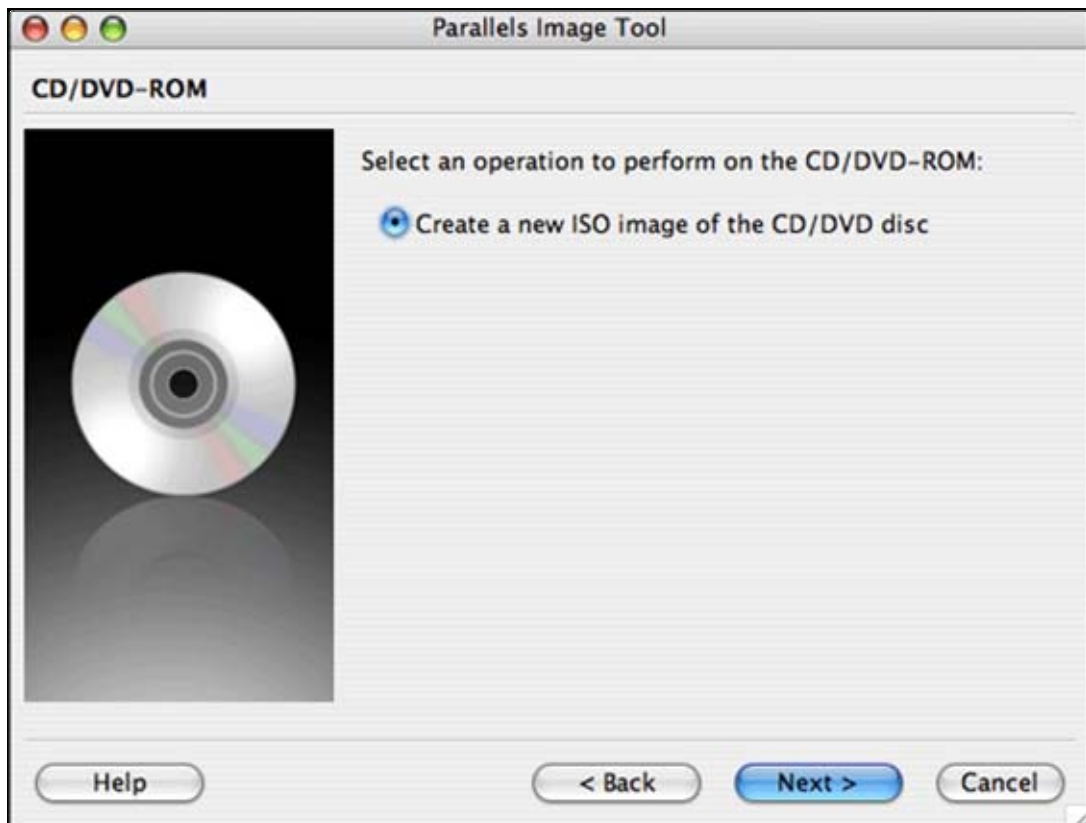




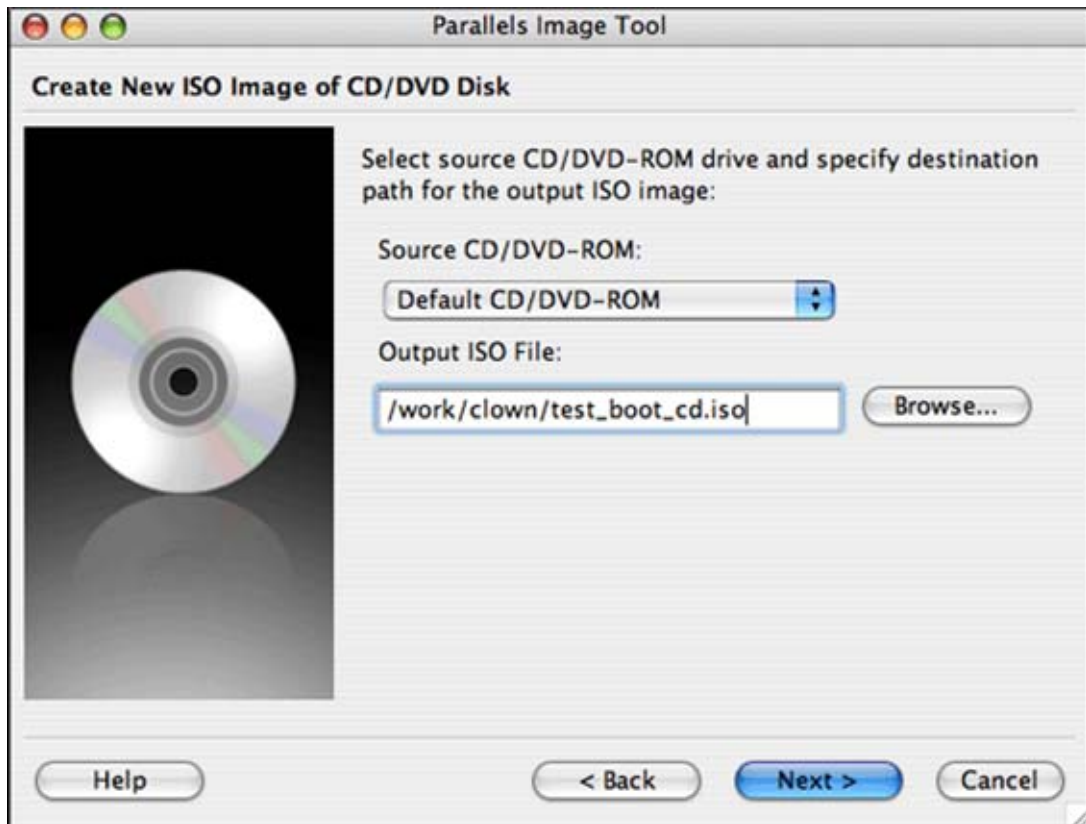
- 3 On the Choose Device Type screen select the CD/DVD-ROM option and click Next.



- 4 The CD/DVD-ROM screen appears with the single operation Create a new ISO image of the CD/DVD disc already selected. Click Next.

