



Parallels Server Bare Metal 5.0

Parallels Management Console User's Guide

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Contents

Introduction	6
About Parallels Management Console.....	7
About This Guide	8
Organization of This Guide	9
Documentation Conventions	9
Getting Help.....	10
Feedback.....	11
Getting Started With Parallels Management Console.....	12
Starting Parallels Management Console	12
Exploring Parallels Management Console Interface.....	12
Welcome Window	13
Parallels Management Console Overview	14
Toolbar	16
Status Bar	18
Parallels Management Console Tray Icon	20
Setting Up Parallels Management Console Preferences.....	20
General Preferences	21
Keyboard Preferences	23
Proxy Server Preferences	24
Managing Parallels Servers.....	25
Registering a New Parallels Server.....	25
Activating a Parallels Server	27
Getting a Trial Activation Key	28
Getting a Permanent Activation Key	28
Connecting to a Registered Parallels Server	29
Configuring Server Settings	30
Setting General Options	30
Configuring Login Settings.....	31
Defining Security Settings.....	33
Configuring Backup Options.....	35
Settings Memory Options	37

Assigning USB Devices to Virtual Machines.....	38
Configuring Participation in the Parallels Customer Program	40
Managing Virtual Networks.....	41
Disconnecting From a Parallels Server	45
Removing a Parallels Server	46
Managing Virtual Machines.....	47
Create a New Virtual Machine.....	47
Choosing Installation Mode	48
Creating Virtual Machines in Express Mode.....	49
Creating Virtual Machines in Typical Mode	53
Creating Virtual Machines in Custom Mode.....	55
Installing a Guest Operating System	60
Using Parallels Tools	62
Supported Operating Systems	63
Installing Parallels Tools in a Windows Guest OS.....	64
Installing Parallels Tools in a Linux Guest OS.....	65
Installing Parallels Tools in a Mac OS X Guest OS	68
Updating Parallels Tools	69
Removing Parallels Tools.....	71
Adding an Existing Virtual Machine	72
Working in a Virtual Machine	74
Performing Main Operations on a Virtual Machine	74
Starting a Virtual Machine and Shutting It Down	75
Suspending and Pausing a Virtual Machine	76
Stopping and Resetting a Virtual Machine	77
Use a Keyboard and Mouse	78
Capture and Release the Keyboard and Mouse	78
Keyboard Shortcuts in a Virtual Machine	78
Changing the View Mode	79
Change Configuration at Runtime	81
Using Shared Folders	83
Setting Up a Shared Folder	84
Making Guest OS Screenshots.....	85
Configuring Virtual Machines.....	86

Editing Virtual Machine Configuration	87
General Settings	88
Options	90
Hardware	101
Adding and Removing Devices	127
Initializing the Newly Added Disk	130
Managing Virtual Machines	132
Cloning a Virtual Machine	133
Deleting and Removing a Virtual Machine.....	135
Managing Virtual Machine Templates.....	138
Creating a Virtual Machine Template	139
Deploying a Virtual Machine Template	141
Managing Virtual Machines From the Tray.....	143
Working With Snapshots	144
Making Snapshots.....	145
Managing Snapshots.....	146
Migrating a Virtual Machine.....	149
Working With Virtual Machine Backups.....	150
Backing Up a Virtual Machine.....	151
Restoring and Removing Virtual Machine Backups.....	152
Using Parallels Compressor.....	153
Guest Operating System Requirements	154
Parallels Compressor Working Principles	155
How to Run Parallels Compressor	156
Troubleshooting and Limitations	158
Getting Technical Support	158
Reporting a Problem to the Parallels Support Team	159
Memory Usage Problems	161
Problems With Antivirus Software	162
Upgrading or Installing Parallels Tools in Text Mode in a Linux Guest OS	163
Install the GCC Package and Kernel Sources in Linux	164
Glossary.....	165
Index	167

CHAPTER 1

Introduction

This guide provides information on how to work in Parallels Management Console—a client application used to manage your Parallels physical servers and their virtual machines.

In This Chapter

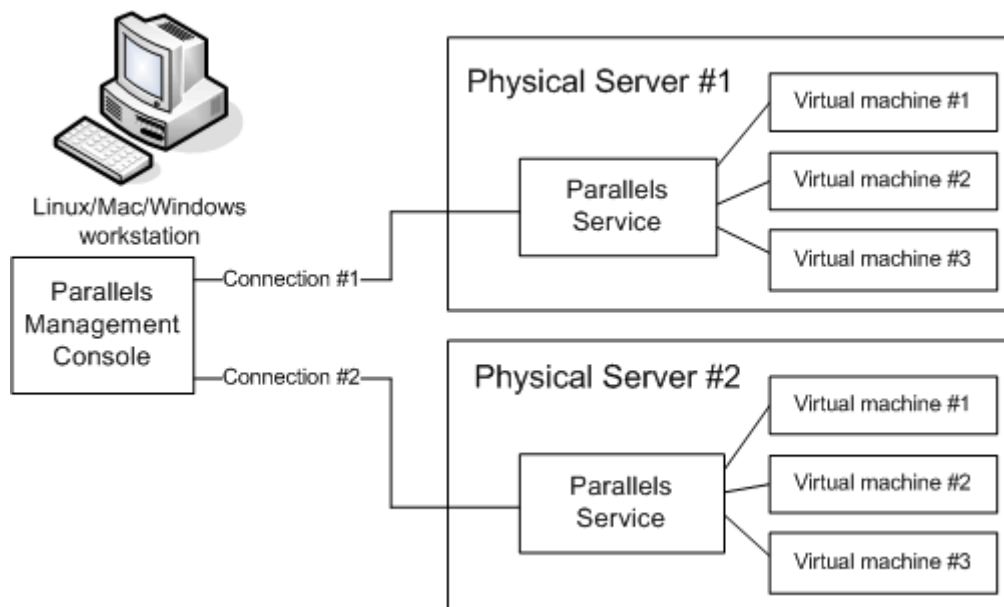
About Parallels Management Console.....	7
About This Guide	8
Getting Help.....	10
Feedback.....	11

About Parallels Management Console

Parallels Management Console is a remote tool with a graphical user interface (GUI) for managing Parallels physical servers and virtual machines residing on them. This tool supports managing physical servers running the following Parallels products:

- Parallels Server for Mac
- Parallels Server Bare Metal
- Parallels Server for Mac Bare Metal Edition




Parallels Management Console uses a typical client-server architecture.



The client application with the graphical user interface is installed on a computer running one of the supported Linux, Mac, or Windows operating systems. For the full list of supported operating systems, see the **Checking System Requirements** subsection of the *Getting Started With Parallels Management Console* guide. Once the client application is up and running, it can connect to the Parallels Service software on a physical server. This software is automatically installed on the physical server when you install one of the aforementioned Parallels products. The client application can control multiple physical servers simultaneously (e.g. *Physical Server #1* and *Physical Server #2* as shown in the picture above). After the connection to the required physical server has been established, you can start managing this server and its virtual machines using the intuitive and comfortable GUI.

Parallels Management Console Specifics

When working with Parallels Management Console, pay attention to the following:

- This guide uses the term *Parallels Server Bare Metal* to refer to both products: Parallels Server Bare Metal and Parallels Server for Mac Bare Metal Edition.
- Some features described in this guide are specific for particular products and product versions (for example, only for Parallels Server Bare Metal 5.0) and may be not available in your product. If a feature is available for a specific product only, we add a note to the place where this feature is described.
- You can install the version of Parallels Management Console shipped with Parallels Server Bare Metal 5.0 only on computers running Linux and Windows operating systems. Installation on Mac computers is not supported.
- Some steps, option names, paths are different on Linux, Mac, and Windows computers. In this case, these differences are marked with the following icons:
 -  for Windows specifics
 -  for Linux specifics
 -  for Mac specifics

About This Guide

Parallels Management Console User's Guide contains extensive information on configuring Parallels Management Console settings and using this application to manage Parallels physical servers and virtual machines hosted on them.

To follow the instructions in this guide, no more than basic Linux, Mac, or Windows administration skills are required.

Organization of This Guide

The structure of the present guide is quite transparent and consists of the following chapters:

- **Introduction** (p. 6) (you are reading it now). Provides basic information about the product and this guide.
- **Getting Started With Parallels Management Console** (p. 12). Provides basic information on how to work with Parallels Management Console.
- **Managing Parallels Servers** (p. 25). Provides basic information on how to work with a Parallels physical server.
- **Setting up a Virtual Machine** (p. 47). Provides instructions on creating a new virtual machine and adding an existing one.
- **Working in a Virtual Machine** (p. 74). Provides basic information on how to work with virtual machines.
- **Configuring Virtual Machines** (p. 86). Provides information on how to change the virtual machine configuration.
- **Managing Virtual Machines** (p. 132). Provides basic information on how to manage your virtual machines.
- **Using Parallels Compressor** (p. 153). Provides information on how and when you can use Parallels Compressor.
- **Troubleshooting and Limitations** (p. 158). Provides the solutions for some of the known issues.

Documentation Conventions

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

The table below presents the existing formatting conventions.

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

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

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

Getting Help

In addition to this guide, you can use the following resources to get more information on Parallels Management Console:

- *Getting Started With Parallels Management Console*. This guide provides information on installing and setting to work the Parallels Management Console application on your computer.
- Context-sensitive help. When working in Parallels Management Console, you can open a help page for the currently active window by pressing F1 on your keyboard.
- Online documentation. All documentation for Parallels Management Console and other Parallels products, such as Parallels Server Bare Metal and Parallels Server for Mac is also available online.
- [Parallels website \(http://www.parallels.com/support/\)](http://www.parallels.com/support/). Visit the Parallels Support web page containing product help files and the FAQ section.
- [Parallels Knowledge Base \(http://kb.parallels.com/\)](http://kb.parallels.com/). This online resource comprises various articles about using Parallels Management Console and other Parallels products.

Feedback

If you spot a typo in this guide, or if you have an opinion about how to make this guide more helpful, you can share your comments and suggestions with us by completing the Documentation Feedback form on our [website](http://www.parallels.com/en/support/usersdoc/) (<http://www.parallels.com/en/support/usersdoc/>).

CHAPTER 2

Getting Started With Parallels Management Console


This chapter helps you get started with Parallels Management Console.

In This Chapter

Starting Parallels Management Console	12
Exploring Parallels Management Console Interface.....	12
Setting Up Parallels Management Console Preferences.....	20

Starting Parallels Management Console

To launch Parallels Management Console:

 On Mac OS X, open the `Applications` folder, and launch the **Parallels Management Console** application.

 On Windows, choose **All Programs > Parallels > Parallels Management Console > Parallels Management Console** from the **Start** menu

 On Linux, start Terminal, and execute `pmc-standalone`.

Note: The version of Parallels Management Console shipped with Parallels Server Bare Metal 5.0 can be installed only on Windows and Linux computers.

Exploring Parallels Management Console Interface

This section describes the main components of Parallels Management Console.

Welcome Window

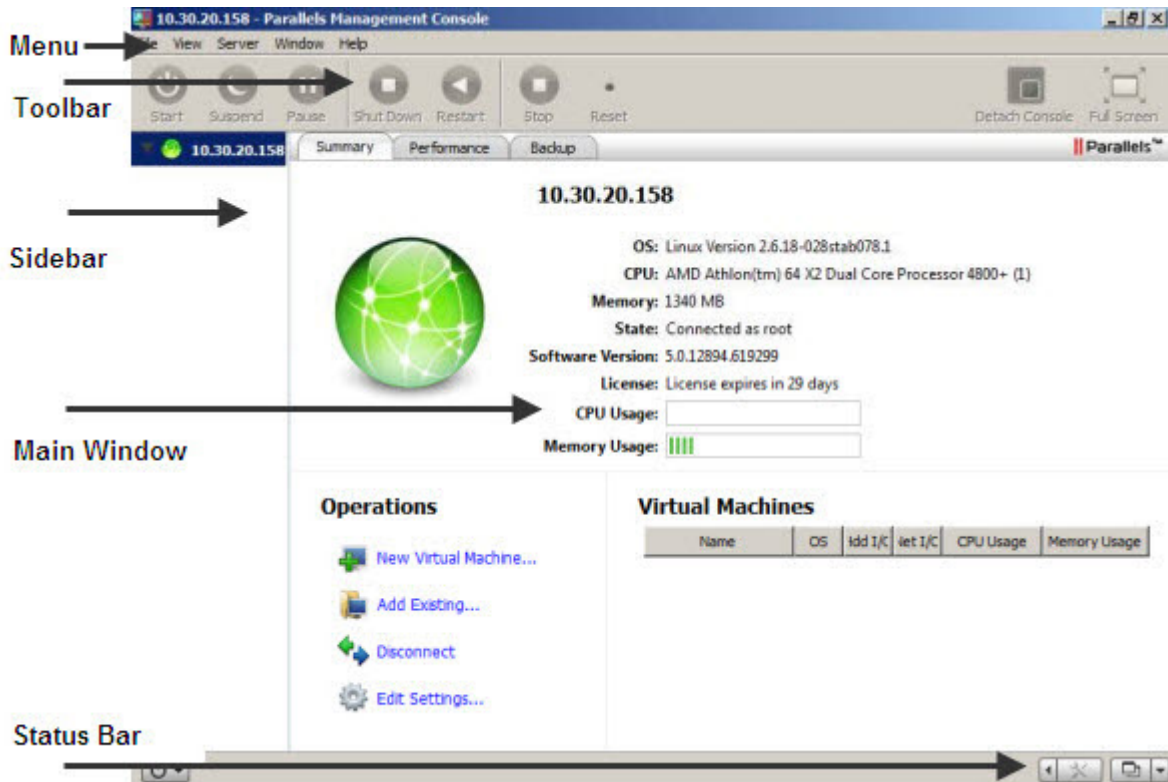
When you start Parallels Management Console for the first time, the Parallels Management Console welcome window appears. In this window, you can do the following:

- Connect to a Parallels physical server. To do this, click **Connect to Parallels Server**.
- View the *Parallels Management Console Getting Started Guide*. To do this, click **Getting Started Guide**.
- Open the Parallels website in your default browser. To do this, click **Parallels Website**.



Parallels Management Console Overview

When you launch Parallels Management Console, the following window appears:



The main Parallels Management Console parts are listed below.

Menu

This part contains options for administering Parallels Management Console, Parallels physical servers, and virtual machines.

Toolbar

This part comprises buttons for managing virtual machines. For detailed information on the toolbar, see **Toolbar** (p. 16).

Sidebar

This part contains the list of Parallels physical servers registered in Parallels Management Console and their virtual machines. If you right-click a server in the list, you see a set of commands for managing this server. If you right-click a virtual machine in the list, you see a set of commands for managing this virtual machine.

Main Window

This part shows the information related either to a Parallels server or to a virtual machine, depending on what you choose in the sidebar. The main window includes the following tabs:

- The **Summary** tab displays the basic information about the selected Parallels server or virtual machine (its name, location, OS, state and description), the main operations you can perform on it, and the current configuration. For a Parallels server, the tab also shows the list of virtual machines hosted on the server.
- The **Console** tab is available when the virtual machine is running and acts as the virtual machine display.
- The **Performance** tab shows the CPU, memory, hard disk, and network usage by the selected Parallels server or virtual machine.
- The **Backup** tab lists virtual machine backups. On this tab, you can also create a new backup, restore the virtual machine from its backup, and delete the backups you do not need any more.

Status Bar

This part displays the information about devices installed in the selected virtual machine. The status bar shows this information for running virtual machines only. For details about the status bar, see **Status Bar**. (p. 18)

Toolbar

The toolbar contains buttons for most frequent commands you are likely to perform in Parallels Management Console: starting and stopping virtual machines, suspending and resuming them, and so on.


Some toolbar buttons become enabled only when a virtual machine is running. If you click a toolbar button, it becomes visibly pressed.



The main toolbar buttons are listed below:



Start. Use this button to start a virtual machine if it is shut down, paused, or suspended. If

the virtual machine is suspended or paused, this button becomes the **Resume** button .



Shut Down. Use this button to shut down a guest operating system gracefully.



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



Detach Console (Attach Console). Use this button to detach the virtual machine console to a new window or to attach it back to the main window. You may use this button to view a running virtual machine in a separate window.



Full Screen. Use this button to switch a virtual machine to [the Full Screen mode](#) (p. 79). To return back to the Window mode, press the default key combination Ctrl+Alt+Enter. You can change the default key combination in [the Preferences dialog](#) (p. 23) available from the **File** menu on a Windows and Linux computer or from the **Management Console** menu on a Mac computer).



Restart. Use this button to restart a guest operating system.



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



Stop. Use this button to stop a virtual machine when it is not running properly and cannot be stopped using a normal shutdown procedure.

Note: If you click this button when a virtual machine is running, you may lose all unsaved data. To turn off the virtual machine, use the shutdown procedure for the guest OS installed in it or use the **Shut Down** button.



Reset. Use this button for the hard reset of a virtual machine when it is not running properly and cannot be restarted using the **Restart** button.



Take Snapshot. Use this button to create a snapshot of a virtual machine.



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



Manage Snapshots. Use this button to open the *Virtual Machine Snapshots* manager. For more information on snapshots, see **Working with Snapshots** (p. 144).

Customizing Toolbar

To change the appearance of the toolbar, right-click the toolbar and choose one of the following options:

- **Icon & Text:** Display both icon buttons and names in the toolbar.
- **Icon Only:** Display icon buttons only.
- **Text Only:** Display item names only.
- **Use Small Size:** Reduce the size of toolbar buttons.
- **Remove Item:** Remove clicked item from the toolbar.
- **Customize Toolbar:** Open the toolbar settings pane. See the description below.

To customize the set of toolbar buttons and its appearance, right-click the toolbar, and choose **Customize Toolbar**. The toolbar settings pane opens. In this pane, you can perform the following operations:

- Add new buttons to the toolbar by dragging them from the settings pane to the toolbar.
- Remove buttons from the toolbar by dragging them from the toolbar to the settings pane.
- Add separators to the toolbar by dragging them from the settings pane to the toolbar.
- Add spaces to the toolbar by dragging them from the settings pane to the toolbar.
- Restore the default toolbar buttons set by dragging it to the toolbar.
- Select the toolbar buttons view mode in the **Show** list











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


Status Bar

When a virtual machine is running, the status bar of its window displays the information about devices connected to the virtual machine.