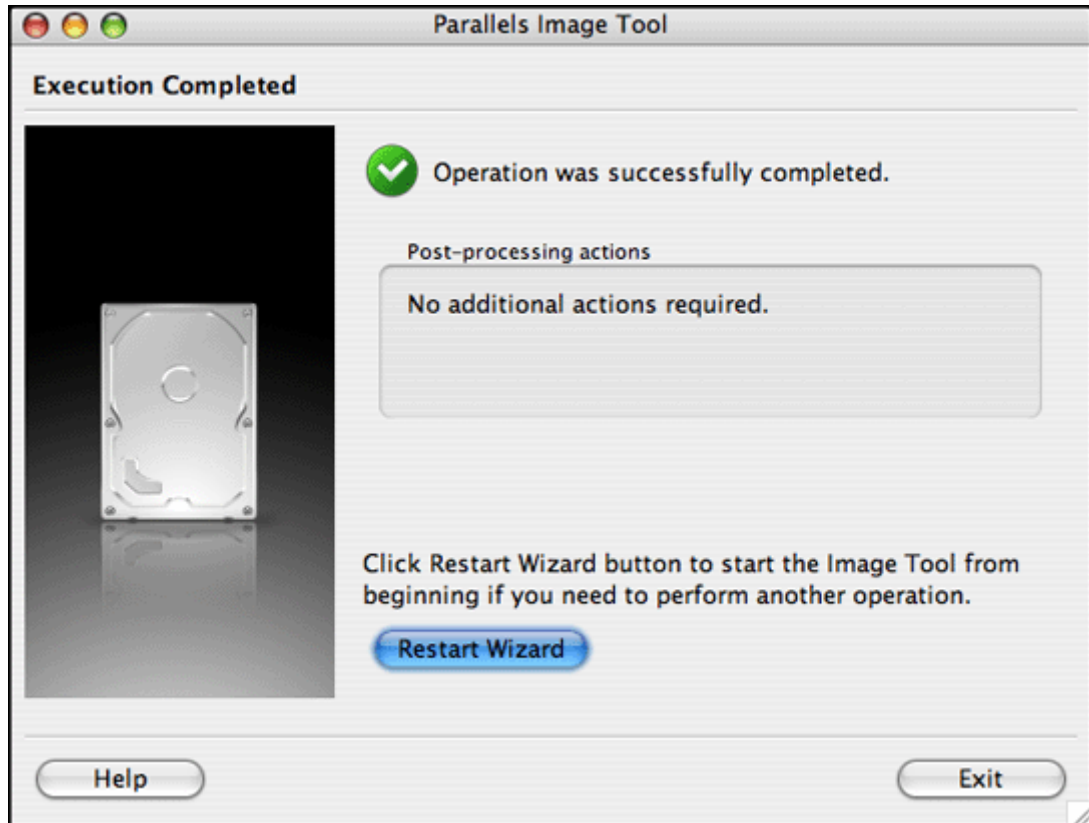


- 5 On the Create New ISO Image of CD/DVD Disk screen select the source device (CD/DVD-ROM on your Mac), and specify a destination folder and a name of the CD/DVD image file. Use the **Browse** button to select an existing file or specify a new file. Click **Next**.



- 6 The assistant will display the chosen operation and the selected options on the **Review Processing Options** screen.  
Carefully review the settings (operation, source device, and destination file). If everything is correct, click the **Start** button to begin the operation.
- 7 While the operation is being performed, the **Execution in progress** screen is displayed. Wait until the operation is completed.

- 8 After the disc image is created, the Execution Completed screen appears.