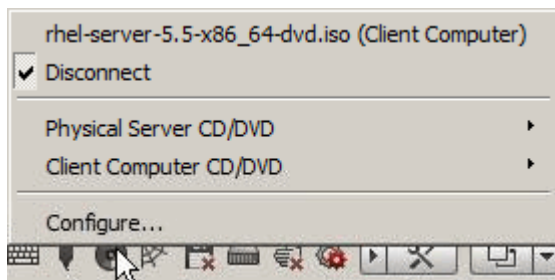


The following devices have icons in the status bar:

- Keyboard 
- Floppy disk drive 
- CD/DVD-ROM 
- Hard disk 
- Network adapter 
- Serial port 
- Parallel port 
- Sound card 
- USB controller 
- shared folders 

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

You can connect or disconnect some of the virtual machine devices at runtime by clicking their icons in the status bar and choosing the respective commands from the shortcut menu. The picture below shows the shortcut menu for the CD/DVD-ROM drive.



To connect CD/DVD ISO images to the virtual machine's CD/DVD-ROM drive or connect floppy images to its floppy disk drive, drag the required image file over the CD/DVD-ROM drive icon or the floppy disk drive icon in the status bar. For more information, see **Changing Configuration at Runtime** (p. 81).

Parallels Management Console Tray Icon

When working with Parallels Management Console installed on Windows- and Linux-based physical computers, you can use the Parallels Management Console tray icon to perform the following operations:




- Manage running and paused virtual machines. For detailed information, see **Managing Virtual Machines From the Tray** (p. 143).
- Bring the Parallels Management Console window to focus. To do this, double-click the tray icon or right-click it, and choose **Show Main Window**.
- Quit Parallels Management Console. To do this, right-click the tray icon, and choose the corresponding item.

The Parallels Management Console tray icon is available if you configure [the closing main window settings](#) (p. 21) as follows:

- Choose **Ask for Action** from the **Closing Main Window** menu. Now if you close the Parallels Management Console main window, you are asked whether you want to exit the application, to hide the main window to the notification area, or to cancel the operation. If you choose to hide the main window, the tray icon appears in the notification area.
- Choose **Hide to Notification Area** from the **Closing Main Window** menu. Now if you close the Parallels Management Console main window, the tray icon appears in the notification area.

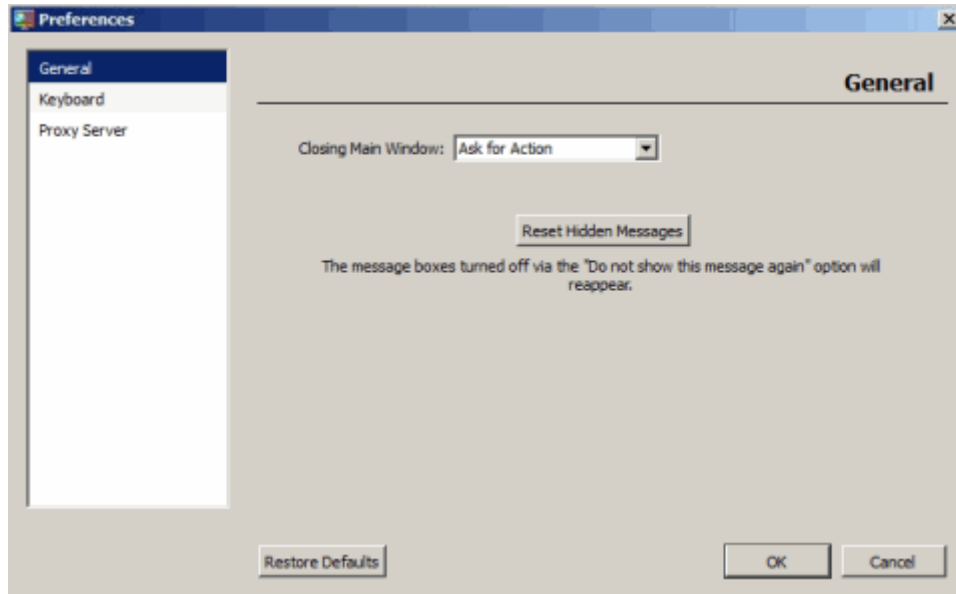
Setting Up Parallels Management Console Preferences

You can configure the Parallels Management Console settings using the **Preferences** dialog. To open this dialog:


-  On Mac OS X, choose **Preferences** from the **Management Console** menu.
-  On Windows, choose **Preferences** from the **File** menu.
-  On Linux, choose **Preferences** from the **File** menu.

General Preferences

In the **General** pane, you can set the Parallels Management Console general preferences.



Closing Main Window


 On a Windows or Linux computer, you can configure how the Parallels Management Console main window should act when you close it:

- **Exit Application.** Choose this option to exit Parallels Management Console on closing the main window. If you have a detached window of a running virtual machine, it will remain open.
- **Hide to Notification Area.** Choose this option to minimize the application and hide it to the notification area on closing the main window. For detailed information on managing virtual machines from the notification area, see **Managing Virtual Machines From the Tray** (p. 143).
- **Ask for Action.** Choose this option to configure Parallels Management Console to ask you what to do on closing the main window.

Reset Hidden Messages

Some of the Parallels Management Console dialogs and warnings include the **Do not show this message again** option. If you select this option in a dialog or warning, the dialog or warning is not shown any more. Clicking the **Reset Hidden Messages** button resets all dialogs and warnings so that they start appearing again.

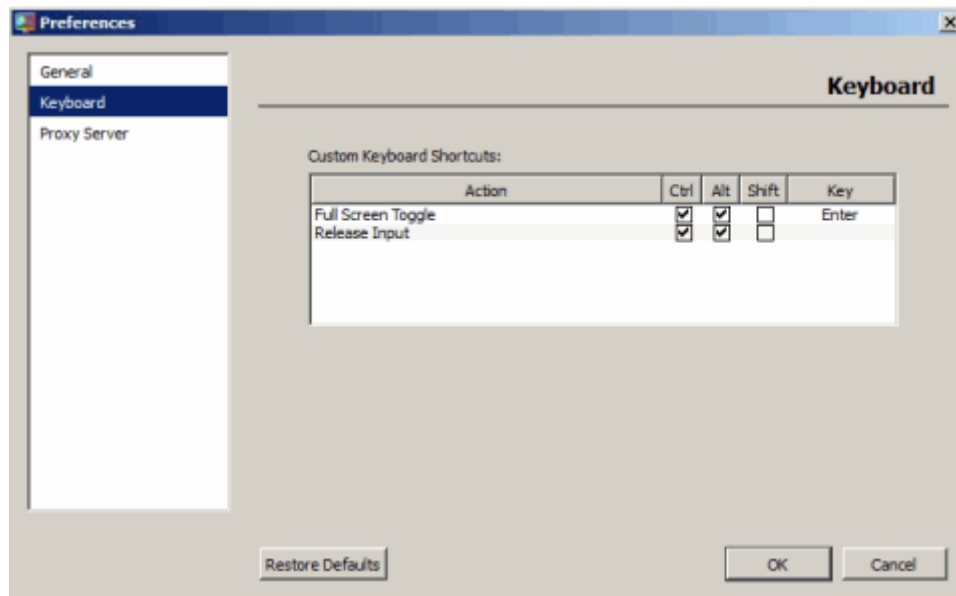
Restore Defaults

 On a Windows or Linux computer, you can use this button to restore the default settings for Parallels Management Console general preferences.

Keyboard Preferences

In the **Keyboard** pane, you can set keyboard shortcuts for the following actions:


- **Full Screen Toggle.** This action switches the virtual machine window from the Window mode to Full Screen, and vice versa.
- **Release Input.** This action releases the keyboard and mouse input from the virtual machine window.

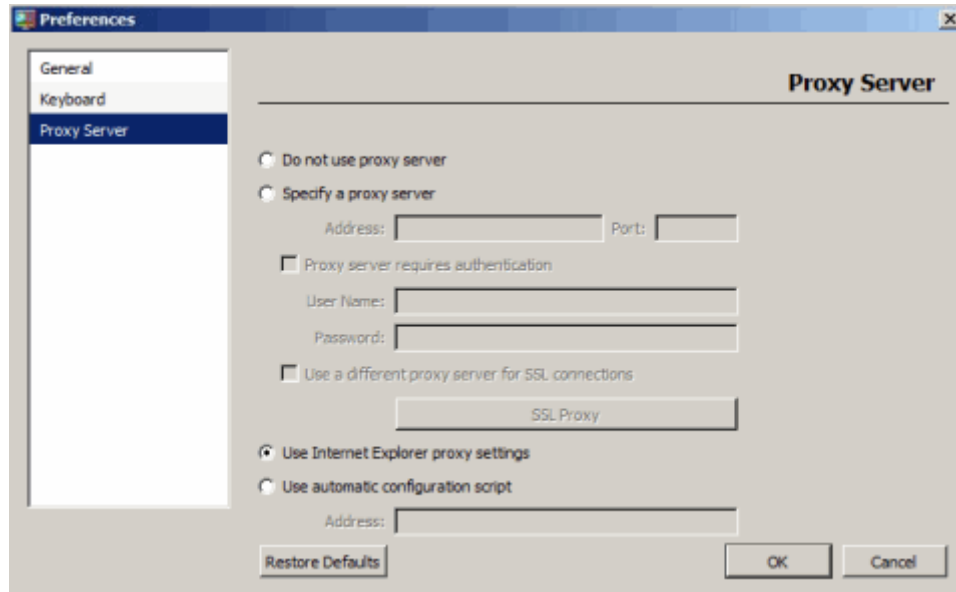


Restore Defaults

To restore the default settings, click **Restore Defaults**.

Proxy Server Preferences

 On a Windows and Linux computer, you can use the **Proxy Server** pane to configure a number of proxy server-related settings.



You can configure the proxy server settings as follows:

- Select the **Do not use proxy server** radio button if you do not want to use a proxy server for network connections.
- Select the **Use Internet Explorer proxy settings** radio button to import the proxy server settings from the connections settings of Internet Explorer. This option is selected by default.
- Select the **Use automatic configuration script** radio button to automatically configure the proxy server settings.
- Select the **Specify a proxy server** radio button to manually specify the proxy server settings. In this case, you need to provide the following information:
 - a IP address and port number of the proxy server in the **Address** and **Port** fields.
 - b If the proxy server requires authentication, select the **Proxy server requires authentication** option, and type the corresponding credentials in the **User Name** and **Password** fields.
 - c If you want to use an SSL proxy server for secure connections, select the **Use a different proxy server for SSL connections** option. Click the **SSL Proxy** button and provide the server IP address and port number in the opened window. You can also specify the credentials for accessing the server, if required.

Once you configured the proxy server settings, click **OK** to activate the changes.

CHAPTER 3

Managing Parallels Servers

This chapter describes operations you can perform on Parallels servers in Parallels Management Console.

In This Chapter

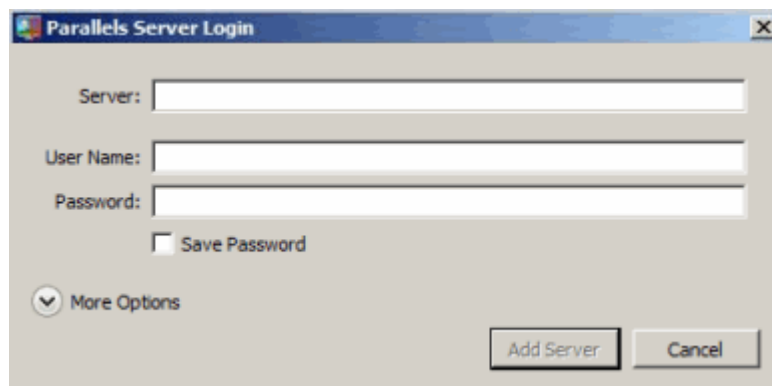
Registering a New Parallels Server	25
Activating a Parallels Server	27
Connecting to a Registered Parallels Server	29
Configuring Server Settings	30
Disconnecting From a Parallels Server	45
Removing a Parallels Server	46

Registering a New Parallels Server

To start managing Parallels servers and their virtual machines with Parallels Management Console, you need first to register these servers in Parallels Management Console. To register a Parallels server, do the following:

- 1 Launch Parallels Management Console, and choose **Add Server** from the **Server** menu. If you start Parallels Management Console for the first time, you can click **Connect to Parallels Server** in the welcome window to connect to the server.

The **Parallels Server Login** dialog appears.



The screenshot shows a dialog box titled "Parallels Server Login". It contains three text input fields labeled "Server:", "User Name:", and "Password:". Below the "Password:" field is a checkbox labeled "Save Password" which is currently unchecked. At the bottom left, there is a "More Options" label with a downward-pointing arrow icon. At the bottom right, there are two buttons: "Add Server" and "Cancel".

2 In the **Parallels Server Login** dialog, specify the parameters to use for connecting to the server:

- In the **Server** field, type the Parallels physical server IP address or hostname. You can click the **More Options** option and choose the server from the **Server List** table (for details, see below).

Note: By default, Parallels servers listen for connections on port 64000. If the listening port number differs from the default one, type the number of the port right after the server IP address. For example, if a Parallels physical server uses port 64001 for connections, type `127.0.0.1:64001` into the **Server** field.

- In the **User Name** and **Password** fields, type *root* as the username and the password of this user on the server.
- To remember your login and password, select the **Save Password** option.

3 Expand the **More Options** section to see the list of servers available on the network and specify additional settings:

- **Server List.** This table lists servers Parallels Management Console found on your network. Only those servers are displayed that can receive broadcast messages.
- **Connection Security.** In this field, you can choose the security level to use for connections between Parallels Management Console and the server.
- **Use Data Compression.** If you select this option, the data sent between Parallels Management Console and the Parallels server will be compressed. If you use low-speed connections, select this option to improve the data transfer speed. You can change this setting later in [the Login pane](#) (p. 31) of the **Server Settings** dialog.

4 Click **Add Server**.

After a while, the selected server appears in the Parallels Management Console [sidebar](#) (p. 14).

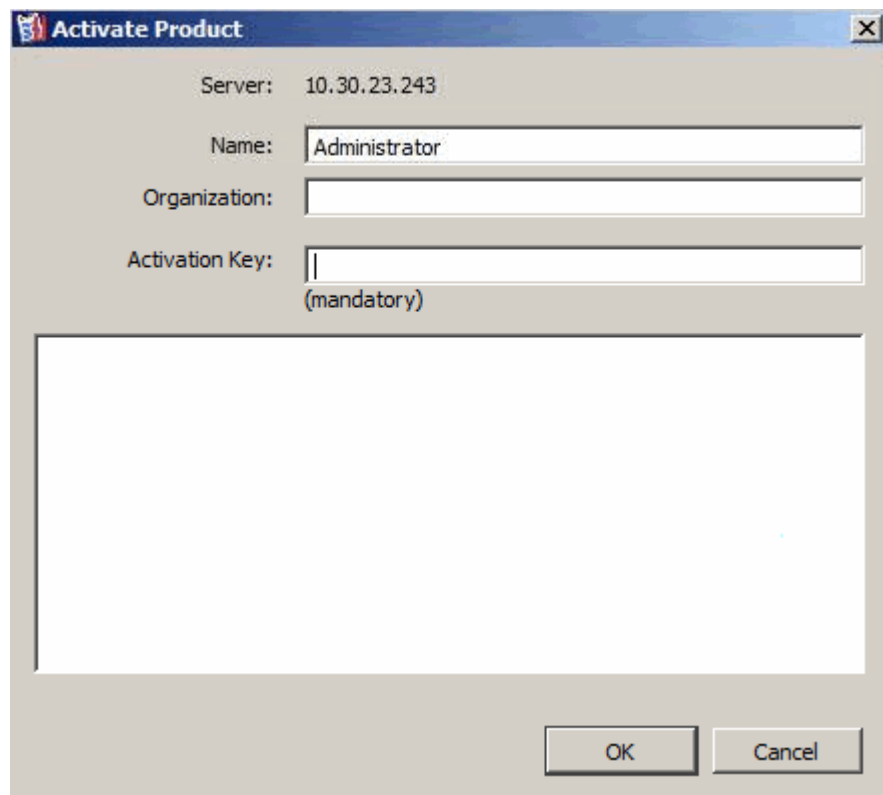
Activating a Parallels Server

When you connect to a Parallels server that is not activated, the following message appears: *Your copy of Parallels Server is not activated.* If the server is not activated, you can create new virtual machines and edit their configuration, but you cannot run these virtual machines and install guest operating systems in them.

Note: Parallels Management Console itself does not require activation.

To activate a Parallels server:

- 1 Click **Activate Product** when you see the message '*Your copy of Parallels Server is not activated.*' or choose **Activate Product** from the **Help** menu. The **Activate Product** dialog appears.



The screenshot shows a dialog box titled "Activate Product". The dialog contains the following information and input fields:

- Server: 10.30.23.243
- Name: Administrator
- Organization: [empty text box]
- Activation Key: [empty text box] (mandatory)

At the bottom of the dialog are two buttons: "OK" and "Cancel".

- 2 Fill out the following fields in this dialog:
 - **Name.** Enter your name (optional).
 - **Organization.** Enter the name of your organization (optional).
 - **Activation Key.** Enter the key for your Parallels product.
- 3 Click **OK**.

If you do not have a valid key, you can choose one of the following options in the **Activate Product** dialog:

- [obtain a trial activation key](#) (p. 28)
- [obtain a permanent activation key](#) (p. 28)

Getting a Trial Activation Key

If you do not want have a valid license and do not want to purchase it at the moment (for example, you want to evaluate the product), you can obtain an evaluation license. To do this:

- 1 In the **Activate Product** dialog, click the **obtain a free trial activation key** link.
- 2 In the displayed window, specify your name and e-mail address.
- 3 Click the **Get Trial** button.

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

You can also get a trial activation key by filling out a special form at the Parallels website. To do this, click the **Register online** button.

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

Getting a Permanent Activation Key

Using the **Active Product** dialog, you can also purchase a permanent activation key. To do this, click the **Purchase a permanent activation key** link. This opens [Parallels Online Store](http://www.parallels.com/buyonline) (<http://www.parallels.com/buyonline>) where you can purchase an activation key for your product.

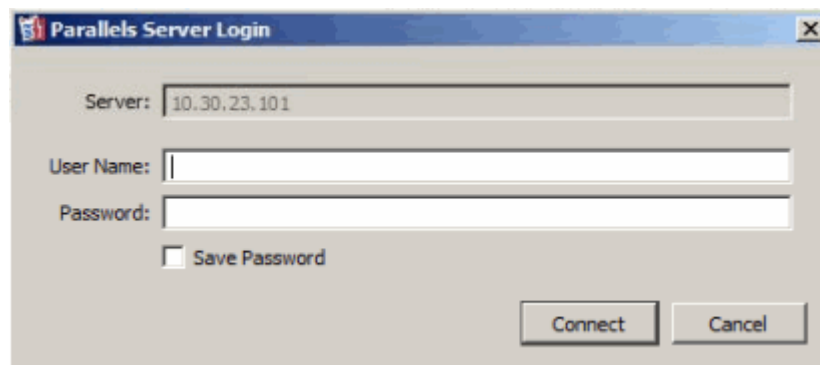
Connecting to a Registered Parallels Server

When you start Parallels Management Console, all registered Parallels servers appear as disconnected, except the server specified as the [default server to connect to](#) (p. 31).

Note: Only one server can be set as the default server.

To connect to a registered server:

- 1 Launch Parallels Management Console, select the server you want to connect to in the sidebar, and choose **Connect** from the **Server** menu.
- 2 In the **Parallels Server Login** dialog, specify your user name and password for the server.

The image shows a screenshot of the 'Parallels Server Login' dialog box. The dialog has a title bar with the text 'Parallels Server Login' and a close button. Below the title bar, there are three input fields: 'Server:' with the value '10.30.23.101', 'User Name:' which is empty, and 'Password:' which is empty. Below the password field is a checkbox labeled 'Save Password' which is currently unchecked. At the bottom right of the dialog, there are two buttons: 'Connect' and 'Cancel'.

If you want Parallels Management Console to save your login and password for future uses, select the **Save Password** option. In this case, you do not need to specify your credentials each time you connect to the server.

- 3 Click **Connect**.

Configuring Server Settings

Using Parallels Management Console, you can configure the following server settings:

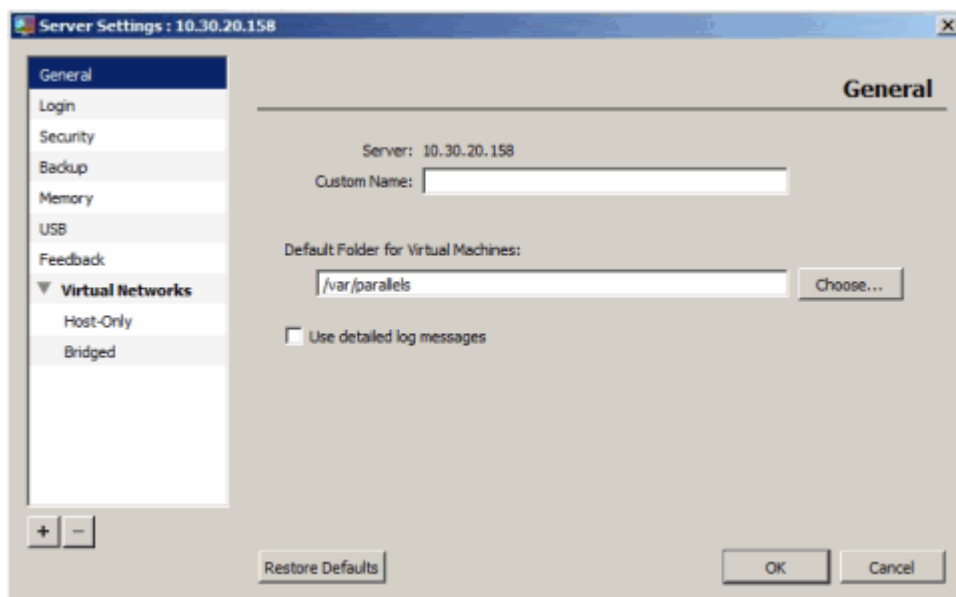
- server name
- default folder for storing virtual machine files
- default login and password for connecting to the server
- connection security level
- default folder for storing virtual machine backups
- amount of memory available in virtual machines
- PCIe devices assignment
- virtual networks

You can change any of these settings in the **Server Settings** dialog. To open this dialog:

- 1 Make sure that you are connected to the Parallels server as a user with administrative privileges.
- 2 Select the server in the sidebar, and choose **Edit Settings** from the **Server** menu.


Setting General Options

You can configure the general options of a Parallels server in the **General** pane of the **Server Settings** dialog. To open this pane, select the server in the Parallels Management Console sidebar, and choose **Edit Settings** from the **Server** menu.



In the **General** pane, you can do the following:

- In the **Custom Name** field, configure the server name. This name is displayed in the Parallels Management Console sidebar (p. 14) and used to uniquely identify the server among other registered servers.
- In the **Default Folder for Virtual Machines** field, specify the default folder for storing virtual machine files. By default, this path is set to one of the following:

 in Parallels Server for Mac to `/Users/Shared/Parallels/`

 in Parallels Server Bare Metal to `/var/Parallels/`

 in Parallels Server for Mac Bare Metal Edition to `/var/Parallels/`

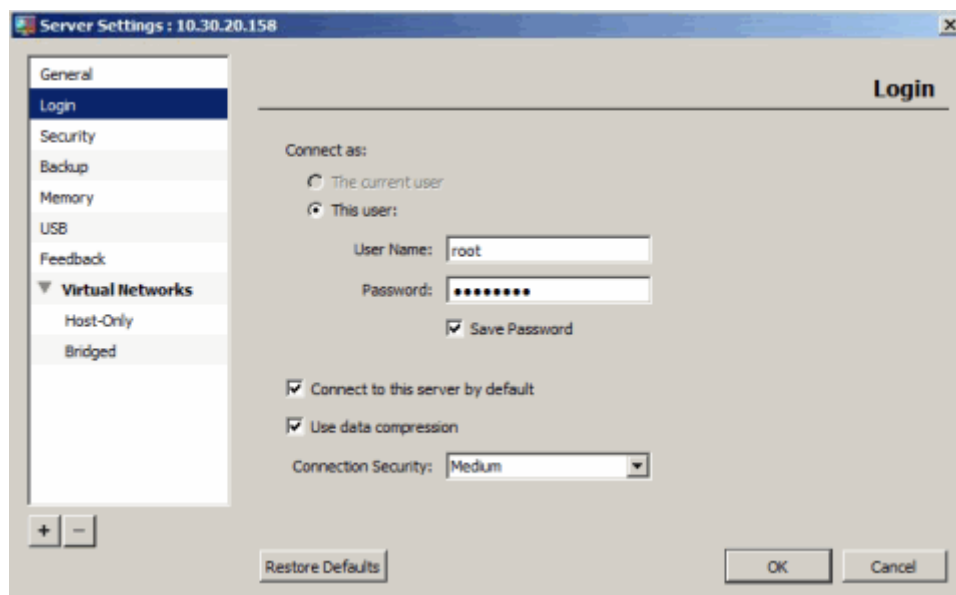
Restore Defaults

To restore the default settings, click **Restore Defaults**.

Configuring Login Settings

You can configure the login settings to use to connect to a Parallels server in the **Login** pane of the **Server Settings** dialog. To open this pane:

- 1 Select the server in the Parallels Management Console sidebar.
- 2 Choose **Edit Settings** from the **Server** menu.
- 3 Click **Login** in the **Server Settings** dialog.



In the **Login** pane, you can configure the following settings:

- **The current user.** Choose this option to connect to the server with the same user account that you used to log in to the primary operating system installed on this server.

Note: This option is available for the *localhost* server only, which is the server with IP address 127.0.0.1 on your network.

- **This user.** Enable this option and specify the user name and password to connect to this server. The name and the password you enter should be valid for the Parallels server. If you want to save the user name and password, select **Save Password**.
- **Connect to this server by default.** Enable this option if you want to connect to this Parallels server automatically when you start Parallels Management Console. You can also set the level of security when connecting to the server. For more information about the security levels, refer to **Security Options** (p. 33).

Note: You can set only one server as the default for the connection.

- **Use Data Compression.** If you select this option, the data sent between Parallels Management Console and Parallels Server will be compressed. If you use low-speed connections, select this option to improve the data transfer speed.

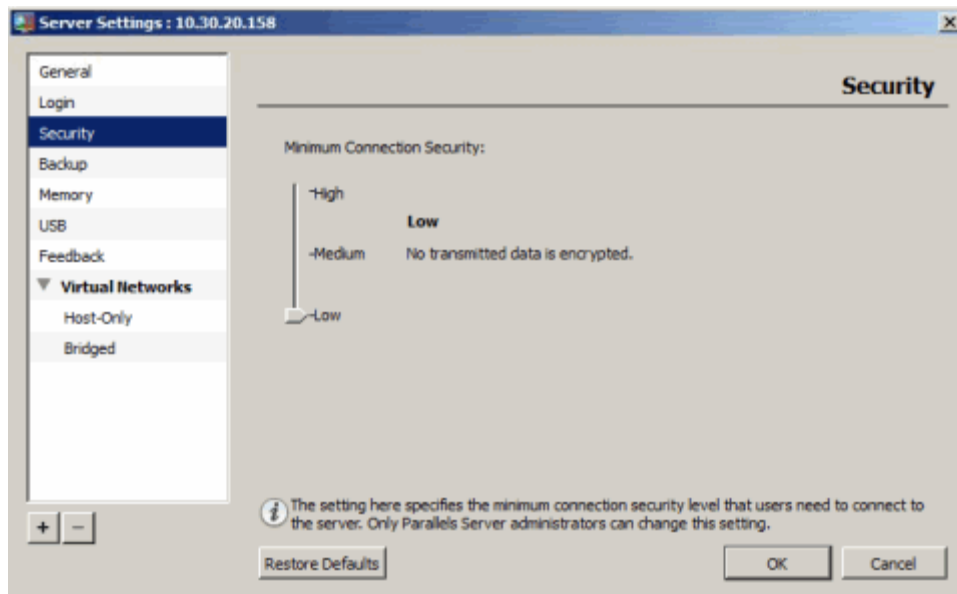
Restore Defaults

To restore the default settings, click **Restore Defaults**.

Defining Security Settings

In the **Security** pane, you can set the level of security for incoming connections to the Parallels server. To open this pane:

- 1 Select the server in the Parallels Management Console sidebar.
- 2 Choose **Edit Settings** from the **Server** menu.
- 3 Click **Security** in the **Server Settings** dialog.



The security level controls the encryption of data between the server and Parallels Management Console. You can choose one of the following security levels:

- **High:** All types of data transmitted between the Parallels server and Parallels Management Console are encrypted. This is the most secure level of encryption. Encrypting all data, however, may result in lower transmission rates.
- **Medium.** All commands, events, and input data transmitted between the Parallels server and Parallels Management Console are encrypted, while video and device data is not encrypted. Encrypting only the most important data results in higher transmission rates as compared to the high security level.
- **Low (default).** Data transmitted between the Parallels server and Parallels Management Console is not encrypted. This security level provides the fastest connection speed, but all data is unsecured and may be intercepted.

After you have set the security level, restart the Parallels Server application to save the changes. To restart the application, you can run the following command on the Parallels server:

```
# service parallels-server restart
```

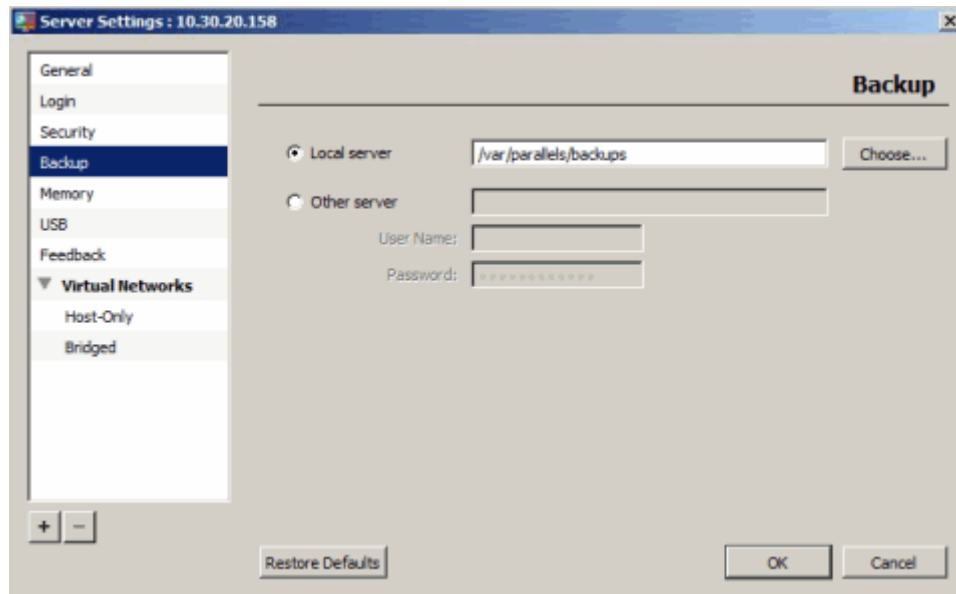
Restore Defaults

To restore the default settings, click **Restore Defaults**.

Configuring Backup Options


In the **Backup** pane, you can configure the directory for storing virtual machine backups. To open this pane:


- 1 Select the server in the Parallels Management Console sidebar.
- 2 Choose **Edit Settings** from the **Server** menu.
- 3 Click **Backup** in the **Server Settings** dialog.




You can choose one of the following options:

- **Local server.** Select this option to store virtual machine backups on the Parallels server. By default, backups are stored in the following directories:

 Parallels Server for Mac— /Users/Shared/Parallels/Backups

 Parallels Server Bare Metal— /var/parallels/backups

 Parallels Server for Mac Bare Metal Edition— /var/parallels/backups

To change the default directory, specify the desired path in the field provided or click the **Choose** button and locate the directory.

- **Other server.** Select this option to store virtual machine backups on a remote Parallels server—that is, on the server different from the one where the virtual machines are residing. To set a remote Parallels server as a backup server, type its IP address or hostname in the field provided, and specify the credentials to access the remote server in the **User Name** and **Password** fields.

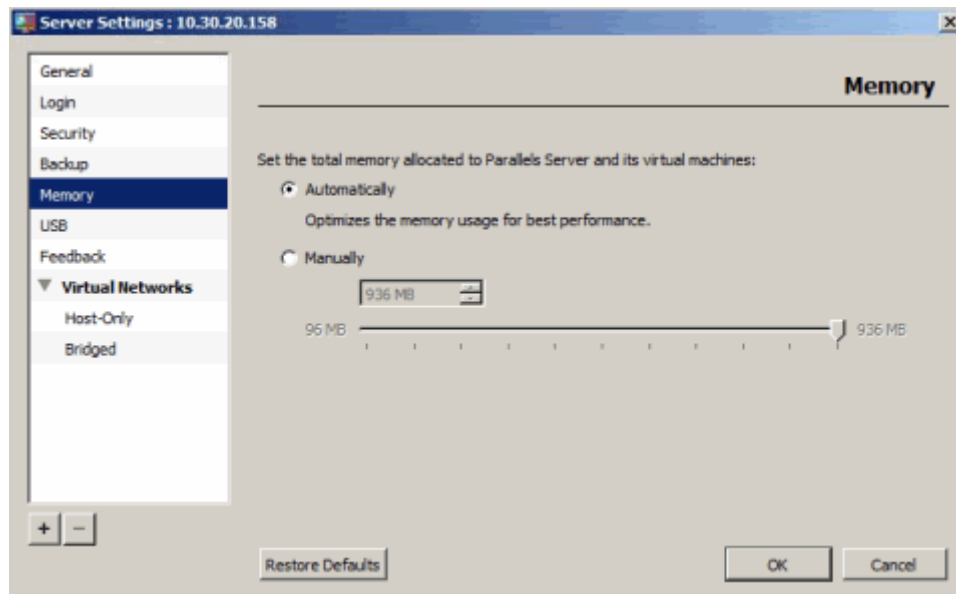
Restore Defaults

To restore the default settings, click **Restore Defaults**.

Settings Memory Options

In the **Memory** pane, you can configure the maximum amount of memory (RAM) that can be allocated to the Parallels application and all running virtual machines on the server. To open this pane:

- 1 Select the server in the Parallels Management Console sidebar.
- 2 Choose **Edit Settings** from the **Server** menu.
- 3 Click **Memory** in the **Server Settings** dialog.



By default, the amount of memory is adjusted automatically. However, you can manually set the memory limit the Parallels application and all running virtual machines are not allowed to exceed. To do this, select the **Manually** radio button and specify the required amount of memory.

Notes:

1. The specified amount of memory is shared between all virtual machines running on the server.
2. For information on configuring the amount of RAM for individual virtual machines, see **General Settings** (p. 88).

At any moment, you can restore the default settings by clicking **Restore Defaults**.