Click the Restart assistant button to continue if you'd like to process more objects or perform other operations. Click the Exit button to close the assistant.

The disc image is created and placed in the destination folder specified in step 5 and can be connected to a virtual machine CD/DVD-ROM drive. See the CD/DVD-ROM Options (page 114) section to learn how to connect an `.iso` image to CD/DVD-ROM drive of a virtual machine.

Also see the CD/DVD-ROM Real Disks and Images (page 100) section for ideas of using CD and DVD disc images in Parallels Desktop.

## CHAPTER 11

# Troubleshooting and Limitations

## In This Chapter

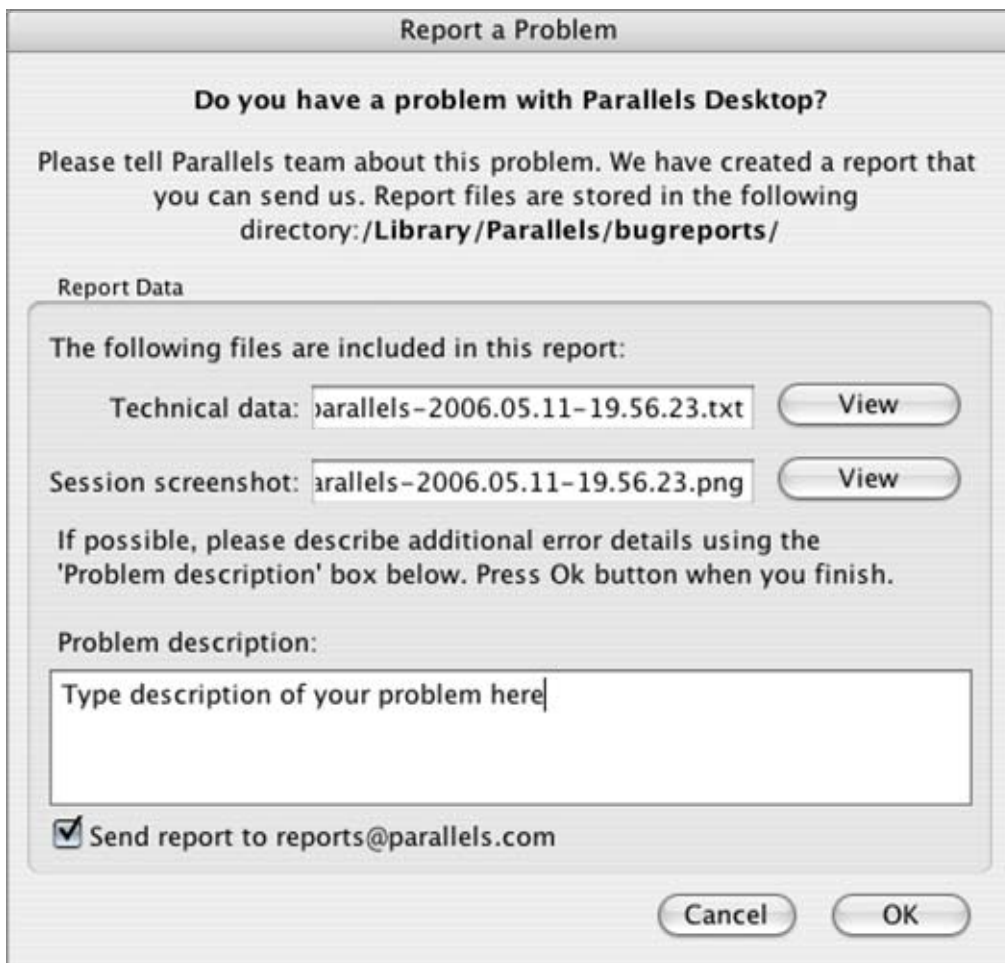
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# Reporting a Problem to the Parallels Team