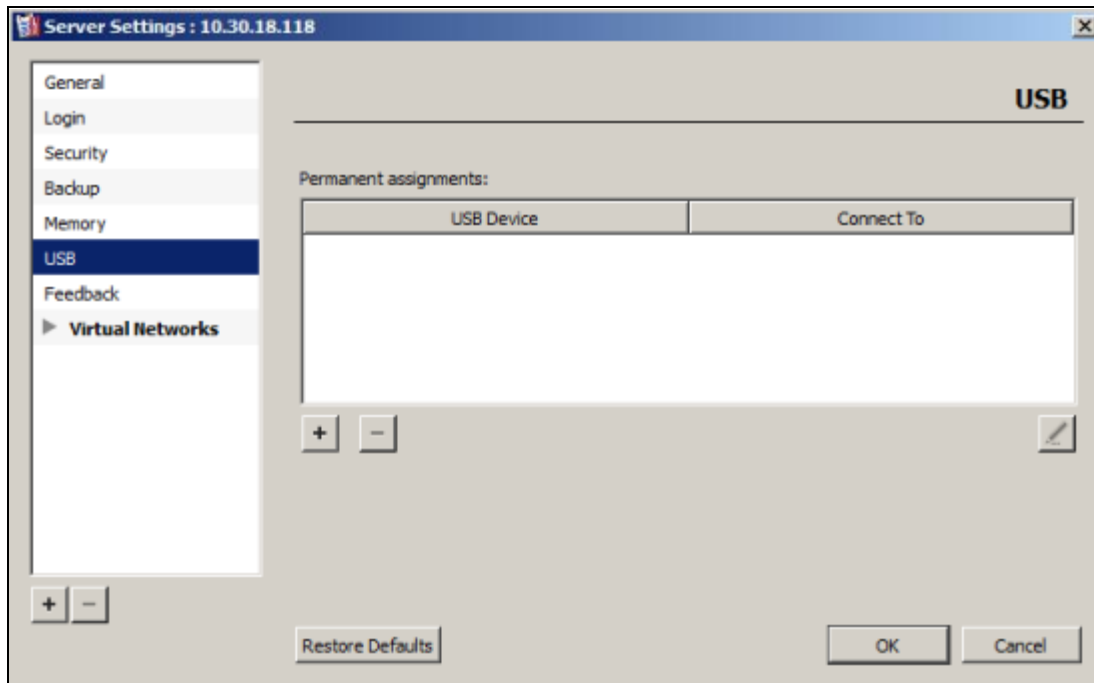
Assigning USB Devices to Virtual Machines

In Parallels Server Bare Metal, you can assign a USB device to a virtual machine so that the device is automatically connected to the virtual machine when you do the following:

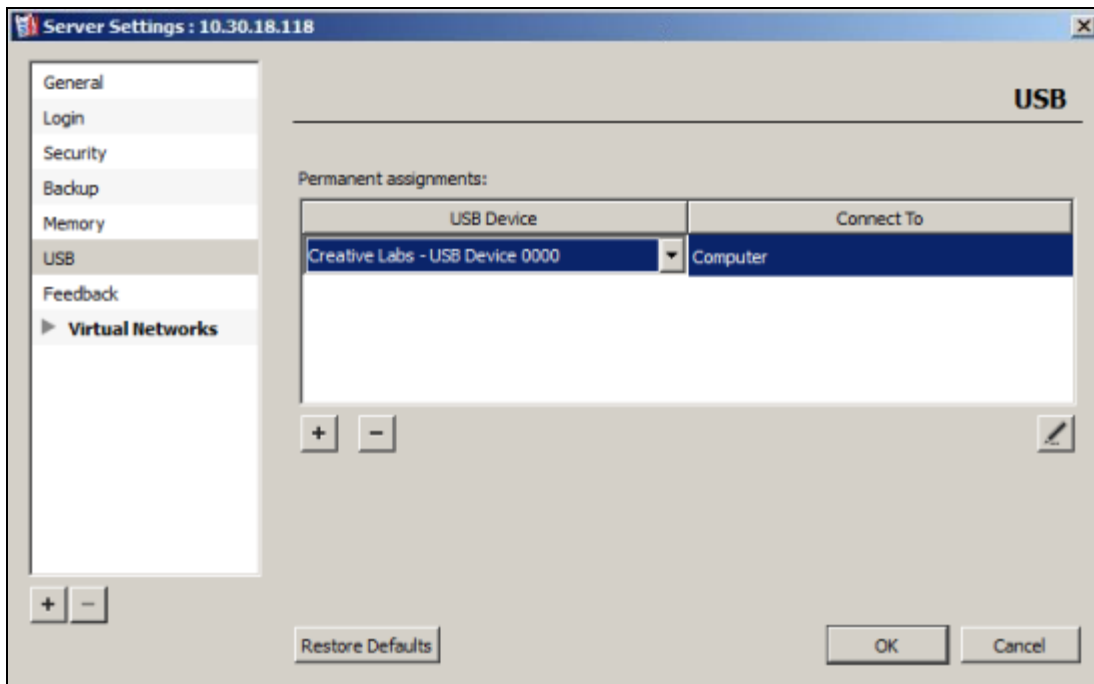
- Connect the USB device to the Parallels server.
- Start the virtual machine.

To assign a USB device to a virtual machine:

- 1 In the Parallels Management Console left panel, select the server where the virtual machine you plan to use the USB device with is located, and choose **Edit Settings** from the **Server** menu.
- 2 In the left pane of the **Server Settings** window, click **USB**.



- 3 Click the plus sign under the **Permanent assignments** table.



- 4 Do the following:
 - a In the **USB Device** column, choose the USB device you want to assign to the virtual machine.
 - b In the **Connect To** column, choose the virtual machine where you want to connect the USB device.

To add another assignment, click the plus sign once more. To delete an assignment, click the minus sign.

- 5 Click **OK**.

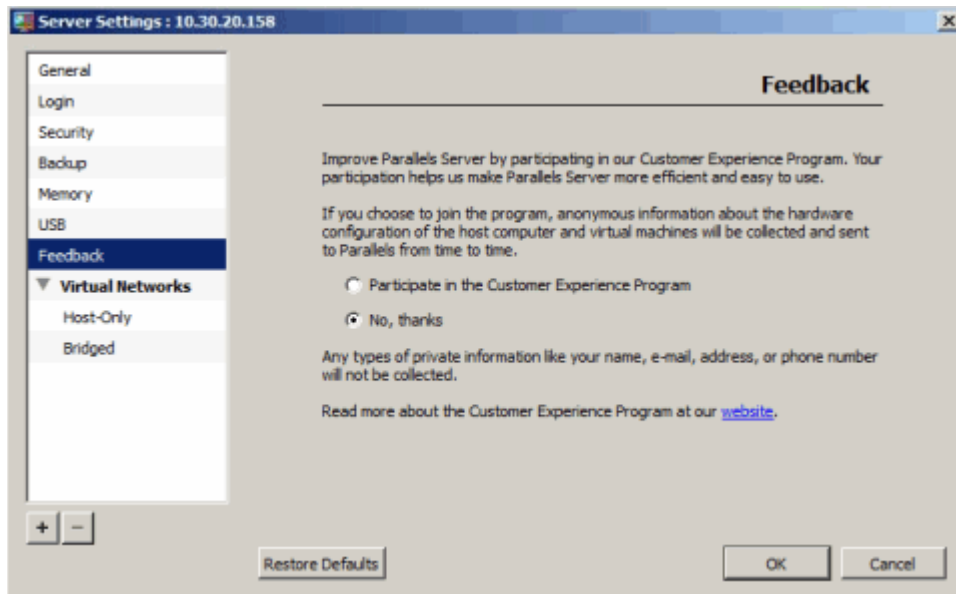
When assigning USB devices to virtual machines, keep in mind the following:

- You cannot migrate a running virtual machine having one or more USB devices assigned.
- After migrating a stopped virtual machine, all its assignments are lost.
- All USB assignments are preserved if you restoring a virtual machine to its original location and are lost otherwise.
- The association between a USB device and a virtual machine is created for the user currently logged in to the system.

Configuring Participation in the Parallels Customer Program

In the **Feedback** pane, you can configure your participation in the Parallels Customer Experience Program (CEP). To open this pane:

- 1 Select the server in the Parallels Management Console sidebar.
- 2 Choose **Edit Settings** from the **Server** menu.
- 3 Click **Feedback** in the **Server Settings** dialog.



If you participate in the program, Parallels collects information about your server and the configuration of your virtual machines. The gathered information is then used to make the product better fit your needs. The following information is collected:

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

Private information like your name, e-mail, address, phone number, and keyboard input is not collected.

For more details on the CEP, click the link at the bottom of the **Feedback** pane.

Managing Virtual Networks

A virtual network acts as a binding interface between a virtual network adapter in a Container and a physical network adapter on the Parallels server. Using virtual networks, you can facilitate the process of managing networks. For example, virtual networks can help you avoid possible problems with migrating virtual machines between Parallels servers. If you assign a virtual machine or Container virtual adapter directly to a physical adapter on the source server and migrate the virtual machine or Container to the destination server, the virtual adapter may get broken because the physical adapter on the destination server is different from that on the source server. To deal with such situations, you can create a virtual network on both servers, set the same name for both networks, and assign the virtual adapter to the virtual network on the source server.

You can create the following types of virtual networks:

- *Host-only*
- *Bridged*

Host-only virtual networks

A Parallels sever can have several host-only virtual networks. A virtual machine connected to a host-only network can connect to the Parallels server and virtual machines connected to the same network. If you have, for example, two host-only virtual networks, the virtual machines connected to the first host-only network can connect to each other and to the Parallels server, but they cannot access the virtual machines on the second host-only network.

For more information about host-only virtual networks, see **Configuring Host-Only Network Settings** (p. 42).

Bridged virtual networks

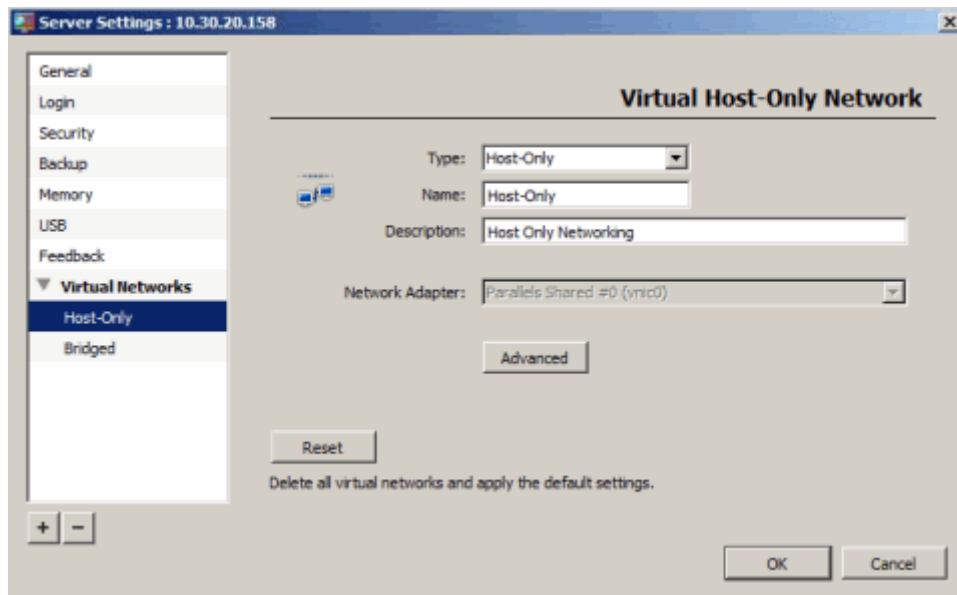
A Parallels server can have one or more bridged virtual networks. The number of bridged virtual networks cannot exceed the number of physical adapter installed on the Parallels server. A virtual machine connected to a bridged virtual network can connect to the network (local and/or Internet) where the physical adapter associated with this virtual network is joined. In a bridged network, a virtual machine is treated as a stand-alone computer on the network and can be configured in the same way as a real one.

For more information about bridged virtual networks, see **Configuring Bridged Network Settings** (p. 44).

Configuring Host-Only Network Settings

In the **Host-Only** pane, you can configure the settings of host-only virtual networks. To open this pane:

- 1 Select the server in the Parallels Management Console sidebar.
- 2 Choose **Edit Settings** from the **Server** menu.
- 3 Expand the **Virtual Networks** item, and click **Host-Only**. **Host-Only** is the name of the default host-only virtual network on the Parallels server. If you have created other host-only virtual networks, click their names instead of **Host-Only**.

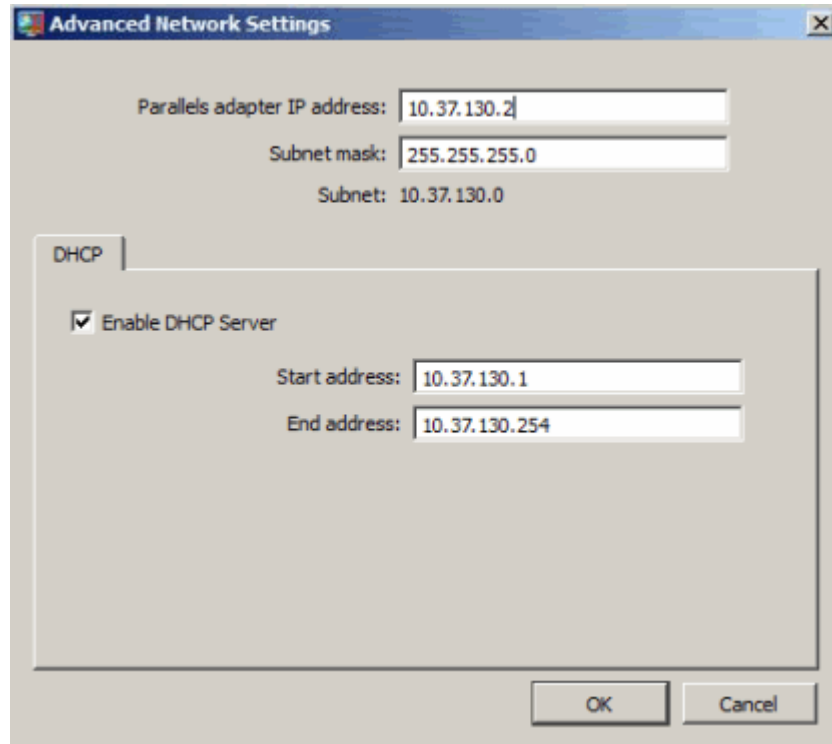


You can do the following:

- In the **Type** field, change the type of the virtual network.
- In the **Name** field, change the virtual network name.
- In the **Description** field, change the virtual network description.
- In the **Network Adapter** field, select the network adapter to connect to the virtual network. This field is available only if you change the network type to 'bridged' in the **Type** field.
- Click the **Advanced** button to open the **Advanced Network Settings** dialog where you can configure a number of advanced network parameters for the virtual network. For more information on advanced settings, see **Defining Host-Only Network Settings** (p. 43).
- Click the **Reset** button to restore the default settings. In this case, all custom networks are removed from the Parallels server, except for two default networks (`Host-Only` and `Bridged`), and the parameters of both networks are set to default values.

Defining Host-Only Network Advanced Settings

Once you click the **Advanced** button in the pane of a host-only network, the **Advanced Network Settings** window appears.



In this window, you can do the following:

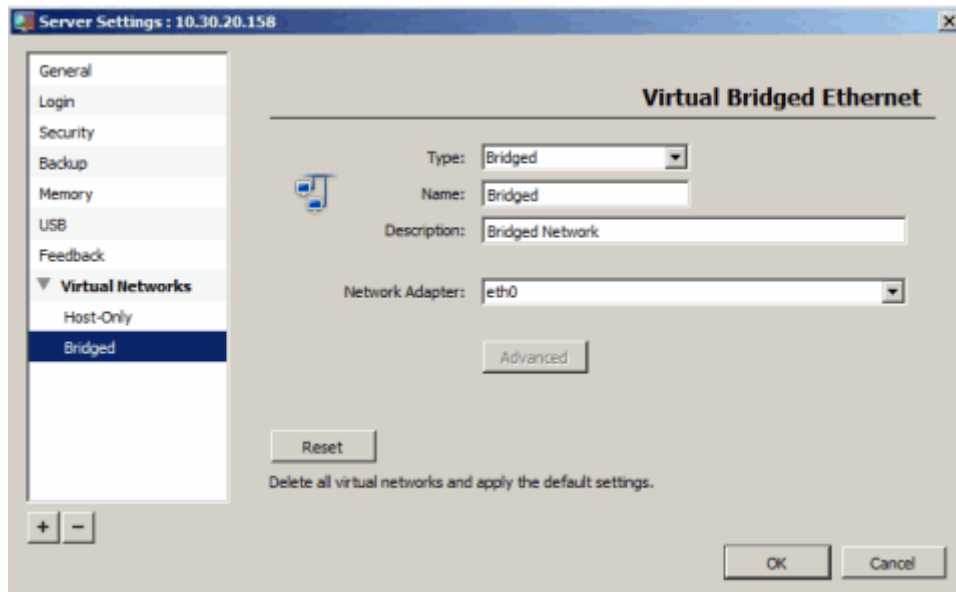
- Specify the host IP address and network mask in the **Parallels adapter IP address** and **Subnet mask** fields.
- Select the **Enable DHCP Server** option to enable the Parallels DHCP server. This server automatically assigns IP addresses to the virtual machines connected to this host-only virtual network from the range you define in the **Start address** and **End address** fields. All IP addresses in the range must belong to the same subnet.

If you do not want to use the Parallels DHCP server, clear the **Enable DHCP Server** option. In this case, you will need to set all IP parameters for virtual machines manually.

Configuring Bridged Network Settings

In the **Bridged** pane, you can configure the settings of bridged virtual networks. To open this pane:

- 1 Select the server in the Parallels Management Console sidebar.
- 2 Choose **Edit Settings** from the **Server** menu.
- 3 Expand the **Virtual Networks** item, and click **Bridged**. **Bridged** is the name of the default bridged virtual network on the Parallels server. If you have created other bridged virtual networks, click their names instead of **Bridged**.




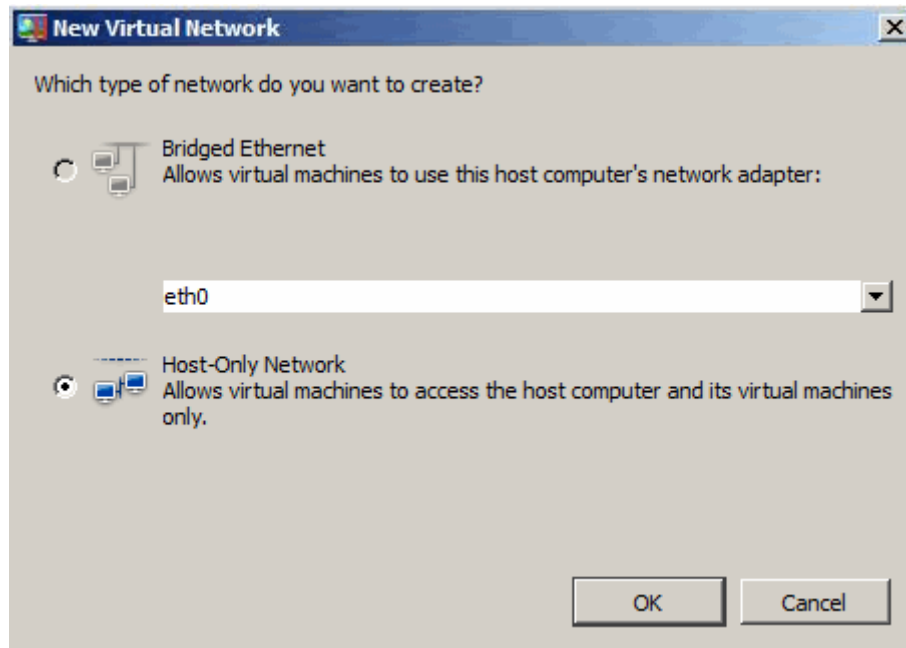
You can do the following:

- In the **Type** field, change the type of virtual network.
- In the **Name** field, change the virtual network name.
- In the **Description** field, change the virtual network description.
- In the **Network Adapter** field, select the network adapter to connect to the virtual network. This field is available only for bridged virtual networks.
- Click the **Reset** button to restore the default settings. In this case, all custom networks are removed from the Parallels server, except for two default networks (`Host-Only` and `Bridged`), and the parameters of both networks are set to default values.

Adding a Virtual Network

To create a new virtual network, do the following:

- 1 In the **Server Settings** window, click the **Add** button  to open the **New Virtual Network** window.



- 2 Select the virtual network type:
 - Select the **Bridged Ethernet** radio button to create a bridged network. In this case, you need to choose the network adapter to connect the bridged virtual network to from the **Network Adapter** menu. This menu lists all network adapters and Ethernet interfaces available on the Parallels server.
 - Select the **Host-Only Network** radio button to create a host-only network.
- 3 Click **OK**.

Disconnecting From a Parallels Server

If you do not plan to work with a Parallels server during a certain time, you can temporarily disconnect Parallels Management Console from the server and free some resources on the local computer. To disconnect from a Parallels server:

- 1 Select the server in the Parallels Management Console sidebar.
- 2 Choose **Disconnect** from the **Server** menu.

Removing a Parallels Server

To remove a Parallels sever from the list of registered servers in Parallels Management Console, do the following:

- 1 Select it in the Parallels Management Console [sidebar](#) (p. 14).
- 2 Choose **Remove** from the **Server** menu.

CHAPTER 4

Managing Virtual Machines

This chapter provides information on the main day-to-day operations you are likely to perform on virtual machines.

In This Chapter

Create a New Virtual Machine.....	47
Installing a Guest Operating System.....	60
Using Parallels Tools.....	62
Adding an Existing Virtual Machine.....	72

Create a New Virtual Machine

The process of creating a new virtual machine includes the following basic steps:

- 1** Creating a virtual machine configuration.
- 2** Installing a guest operating system. To check the list of supported guest operating systems, check the user's guide for the respective Parallels product.
- 3** Installing Parallels Tools.

These steps are described in the following sections in detail.

Choosing Installation Mode

Parallels Management Console offers several modes of creating virtual machine configurations and installing guest operating systems. So before starting to create your first virtual machine, make sure you know what each of the installation modes means.

Express Installation

In the *Express* installation mode, Parallels Management Console automatically creates a virtual machine configuration and installs the guest operating system (OS) you choose. This is the easiest way to create a new virtual machine. All you need to do is to provide guest OS installation files and specify the OS product key, if necessary, and Parallels Management Console will do the rest. For more information on this installation mode, see **Creating Virtual Machines in Express Mode** (p. 49).

Typical Installation

In the *Typical* installation mode, Parallels Management Console asks you to specify the type and version of the guest OS you want to run in your virtual machine and where you want to store the virtual machine files. Once you provide this information, Parallels Management Console creates a typical virtual machine configuration and starts the OS installation. You then follow standard instructions to install the operating system the same way you do this on a standalone computer. For more information on this installation mode, see **Creating Virtual Machines in Typical Mode** (p. 53).

Custom Installation

In the *Custom* installation mode, you manually specify all options and control the whole process of creating the virtual machine. In particular, you specify the amount of RAM for the virtual machine, the size and format of the virtual hard disk, network parameters, and so on. The Custom installation mode is intended for experienced users. For more information on this mode, see **Creating Virtual Machines in Custom Mode** (p. 55).

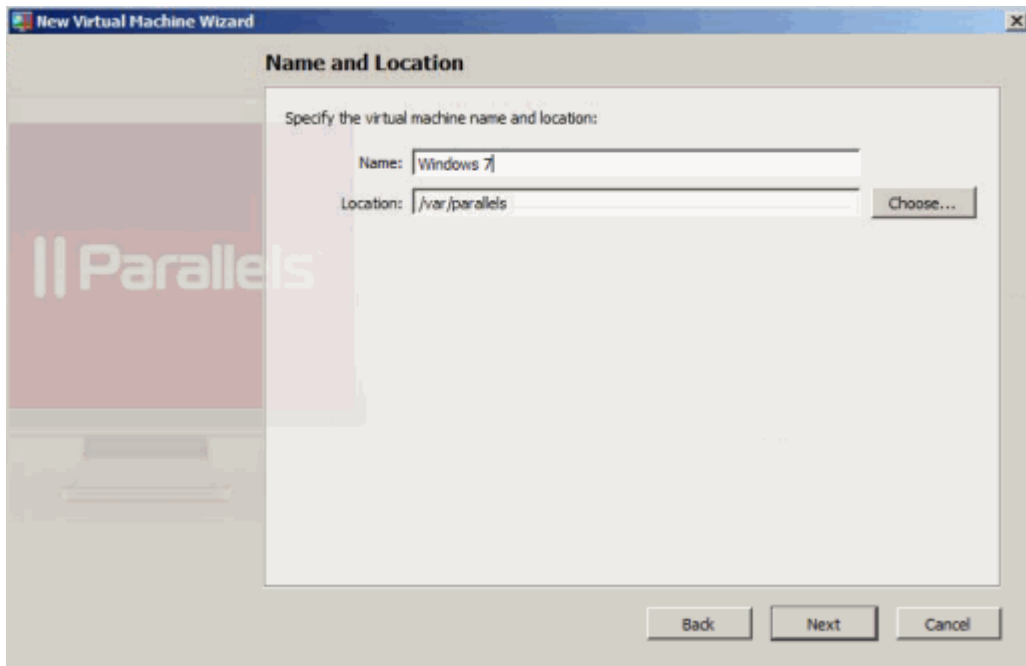
Creating Virtual Machines in Express Mode

Installation in the Express mode is supported for the following operating systems:

- Windows 7
- Windows Vista
- Windows XP
- Windows Server 2003
- Windows 2000 Server
- Ubuntu 9.10 and higher
- Red Hat Enterprise 4.8, 5.6, and 6
- Fedora 13 and higher

To create a virtual machine in the Express installation mode, do the following:

- 1** Start Parallels Management Console, and choose **New** from the **File** menu. This launches the **New Virtual Machine** wizard.
- 2** In the **Select Operating System Type and Version** window, select the guest OS to install in the virtual machine, and click **Next**.
- 3** In the **Virtual Machine Type** window, select **Express Windows** or **Express Linux** depending on the operating system you plan to run in the virtual machine, and click **Next**.
- 4** In the **Name and Location** window, define the name and location for the virtual machine:
 - **Name.** Indicate an arbitrary name for the virtual machine. By default, the virtual machine gets the same name as the operating system installed in it. If a virtual machine with such a name already exists, you are prompted to indicate another name. The name must not exceed 50 characters.
 - **Location.** Use the **Choose** button, if necessary, to change the default location of the virtual machine files.

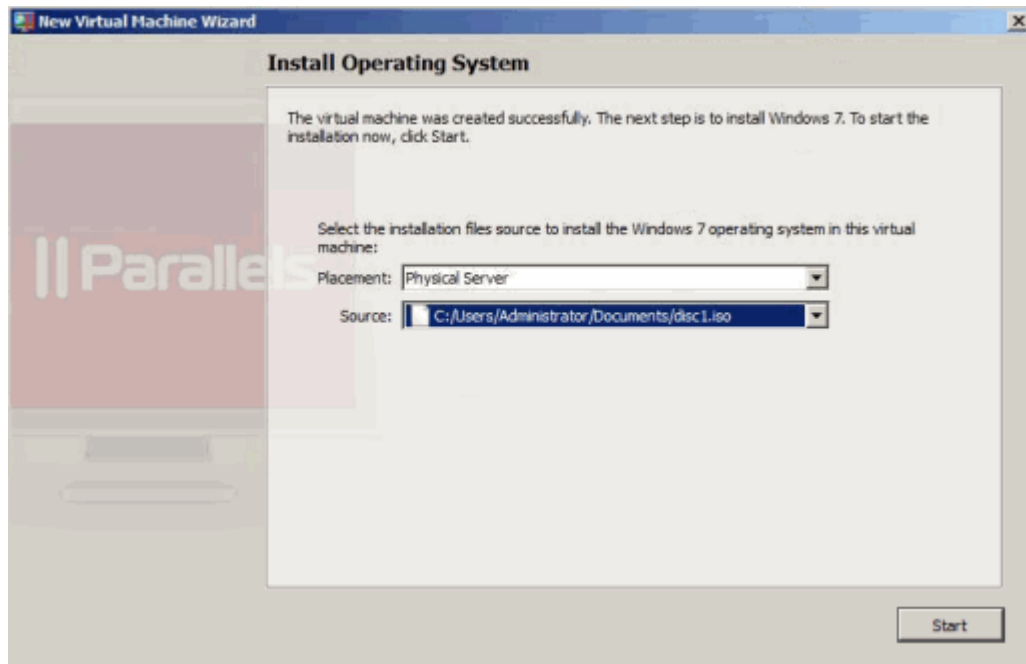


Click **Next**.

- 5** In the **Express Windows/Linux Installation** window, do the following:
 - a** Specify a user name and (for Linux virtual machines only) a password to log in to the virtual machine. For Windows virtual machines, the password is blank; you can set it manually once the operating system installation is complete.
 - b** (For Windows virtual machines only.) Enter the product key for your Windows operating system. If you do not specify the product key in this step, you will have to provide it later when the Windows guest OS installation starts.
 - c** If necessary, click the **Advanced** button, and configure the number of CPUs and the amount of RAM for the virtual machine.
 - d** (For Windows virtual machines only.) Select the **64-bit Windows version** option if you are installing a 64-bit version of the guest operating system.
 - e** Click **Create**.
- 6** Once the virtual machine is created, the **Prepare to Install Operating System** window appears. In this window, specify the source of installation files, and click **Start**. To specify the path to the source installation files, select **Physical Server** or **Client Computer** in the **Placement** list depending on whether the files are located on the Parallels server or on a computer running Parallels Management Console and do one of the following:
 - If the installation files are located on a CD or DVD, choose the respective drive in the **Source** list.
 - If you have a CD or DVD image with the installation files, click **Choose an image file** in the **Source** list and locate the image.

Notes:

1. OS installation CDs and DVDs are not included with your Parallels product. You must obtain an operating system separately.
2. For a Linux virtual machine, the source installation files may be located on the Parallels server only.

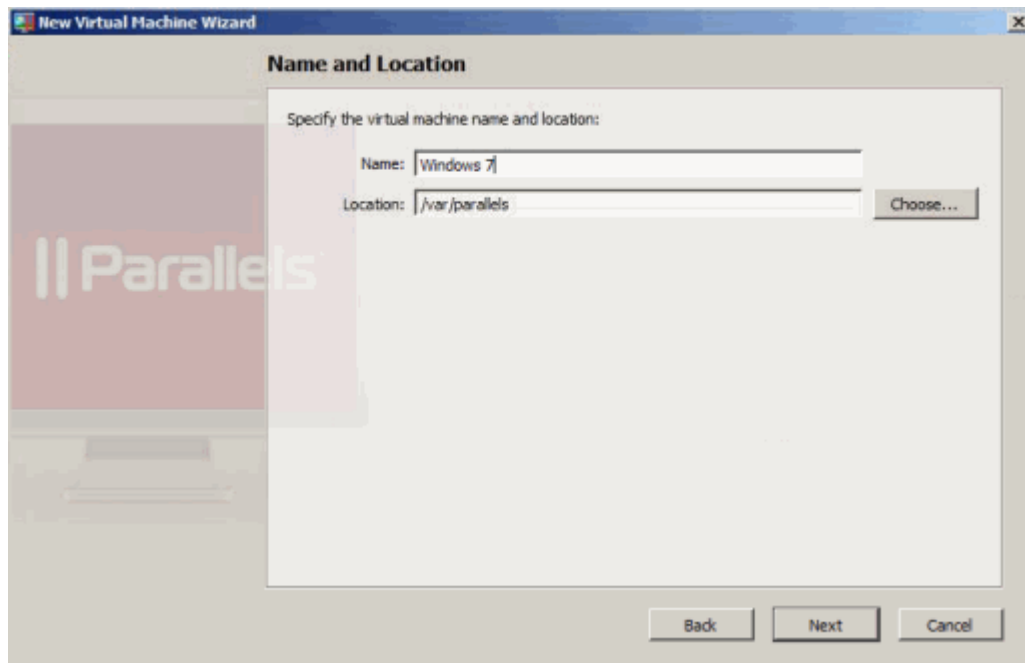


Once you click **Start**, the new virtual machine is started and the guest operating system is installed in it. After the installation, Parallels Management Console automatically installs Parallels Tools in the virtual machine.

Creating Virtual Machines in Typical Mode

To create a typical virtual machine:

- 1 Start Parallels Management Console, and choose **New** from the **File** menu. This launches the **New Virtual Machine** wizard.
- 2 In the **Select Operating System Type and Version** window, choose the operating system you are planning to install in the virtual machine, and click **Next**.
- 3 In the **Virtual Machine Type** window, select **Typical**, and click **Next**.
- 4 In the **Name and Location** window, define the name and location for your virtual machine:
 - **Name.** Indicate an arbitrary name for the virtual machine. By default, the virtual machine gets the same name as the operating system you install in it. If a virtual machine with such a name already exists, you are prompted to indicate another name. The name must not exceed 50 characters.
 - **Location.** Use the **Choose** button, if necessary, to change the default location of the virtual machine files.

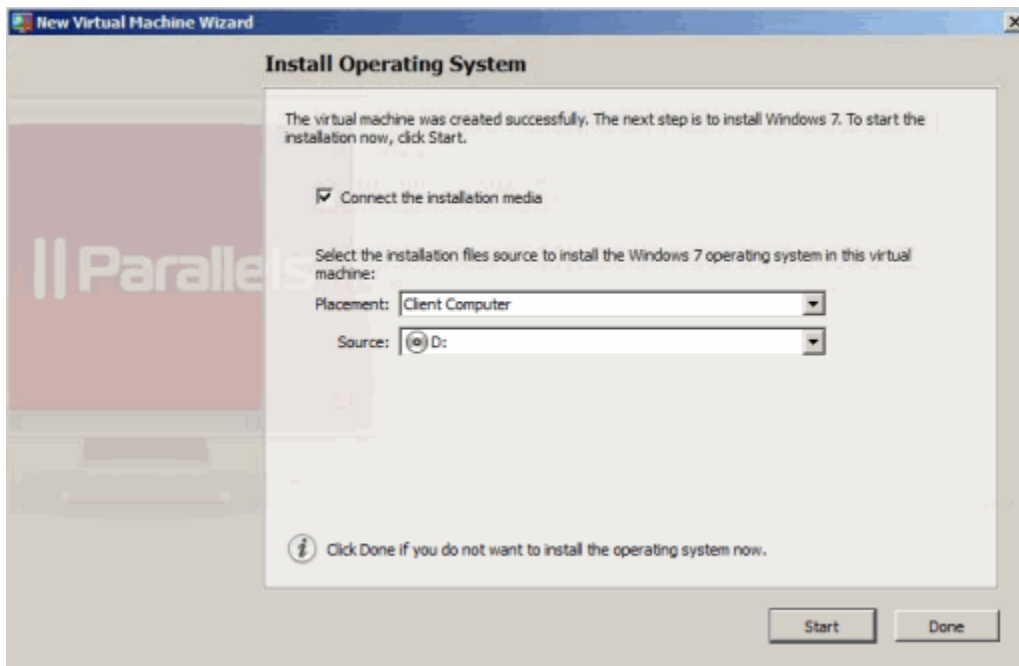


Click **Next**.

- 5 Once the virtual machine is created, the **Install Operating System** window appears. In this window, specify the source of installation files:
 - Select the installation source in the **Placement** list. Choose `Physical Server` if your source installation files are located on the Parallels server or choose `Client Computer` if the source installation files are located on the physical computer where Parallels Management Console is installed. If Parallels Management Console is installed on the Parallels server, in the **Placement** list, you will be able to choose only `Physical Server`.
 - Specify the path to the source installation files. If you want to use a disc inserted into the computer's CD/DVD drive, choose this drive from the **Source** menu. If you want to use a CD/DVD disc image connected to the virtual machine's CD/DVD drive, click the **Source** menu and use **Choose an image file** to locate the file.

Notes:

1. OS installation CDs and DVDs are not included with your Parallels product. You must obtain an operating system separately.
2. For a Linux virtual machine, the source installation files may be located on the Parallels server only.



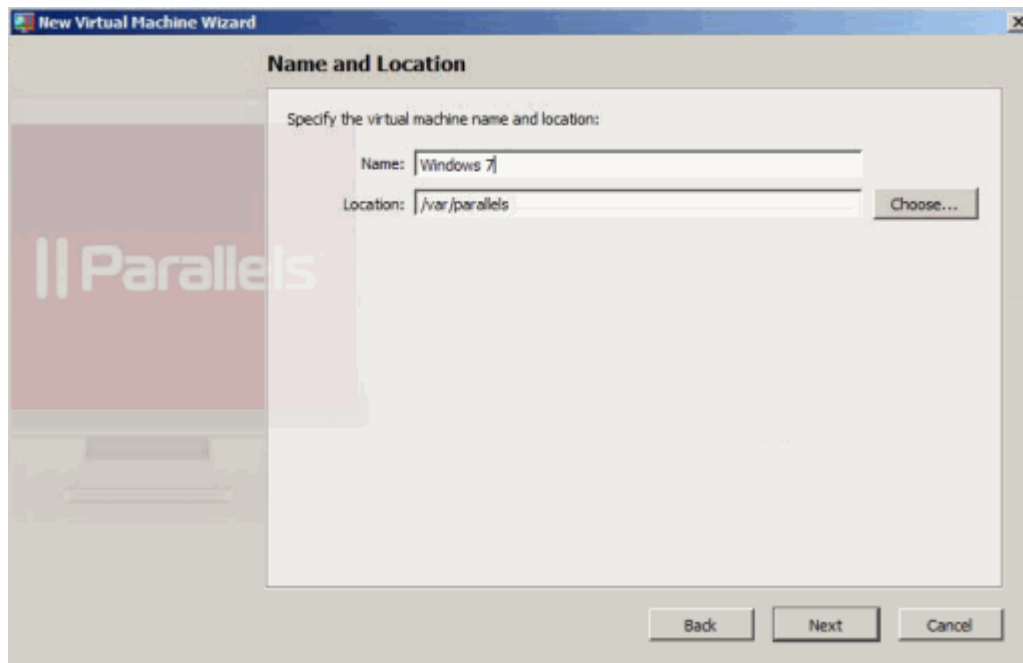
- If you want to connect the installation source to the virtual machine in this step, make sure the **Connect the installation media** option is selected. If you clear this option and start the virtual machine or start it later, you will have to connect the installation source to the virtual machine manually.