In order to enhance the quality of Parallels Desktop product, you are able to send feedback to Parallels Software International Inc. in the form of problem reports. In the case of a fatal error inside a virtual machine, Parallels Desktop automatically opens the Report a Problem window proposing user to send a report. You may also decide to send a report on your own if you should ever encounter incorrect system behavior.

## Automatically Generated Reports

Fatal errors in a virtual machine lead to the automatic generation of a virtual machine status report which takes a console screenshot and opens the Report a Problem window for a user to decide whether he/she wants to send the report to Parallels Software corporation. The Report a Problem window contains the following elements.



The Technical data field shows the name of the `.txt` status report file that has been generated in accordance with the error. The status report holds information on the product version, your activation data, primary and guest OSes information, processor status, and so on. You can update the data if necessary. Click View to open the report in the text editor.

The Session screenshot field holds the name of the `.jpg` console screenshot that has been made in accordance with the error. To see the screenshot click the View button.

You may add a verbal description of the situation in the Problem description box. The text you enter here is saved in the status report in a separate block when you close the Report a Problem window by clicking OK button.

To send the report to the Parallels corporation:

- 1 Click the OK button in the Report a Problem window.
- 2 Launch your e-mail client application, create a new letter and attach the status report and the console screenshot to it. They are located in the following directory:

`/Library/Parallels/bugreports/`

The format of status report's names and screenshots are the following:

`parallels-yyyy.mm.dd-hh.mm.ss.<txt/png>`

- 3 Enter the following e-mail address for the recipient:

`reports@parallels.com`

### Creating a Report Manually

To create a problem report, select Report a Problem in the Help menu. A report is generated which contains technical data collected at the moment that the Report a problem command was activated. If a guest OS is running, a console screenshot is made.

To send a report, perform the same actions as you would for an automatically generated report.

---

## Installing Ubuntu Linux 6.0.6 Server

To run an Ubuntu Linux 6.0.6 Server in a virtual machine, follow these steps:

- 1 The virtual machine should have the network adapter included into its' configuration. Network adapter should be set to the **Bridged Ethernet** mode.  
If you use a typical virtual machine, it meets both conditions.
- 2 Install the Ubuntu Linux 6.0.6 Server package. Do not disconnect the installation CD/DVD or its' image!
- 3 Make sure that **Boot Sequence** on the Configuration Editor / Options / Booting Options tab is set to [CD-ROM, Hard Disk, Floppy].
- 4 Power on the Ubuntu virtual machine. Enter

**rescue**

in the prompt.

- 5 In the Enter rescue mode screen select `/dev/discs/disco/part1`, then on the same screen, select execute a shell in `/dev/discs/disco/part1`. Note that these options may have slightly different names.
- 6 In the next screen click Continue.
- 7 In the prompt string enter the following command:  
**sudo apt-get install linux-686**
- 8 When you are asked if you want to continue, type "y".
- 9 686 kernel is downloaded and installed. When it is finished, enter

**exit**

command.

- 10 In the Enter rescue mode screen select the last option **reboot the system**.
- 11 Disconnect the installation CD/DVD from your virtual machine to boot from hard disk. After booting is finished the virtual machine is ready for work.

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