To start the virtual machine and guest OS installation, click **Start**. When the installation is complete, install [Parallels Tools](#) (p. 62) if they are available for the guest OS. If you do not want to start the virtual machine and install the guest OS, click **Done**.

Creating Virtual Machines in Custom Mode

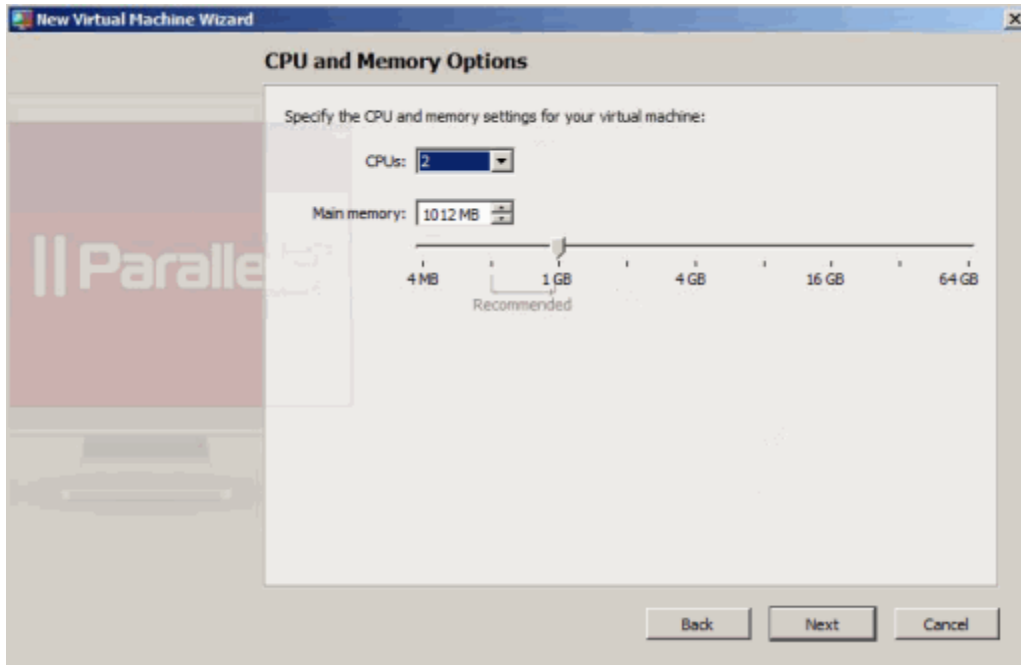
To create a custom virtual machine:

- 1 Start Parallels Management Console, and choose **New** from the **File** menu. This launches the **New Virtual Machine** wizard.
- 2 In the **Select Operating System Type and Version** window, select the guest OS you plan to install in the virtual machine, and click **Next**.
- 3 In the **Virtual Machine Type** window, select **Custom** and click **Next**.
- 4 In the **Name and Location** window, define the name and location for your virtual machine:
 - **Name.** Indicate an arbitrary name to be assigned to the virtual machine. By default, the virtual machine gets the same name as the operating system you install in it. If a virtual machine with such a name already exists, you are prompted to indicate another name. The name must not exceed 50 characters.
 - **Location.** Use the **Choose** button, if necessary, to change the default location of the virtual machine files.

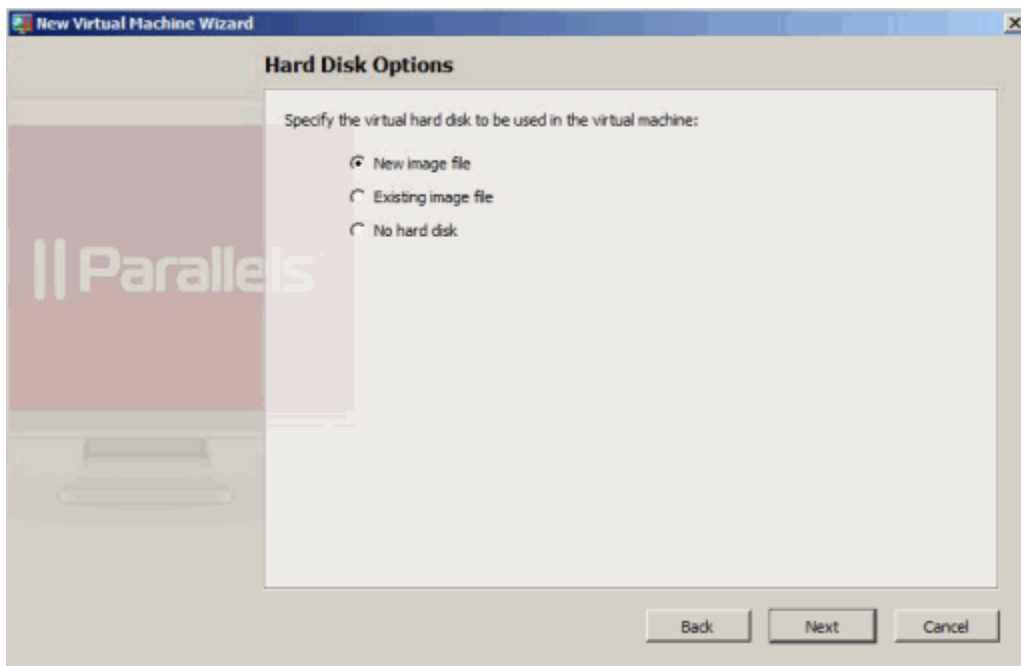


Click **Next**.

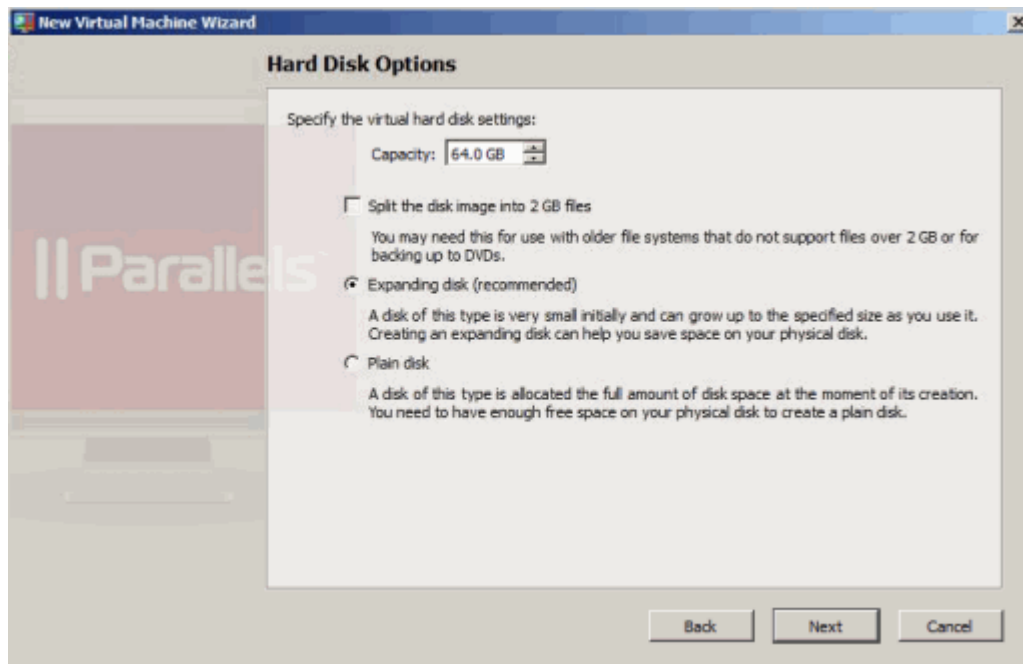
- 5 In the **CPU and Memory Options** window, specify the number of CPUs and the amount of RAM for the virtual machine, and click **Next**. You can use the slider or arrow buttons to set the value or simply type it into the corresponding field.



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



- 7 The next step differs, depending on which option you choose in the previous step:
- If you choose **No hard disk**, go to **Step 8**.
 - If you choose **Existing image file**, the **Existing Virtual Hard Disk** window appears. In this window, specify the hard disk image to connect, and click **Next**.
 - If you choose **New image file**, the **Hard Disk Options** window appears. In this window, specify the capacity and type of the virtual disk, and click **Next**.



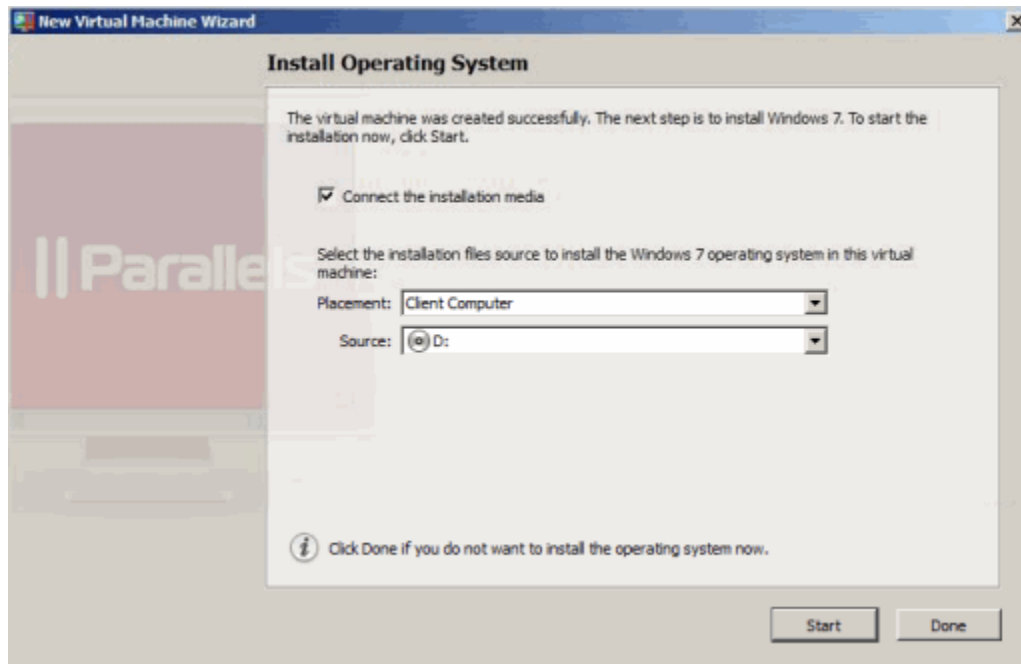
- 8** In the **Networking Type** window, select the type of networking you want to use in the virtual machine, and click **Next**.
- **Virtual Network.** If you select this option, the virtual machine will be connected to one of the [virtual networks](#) (p. 41) available on the Parallels server.
 - **Routed Networking.** If you select this option, the virtual machine will appear as a full member on the network, and its traffic is routed via one of the virtual adapters on the Parallels server.
 - **No Networking.** If you select this option, the virtual machine will have no network adapter.

Note: You can reconfigure the networking settings after creating the virtual machine.

- 9** This step differs depending on the option you select in the previous step:
- If you select the **No Networking** option, go to **Step 10**.
 - If you select the **Virtual Network** option, the **Network Adapter** window appears. In this window, select [the virtual network](#) (p. 41) where to connect the virtual machine network, and click **Next**.
- 10** In the **Optimization Options** window, select the optimization mode, and click **Create**. You can choose one of the following options:
- **Virtual machine (Recommended).** Select this option to allocate most of the server resources to the virtual machine and its applications.
 - **Host Computer.** Select this option to allocate most of the resources to the server and its applications.
- 11** Once the virtual machine is created, the **Install Operating System** window appears. In this window, specify the source of installation files:
- Select the installation source in the **Placement** list. Choose `Physical Server` if your source installation files are located on the Parallels server or choose `Client Computer` if the source installation files are located on the physical computer where Parallels Management Console is installed. If Parallels Management Console is installed on the Parallels server, in the **Placement** list, you will be able to choose only `Physical Server`.
 - Specify the path to the source installation files. If you want to use a disc inserted into the computer's CD/DVD drive, choose this drive from the **Source** menu. If you want to use a CD/DVD disc image connected to the virtual machine's CD/DVD drive, click the **Source** menu and use **Choose an image file** to locate the file.

Notes:

1. OS installation CDs and DVDs are not included with your Parallels product. You must obtain an operating system separately.
2. For a Linux virtual machine, the source installation files may be located on the Parallels server only.



- To start the virtual machine and guest OS installation, click **Start**. When the installation is complete, install [Parallels Tools](#) (p. 62) if they are available for the guest OS. If you do not want to start the virtual machine and install the guest OS, click **Done**.

Installing a Guest Operating System

If you have created a virtual machine but haven't yet installed a guest operating system, you can install one any time. You can install a guest OS from a CD or DVD, or from a CD/DVD image file. Some operating systems are available as CD/DVD disc images only.

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

You can also install the guest operating system using a PXE server via network.


Some operating systems are installed only from floppy disks. If your computer does not have floppy drives, you can install such operating systems using images of installation diskettes or using real floppy disk drives inserted into an external USB floppy disk drive. You can create floppy disk images using third-party applications.

Installing from a CD/DVD or its image

To install a guest OS from a CD/DVD or using an image:

- 1 Select the virtual machine, and make sure that it is stopped.
- 2 Choose **Configure** from the **Virtual Machine** menu to open Virtual Machine Configuration.
- 3 Open the **CD/DVD-ROM** settings, and configure the virtual CD/DVD-ROM drive settings.
 - If you are installing from a real CD/DVD, select the **Real Device** option and specify the real drive to connect in the **CD/DVD-ROM** list. Then insert the CD/DVD disc with the operating system files into the appropriate drive of the computer.
 - If you are installing from an image file, select the **Image file** option, and specify the path to the image file in the **File** field.



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

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

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

Note: If you need to press any keys inside the virtual machine during the guest OS installation, first click inside the virtual machine window to capture the keyboard and mouse input and then press the corresponding keys. To release the keyboard and mouse, press Ctrl+Alt. For more information, refer to **Capturing and Releasing the Keyboard and the Mouse** (p. 78).


Installing from the network

- 1 Choose **Configure** from the **Virtual Machine** menu to open Virtual Machine Configuration.
- 2 Click the **Add** button  in the bottom part of the Virtual Machine Configuration dialog to launch Add Hardware Wizard.
- 3 Add a network adapter to your virtual machine configuration.
- 4 Open the **Boot Order** pane in Virtual Machine Configuration and change the boot sequence to make the virtual network adapter the first device in the sequence. To do this, select **Network Adapter** in the list, and use the arrow buttons to move it to the top of the list.
- 5 Click **OK** to apply the changes.
- 6 Start the virtual machine by clicking **Start**  on the toolbar.

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

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

Installing from a floppy disk image

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

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

Reinstalling the guest OS

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

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

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

Using Parallels Tools

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

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

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

Note: You can create virtual machines with Mac OS X guest operating systems only on Intel-based Macs.

- `prl-tools-other.iso` - disc image with Parallels Tools for other guest operating systems.

These disc images can be found in the following locations:

- Parallels Server for Mac: `/Library/Parallels/Tools`
- Parallels Server Bare Metal: `/usr/share/parallels-server/tools`
- Parallels Server for Mac Bare Metal Edition: `/usr/share/parallels-server/tools`

Supported Operating Systems

Parallels Tools are available for the following guest operating systems:

Windows

- Windows 2000
- Windows Server 2003
- Windows XP
- Windows Vista
- Windows Server 2008
- Windows 7

Linux

Any supported Linux guest operating systems that have the following packages installed:

- `x.org` 6.7 and later
- `glibc2.4` and later

Mac

- Any supported Mac OS X guest operating systems.

Note: You can create virtual machines with Mac OS X guest operating systems only on Intel-based Macs.

Installing Parallels Tools in a Windows Guest OS

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

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

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

Note: If the **Install Parallels Tools** option is grayed out, make sure that Parallels Tools can be installed in your guest operating system. To see the list of guest OSs supported by Parallels Tools, see **Supported Operating Systems** (p. 63).

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

Reinstalling Parallels Tools

To reinstall Parallels Tools:

- 1 Start the virtual machine.
- 2 Choose **Reinstall Parallels Tools** from the **Virtual Machine** menu.

The **Reinstall Parallels Tools** option is available only if Parallels Tools are up to date. If Parallels Tools are outdated, you will see the **Update Parallels Tools** option instead. See **Updating Parallels Tools** (p. 69) for details.

How to check if Parallels Tools have been installed

To check whether Parallels Tools have been successfully installed, start your virtual machine and look at the status bar of its window. If the tip "Press Ctrl + Alt to release the mouse and keyboard" appears in the status bar of the virtual machine's window, this means that Parallels Tools were not installed. If Parallels Tools are installed, you do not need to press any key to release the mouse and keyboard because they are released automatically.

Installing Parallels Tools in a Linux Guest OS

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

- 1 Close all applications in the guest operating system.
- 2 Disable the 3D-accelerated window manager if you use any.
- 3 Make sure that you have the `gcc` package and kernel sources installed. If these packages are not installed, the Parallels Tools installer will warn you. The kernel sources package name depends on the type of Linux operating system you use: it can be `kernel-devel`, or `kernel-headers`, or something like this. For more information about the kernel sources, see **Installing the GCC package and Kernel Sources in Linux** (p. 164).

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

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

If you have one of the most recent versions of Linux OSs (Fedora 10) in your virtual machine, the `prl-tools-lin.iso` image file will be mounted automatically after you connect it to the CD/DVD-ROM drive. To install Parallels Tools, do the following:

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

Note: If the **Install Parallels Tools** option is grayed out, make sure that Parallels Tools can be installed in your guest operating system. To see the list of guest OSs supported by Parallels Tools, see **Supported Operating Systems** (p. 63).

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

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

```
su
```

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

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

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

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

```
./install
```

- 6 Follow the on-screen instructions to complete the installation.
- 7 Once the installation of Parallels Tools is complete, restart the virtual machine.

Installing Parallels Tools in other versions of Linux guest OSs

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

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

Note: If the **Install Parallels Tools** option is grayed out, make sure that Parallels Tools can be installed in your guest operating system. To see the list of guest OSs supported by Parallels Tools, see **Supported Operating Systems** (p. 63).

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

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

```
su
```

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

```
mount | grep iso9660
```

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

If this command returns anything like

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

skip the next step and proceed to the following one.

If this command returns anything like

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

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

```
umount /dev/cdrom
```

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

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

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

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

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

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

```
./install
```

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

- 8 Follow the Parallels Tools Installer instructions to complete the installation.

When the installation of Parallels Tools is complete, restart your virtual machine.

Note: If X Server fails to start in your virtual machine, you can install Parallels Tools manually [in text mode](#) (p. 163).

Reinstalling Parallels Tools

To reinstall Parallels Tools, [remove them](#) (p. 71) first, and then install them again using the above procedure.

How to check if Parallels Tools have been installed

To check whether Parallels Tools have been successfully installed, start your virtual machine and look at the status bar of its window. If the tip "Press Ctrl + Alt to release the mouse and keyboard" appears in the status bar of the virtual machine's window, this means that Parallels Tools were not installed. If Parallels Tools are installed, you do not need to press any key to release the mouse and keyboard because they are released automatically.

Troubleshooting

Sometimes, the Parallels Tools installer may be blocked by SELinux. To solve this problem:

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

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

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

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

```
title Red Hat Enterprise Linux Server (2.6.18-8.el5)  
    root (hd0,0)  
    kernel /vmlinuz-2.6.18-8.el5 ro root=/dev/VolGroup00/LogVol100 rhgb quiet  
    initrd /initrd-2.6.18-8.el5.img
```

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

```
selinux=0
```

and the whole entry will be:

```
kernel /vmlinuz-2.6.18-8.el5 ro root=/dev/VolGroup00/LogVol100 rhgb quiet selinux=0
```

- 4 Save the file and restart the virtual machine.

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

Installing Parallels Tools in a Mac OS X Guest OS

To install Parallels Tools in a Mac OS X guest OS:

Note: You can create virtual machines with Mac OS X guest operating systems on Intel-based Macs only.

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

Note: If the **Install Parallels Tools** option is grayed out, make sure that your guest operating system is supported by Parallels Tools. To view the list of supported guest OSs, see **Supported Operating Systems** (p. 63).

- 3 Open the mounted image, of the disk and double-click the **Guest OS Tools For Mac OS X** icon to start the installation.
- 4 In the **Welcome** window, click **Continue**.
- 5 In the **Select a Destination** window, specify the location for Parallels Tools. Click **Continue**.
- 6 In the **Standard Install on "Macintosh HD"** window, specify a location for Parallels Tools, and click **Install**. Type the password when prompted.
You can view the installation progress in the **Installation** window.
- 7 Once the installation is complete, click **Restart** to exit the assistant and restart the virtual machine.

Reinstalling Parallels Tools

To reinstall Parallels Tools, [remove them](#) (p. 71) first, and then install them again using the procedure above.

How to check if Parallels Tools have been installed

To check whether Parallels Tools have been successfully installed, start your virtual machine and look at the status bar of its window. If the tip "Press Ctrl + Alt to release the mouse and keyboard" appears in the status bar of the virtual machine's window, this means that Parallels Tools were not installed. If Parallels Tools are installed, you do not need to press any key to release the mouse and keyboard because they are released automatically.

Updating Parallels Tools

The procedure of updating Parallels Tools depends on the guest operating system installed in a virtual machine.

In a Windows guest OS

Parallels Management Console automatically checks for new Parallels Tools updates when you start a virtual machine.

If a newer version of Parallels Tools is available, you will see a message asking you to update the tools. Click **Install** to update Parallels Tools. You can also wait for several seconds, and the update starts automatically.

If you do not want to update Parallels Tools or want to do it later, click **Cancel**. You will be able to update them later by using the **Update Parallels Tools** option from the **Virtual Machine** menu.

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

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

In a Linux guest OS

Once you update the Parallels Server application on your server, you need to manually update Parallels Tools. Before updating Parallels Tools, do the following:

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

To update Parallels Tools:

- 1 Start the virtual machine.
- 2 When the guest OS boots up, choose **Update Parallels Tools** from the **Virtual Machine** menu. This connects the `prl-tools-lin.iso` image to your virtual machine's CD/DVD-ROM.
- 3 Follow the steps in **Installing Parallels Tools in a Linux Guest OS** (p. 65) to update Parallels Tools. When asked whether to upgrade or remove Parallels Tools, select **Upgrade**, and click **Next**.

In Mac OS X

Once you update the Parallels Server application on your server, you need to manually update Parallels Tools:

- 1 Start the virtual machine.
- 2 When the guest OS boots up, choose **Update Parallels Tools** from the **Virtual Machine** menu. This connects the `prl-tools-mac.iso` image to your virtual machine's CD/DVD-ROM.
- 3 Open the Parallels Tools CD-ROM mounted on the virtual machine's desktop, and double-click the **Install** icon.
- 4 Specify your name and password when prompted.
- 5 In the **Welcome** window, click **Continue**.
- 6 In the **Select a Destination** window, specify where Parallels Tools is to be installed, and click **Continue**.
- 7 In the **Standard Install on "Macintosh HD"** window, click **Install**. Specify your name and password when prompted.
- 8 Once Parallels Tools are updated, click **Restart** to quit the installer and restart the virtual machine.

Removing Parallels Tools

You can remove Parallels Tools from a virtual machine in the same way you remove any other applications from your system.

Removing from a Windows guest OS

To remove Parallels Tools from a Windows virtual machine:

- 1 Start the virtual machine, and log in to the guest OS.
- 2 From the Windows **Start** menu, choose **Control Panel > Add or Remove Programs**.
In Windows Vista, choose **Control Panel > Programs and Features**. In Windows 7, choose **Control Panel > Programs > Programs and Features**.
- 3 Select Parallels Tools in the list, and click **Remove**.
- 4 When Parallels Tools are removed, restart the virtual machine.

Removing from a Linux guest OS

Do the following before removing Parallels Tools from a Linux virtual machine:

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

To remove Parallels Tools:

- 1 Start the virtual machine.
- 2 To remove Parallels Tools, connect and mount the `prl-tools-lin.iso` image and launch the Parallels Tools installer. For detailed instructions, see **Installing Parallels Tools in a Linux Guest OS**.
- 3 Follow the on-screen instructions. When prompted to choose the action to perform, select **Remove** and press Enter.
- 4 Once Parallels Tools are successfully removed, press Enter to close the window.

Removing from Mac OS X

To remove Parallels Tools from a Mac virtual machine:

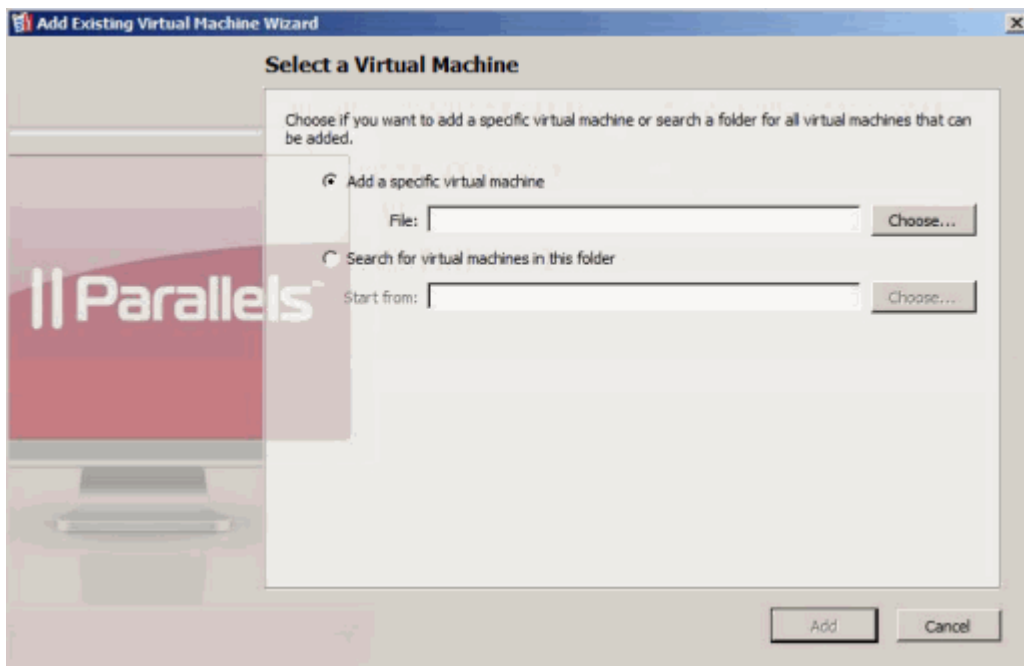
- 1 Start the virtual machine, and log in to the guest OS.
- 2 To remove Parallels Tools, connect and mount the `prl-tools-mac.iso` image and launch the Parallels Tools installer. For detailed instructions, see **Installing Parallels Tools in Mac OS X**.
- 3 Open the mounted image of the disc, and double-click the **Uninstall Parallels Tools** icon.



- 4 In the **Welcome** window, click **Uninstall**. Enter the password when prompted.
- 5 In the **Uninstallation Completed** window, click **Restart** to quit the installer and restart the virtual machine.

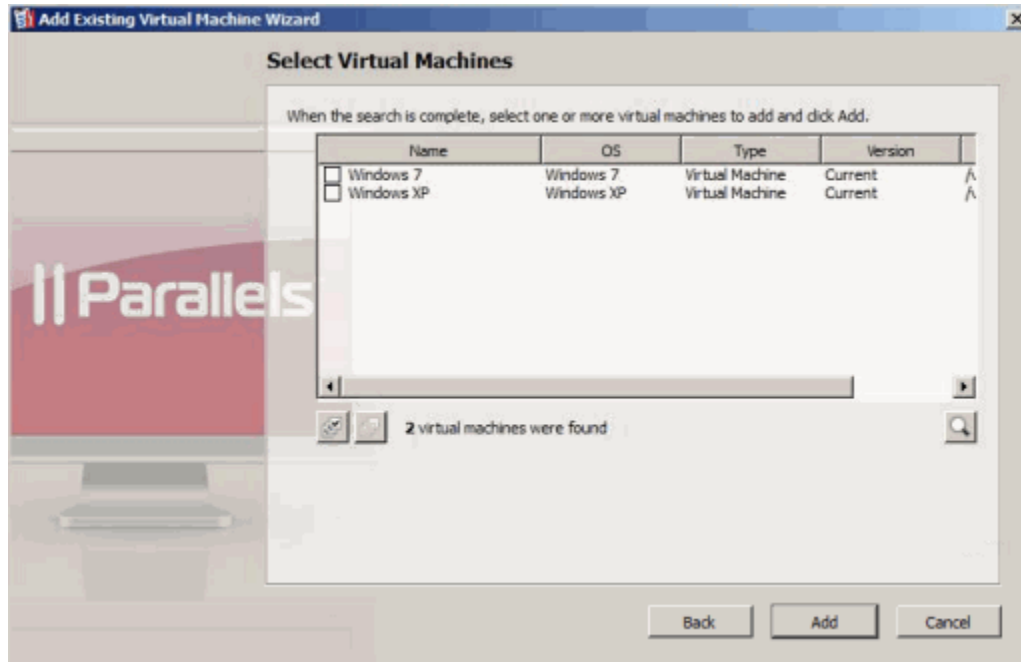
Adding an Existing Virtual Machine

If you already have a virtual machine, but it is not yet registered in Parallels Management Console, you can register it as follows:

- 1 Choose **Add Existing** from the **File** menu.
- 2 In the **Select a Virtual Machine** window, locate the virtual machine you want to register:
 - You can manually specify the path to the virtual machine's configuration file (`config.pvs`). Select the **Add a specific virtual machine** option, and type the path in the **File** field or click the **Choose** button and navigate to the necessary file. Click **Add** and go to **Step 5**.
 - You can use the search option and look for all virtual machines in a specific folder. Select the **Search for virtual machines in this folder** option, type the path to the necessary folder in the **Start from** field or click the **Choose** button, and navigate to it. Click **Search**.



- 3 If you choose **Search for virtual machines in this folder**, the wizard displays all unregistered virtual machines in the specified folder. Select the virtual machines you want to register. You can use the **Select All**  and **Clear All**  buttons to select and deselect all virtual machines at once.



Review the selection, and click **Add**.

- 4 Once the operation is complete, click **Finish**.

CHAPTER 5

Working in a Virtual Machine

This chapter explains how to work with your virtual machines.

In This Chapter


Performing Main Operations on a Virtual Machine.....	74
Use a Keyboard and Mouse	78
Changing the View Mode.....	79
Change Configuration at Runtime	81
Using Shared Folders	83
Making Guest OS Screenshots.....	85

Performing Main Operations on a Virtual Machine

This sections describes basic day-to-day operations you are likely to perform with virtual machines.

Starting a Virtual Machine and Shutting It Down

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


- Click the **Start** button  in [the toolbar](#) (p. 16).
- Choose **Start** from the **Virtual Machine** menu.
- Right-click the virtual machine in the [sidebar](#) (p. 14), and choose **Start** from the shortcut menu.
- Click **Start** in the **Operations** section of the virtual machine's **Summary** tab.

Once you start the virtual machine, it will boot into the guest operating system installed in this virtual machine. If no guest operating system is installed, you will see the following message: "No boot device is available...".

Notes:

1. To start a virtual machine, you need to install a valid license on the Parallels server where this virtual machine resides. For details, refer to **Activating a Parallels Physical Server** (p. 27).
2. It is not recommended to start a virtual machine located on an external storage device. This may result in low performance and unsteady operation.

To shut down a virtual machine, do one of the following:

- Click the **Shut Down** button  in [the toolbar](#) (p. 16).
- Choose **Shut Down** from the **Virtual Machine** menu.
- Right-click the virtual machine in the [sidebar](#) (p. 14), and choose **Shut Down** from the shortcut menu.
- Click **Shut Down** in the **Operations** section of the virtual machine's **Summary** tab.

Suspending and Pausing a Virtual Machine

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

Note: Close the **Virtual Machine Configuration** dialog before changing the virtual machine state.

Suspending a Virtual Machine

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


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

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

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

- Choose **Suspend** from the **Virtual Machine** menu.
- Click the **Suspend** button  in [the toolbar](#) (p. 16).

Note: You can view the configuration of a suspended virtual machine in the read-only mode. To modify the configuration, you need first to stop the virtual machine.

To resume a suspended virtual machine, click the **Resume** button  in [the toolbar](#) (p. 16) or choose **Resume** from the **Virtual Machine** menu.


Pausing a Virtual Machine

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

Note: Only the amount of RAM used by the guest OS is released. The memory used by the Parallels Server application remains locked.

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

- Click the **Pause** button  in [the toolbar](#) (p. 16).
- Choose **Pause** from the **Virtual Machine** menu.

When a virtual machine is paused, its window is grayed out. To continue running the virtual machine, click the **Resume** button  in [the toolbar](#) (p. 16) or choose **Resume** from the **Virtual Machine** menu.

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

Stopping and Resetting a Virtual Machine

Stopping a Virtual Machine

If the guest operating system cannot be shut down correctly, you can forcibly stop the virtual machine by doing one of the following:


- Click the **Stop** button  in [the toolbar](#) (p. 16); or
- Choose **Stop** from the **Virtual Machine** menu.

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

Resetting a Virtual Machine

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

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

- Click the **Reset** button  in [the toolbar](#) (p. 16). If this button is absent from the toolbar, see [Customizing Toolbar](#) (p. 16).
- Choose **Reset** from the **Virtual Machine** menu.

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

Use a Keyboard and Mouse

Capture and Release the Keyboard and Mouse

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

- 1 Move the mouse pointer over the virtual machine window.
- 2 Click in the window.


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

Note: You can change the key combination for releasing the keyboard and mouse input using [the Keyboard pane](#) (p. 23) of [the Preferences dialog](#) (p. 20).

If you want to automatically capture and release the keyboard and mouse input, you should install Parallels Tools in your virtual machine. After the Parallels Tools installation, you can capture and release the mouse and keyboard input more easily:

- Click anywhere in the virtual machine window to capture the input; and
- Click anywhere outside the virtual machine window to release the input.

Keyboard Shortcuts in a Virtual Machine

When working in a virtual machine, you can apply any of the main Windows and Linux shortcuts to your virtual machine with the help of the **Keyboard** icon  in the virtual machine [status bar](#) (p. 18). Just click the icon and select the desired key combination from the drop-down list. The corresponding action will take place in the guest operating system.

Changing the View Mode

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

- **Window mode.** This is the default view mode in which the virtual machine screen is displayed in the Parallels Management Console window. The window contains the following panes:
 - **Summary.** This pane provides basic information on the virtual machine and access to the **Virtual Machine Configuration** dialog. The **Summary** pane also contains buttons for the most frequent commands used to start, stop, and otherwise manage the virtual machine.
 - **Console.** In this pane, you can interact with the running virtual machine via its guest OS window.
 - **Performance.** In this pane, you can view the virtual machine CPU, memory, hard disk, and network usage when the virtual machine is running.
 - The **Backup** tab lists all virtual machine backups. It also contains the controls allowing you to create a new backup.
- **Full Screen mode.** In this mode the virtual machine screen is expanded to occupy the whole of your physical computer screen.

Switching to the Full Screen Mode

You can run a guest operating system in the Full Screen mode when the guest operating system window occupies the whole screen and all controls are hidden.

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

- Click the **Full Screen** button  in the Parallels Management Console toolbar.
- Choose **Full Screen** from the **View** menu.


Note: The default hot key combinations can be configured in the **Keyboard pane** (p. 23) of the **Preferences dialog** (p. 20).

To return to the Window mode, press the appropriate hot key combination (Ctrl+Alt+Enter by default).

Detaching the Console Pane

In this version of Parallels Management Console, you can detach the **Console** pane of your running virtual machine from the Parallels Management Console window and work with it in a separate window.

To detach the **Console** pane, do one of the following:

- Choose **Detach Console** from the **View** menu.
- Click the **Detach Console** button  in the Parallels Management Console toolbar.

Note: If this button is missing from the toolbar, you can add it by [customizing the toolbar](#) (p. 18).

If you want the **Console** pane to join the virtual machine window again, do one of the following:

- choose **Attach Console** from the **View** menu
- click the **Attach Console** button in the Parallels Management Console toolbar
- close the separate **Console** window

Locking the guest OS screen resolution

The virtual machine screen resolution can be changed in the following situations:

- When you adjust the guest OS display settings.
- When you resize the virtual machine window (this feature works only when [Parallels Tools](#) (p. 62) are installed in your virtual machine).
- When you run an application that automatically changes the screen resolution of your guest OS.

This behavior of the virtual machine window can be irritating. To freeze the virtual machine screen resolution, use the **Lock Window** option available from the **View** menu. When the **Lock Window** option is enabled, the virtual machine screen resolution can be changed by adjusting the guest OS display settings only.

Change Configuration at Runtime

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

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

- SATA hard drives
- CD/DVD-ROM drives
- floppy disk drives
- network adapters
- printer ports
- serial ports
- sound devices
- USB devices
- shared folders

You can configure any of these devices as follows:

- Use the necessary command from the **Devices** menu in the menu bar. This menu is available only when the virtual machine is running.
- Click a device icon on the [status bar](#) (p. 14) and choose the command from a device shortcut menu.

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

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

Hard Drives

To disconnect a SATA hard drive from a running virtual machine, choose **Hard Disk 1 > Disconnect** from the **Devices** menu. If you have several SATA drives connected to your virtual machine, they are marked as **Hard Disk 1**, **Hard Disk 2**, etc. and are listed in the order you added them to the virtual machine.

To connect a disconnected disk, choose **Hard Disk 1 > Connect to** from the Device menu.

CD/DVD-ROM or a Floppy Drives


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

Network Adapters

You can connect the network adapter to any virtual network created on the Parallels server. If you have several network adapters used by the virtual machine, on the [status bar](#) (p. 14) and in the **Devices** menu they are listed in the same order as they were connected. The first network adapter will be **Network Adapter 1**, the second will be **Network Adapter 2**, and so on.


Printer Ports

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

- Click the **Devices** menu, select the corresponding printer port, and choose the appropriate command from the displayed menu.
- Right-click the printer port icon  in the [status bar](#) (p. 14) to display the shortcut menu and choose the appropriate command.

Serial Ports

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

- Click the **Devices** menu, select the corresponding serial port, and choose the appropriate command from the displayed menu.
- Right-click the serial port icon  in the [status bar](#) (p. 14) to display the shortcut menu and choose the appropriate command.

Sound Devices

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

USB Devices

Parallels Management Console automatically detects all USB devices plugged into the Parallels server. The devices that are currently connected to the virtual machine appear in the list from the **Device** menu. You cannot use a USB device in the Parallels server operating system while it is being used by the virtual machine.

Shared Folders

The Shared Folders options available at runtime are similar to the settings in [the Virtual Machine Configuration dialog](#) (p. 87, p. 86).

You can

- share all disks of the Parallels server or Home Folder only with the virtual machine
- add a new shared folder

Using Shared Folders

Shared folders are folders in the host computer operating system that are visible to the guest OS too. These folders can be used for exchanging files between the host computer operating system and a virtual machine or between several virtual machines.

In the host computer operating system shared folders appear as usual folders, while in the guest OS they are objects of the network neighborhood.

Using shared folders is possible for the supported Windows and Linux guest operating systems with Parallels Tools installed.

Setting Up a Shared Folder

Setting up a shared folder includes two steps:

- 1 Installing Parallels Tools in the virtual machine.
- 2 Adding shared folders to the virtual machine.

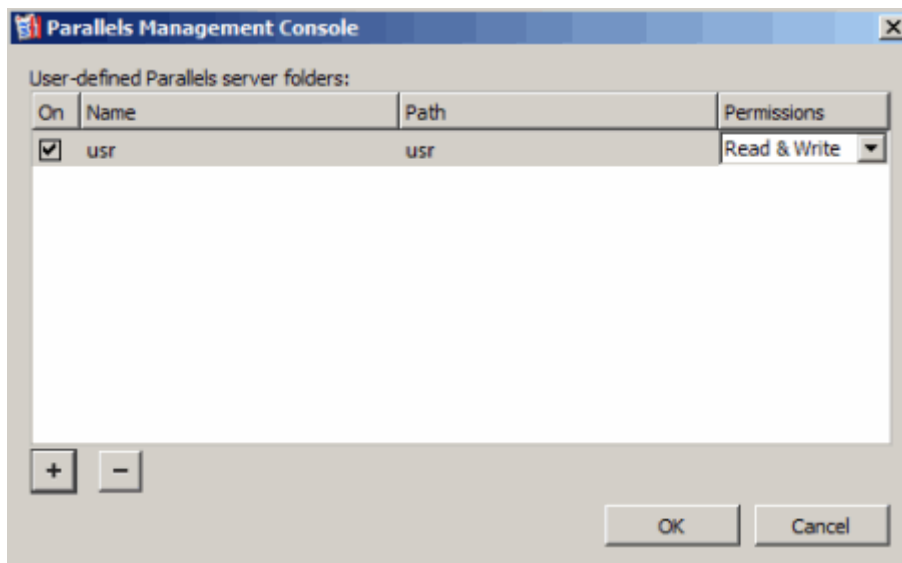
Installing Parallels Tools

To use shared folders, you first need to install Parallels Tools in the virtual machine. For more information on installing Parallels Tools, see **Using Parallels Tools** (p. 62).

Adding a Shared Folder

Once you install Parallels Tools, you can add a shared folder to the virtual machine:

- 1 Open the **Virtual Machine Configuration** dialog by choosing **Configure** from the **Virtual Machine** menu.
- 2 In the **Virtual Machine Configuration** dialog, select the **Options** tab, and click the **Sharing** pane (see **Shared Folders Settings** (p. 96)).
- 3 Click the **Custom Folders** button, and then click the plus (+) button.
- 4 In the **Browse for Folder** dialog window, locate the folder you want to share, and click **Open**. For example, if you share the `/usr` folder, your window will look like the following:



- 5 In the **Permissions** column, set security permissions on the folder:
 - Select the **Read only** option to permit viewing and listing files and subfolders in the shared folder from inside the virtual machine.
 - Select the **Read & Write** option to permit adding files and subfolders along with viewing and listing files and subfolders in the shared folder from inside the virtual machine.
- 6 In the **Name** column, you can change the name under which the folder will be displayed in the virtual machine. To do this, double-click the current name and type a new name in the field provided.
- 7 Click **OK** to save the settings.

Making Guest OS Screenshots

If you want to make a screenshot of the guest operating system when it is running, choose **Make Screenshot** from the **View** menu. The first screenshot file will be named `Parallels Picture.png` and placed on the desktop of the client computer. The next screenshots will have the same name with an appropriate number added.

CHAPTER 6

Configuring Virtual Machines

The **Virtual Machine Configuration** dialog allows you to edit the virtual machine settings and the devices it uses. This chapter provides instructions on how to use the **Virtual Machine Configuration** dialog.

In This Chapter

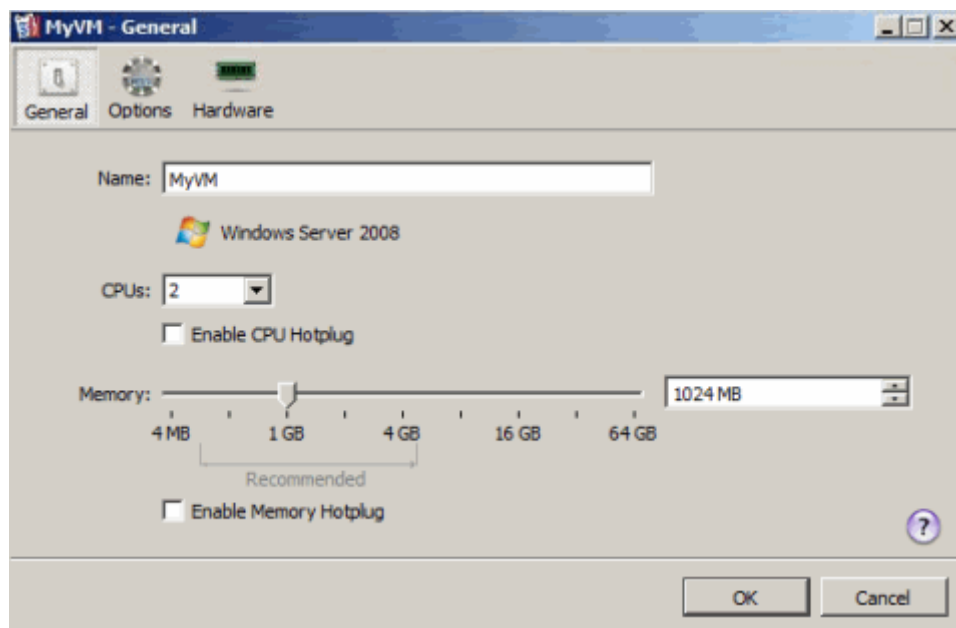
Editing Virtual Machine Configuration	87
Adding and Removing Devices	127

Editing Virtual Machine Configuration

With the help of the **Virtual Machine Configuration** dialog, you can edit the settings of the virtual machine and the devices it uses.

To open the **Virtual Machine Configuration** dialog, do one of the following:

- Double-click the virtual machine icon in the sidebar of the Parallels Management Console main window.
- Click **Configure** on the virtual machine **Summary** page.
- Choose **Configure** from the **Virtual Machine** menu.
- Right-click the virtual machine in the sidebar, and choose **Configure**.

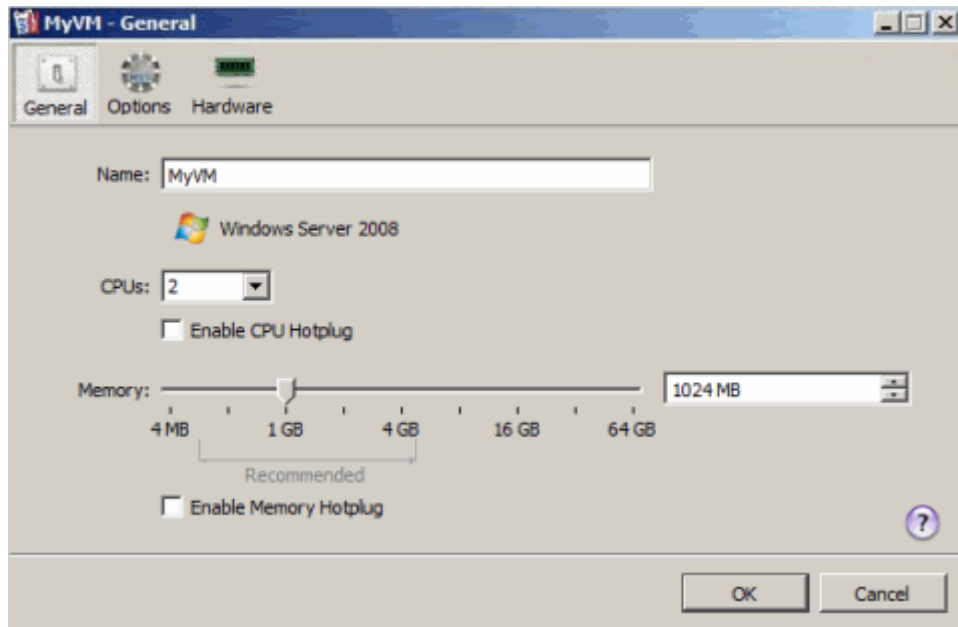


The **Virtual Machine Configuration** dialog contains three tabs:

- **General.** This tab allows you to configure the basic virtual machines settings: the virtual machine name, the number of processors to be available to the virtual machine, and the amount of memory that the virtual machine can use.
- **Options.** This tab allows you to configure various settings related to the virtual machine operation. For example, you can adjust the virtual machine startup and shutdown settings, edit the Parallels Tools parameters, or configure access rights to the virtual machine.
- **Hardware.** This tab allows you to configure the current settings of the devices existing in the virtual machine: processors, video cards, floppy disk and CD/DVD-ROM drives, hard disk drives, network adapters, and so on. You can also add new devices to the virtual machine and delete existing ones.

General Settings

To view and edit the general settings of a virtual machine, use the **General** pane of the **Virtual Machine Configuration** dialog.



- **Name.** In this field, you can view and change the virtual machine's name. It is displayed in the virtual machine's [main window](#) (p. 14).
- The guest OS type and version. This field, located right under the **Name** field, displays the type and version of the guest operating system installed in the virtual machine or declared to be installed in future.
- **CPUs.** In this menu, you can set the number of CPUs the virtual machine is allowed to use. The maximum number of virtual CPUs depends on the number of physical CPU cores installed on the Parallels server. For example, if you have a Core 2 Duo processor, you can assign to the virtual machine no more than two virtual CPUs. However, in any case, you cannot set more than 16 virtual CPUs to a virtual machine.
- **Memory.** In this field, you can set the amount of RAM that will be available to the virtual machine. You can choose any available value, but it is recommended that you set the value provided in the **Recommended** range below the slider.

Enabling CPU Hotplug

If a guest operating system supports the CPU hotplug functionality, you can enable this functionality for the virtual machine. Once the CPU hotplug functionality is turned on, you can configure the number of CPUs available to your virtual machines even if they are running. Currently, the following systems come with the CPU hotplug support:

Linux

- Linux operating systems based on the RHEL 5 kernel and higher (Red Hat Linux Enterprise 5, CentOS 5, and so on)

Windows

- x64 version of Windows Server 2008 (Standard Edition)
- x64 version of Windows Server 2008 (Enterprise Edition)
- x64 version of Windows Server 2008 (Datacenter Edition)
- x64 version of Windows Server 2008 R2 (Datacenter Edition)

By default, the CPU-hotplug support is disabled for all newly created virtual machines. To enable this functionality, select the **Enable CPU Hotplug** option, and click **OK**. Once the CPU hotplug support is enabled, you can configure the number of CPUs for the virtual machine even if it is running.

Enabling Memory Hotplug

If a guest operating system supports the memory hotplug functionality, you can enable this functionality for the virtual machine. Once the memory hotplug functionality is turned on, you can configure the amount of memory available to your virtual machines even if they are running. Currently, the following systems come with the memory hotplug support:

Linux (both x86 and x64 versions)

- CentOS 5.3 and higher
- Red Hat Enterprise Linux 5.3 and higher
- Fedora 13 and higher
- SUSE Linux Enterprise Server 10 and higher
- Ubuntu 10.04 and higher

Windows

- x64 version of Windows Server 2008 R2 (Datacenter Edition)
- x86 and x64 versions of Windows Server 2008 (Standard Edition)
- x86 and x64 versions of Windows Server 2008 (Enterprise Edition)
- x86 and x64 versions of Windows Server 2008 (Datacenter Edition)
- x86 and x64 versions of Windows Server 2003 (Enterprise Edition)

By default, the memory hotplug support is disabled for all newly created virtual machines. To enable this functionality, select the **Enable Memory Hotplug** option, and click **OK**. Once the memory hotplug support is enabled, you can configure the amount of memory for the virtual machine even if it is running.

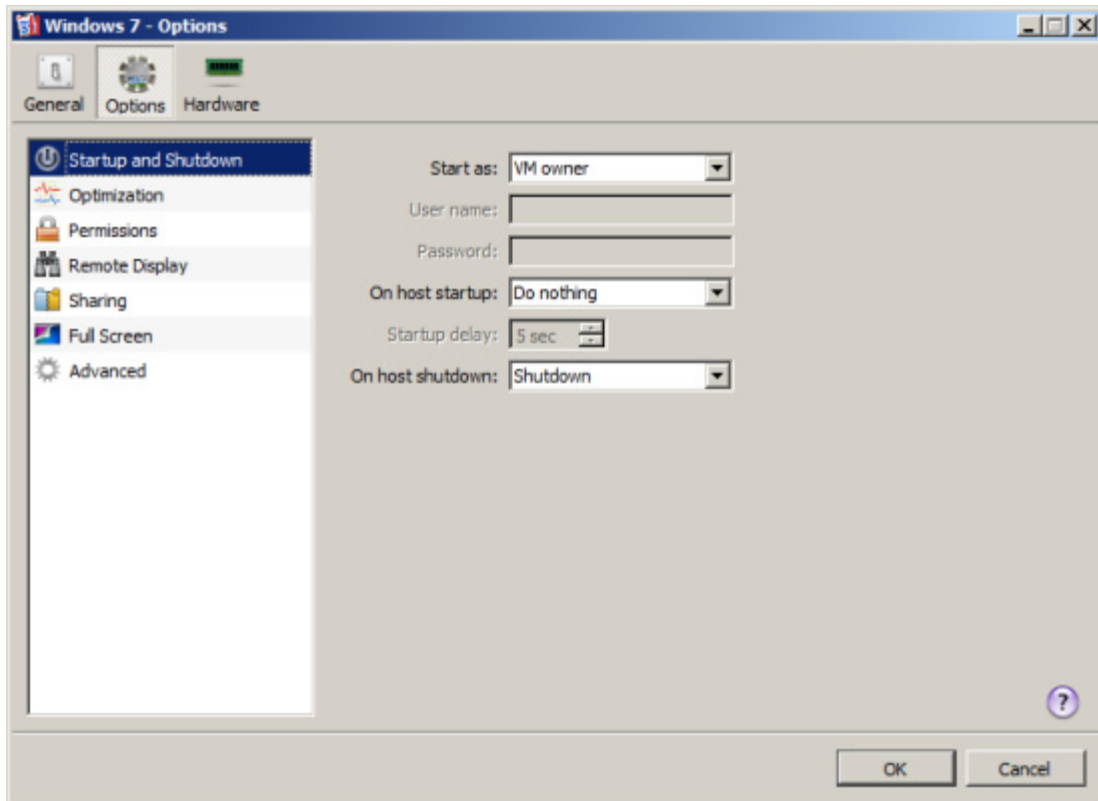
When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Options

This section describes the settings available on the **Options** tab of the virtual machine configuration window.

Startup and Shutdown Settings

To manage the virtual machine startup and shutdown settings, use the corresponding pane of the **Virtual Machine Configuration** dialog.



Choosing the user account under which the virtual machine will run

From the **Start as** menu, you can choose the user account under which the virtual machine will run. Choose between the following accounts:

- **VM owner.** The virtual machine will run under the user account used to connect to the Parallels server.
- **Administrator.** The virtual machine will run under the administrator user account.
- **A specific user.** The virtual machine will run under the specified user account.

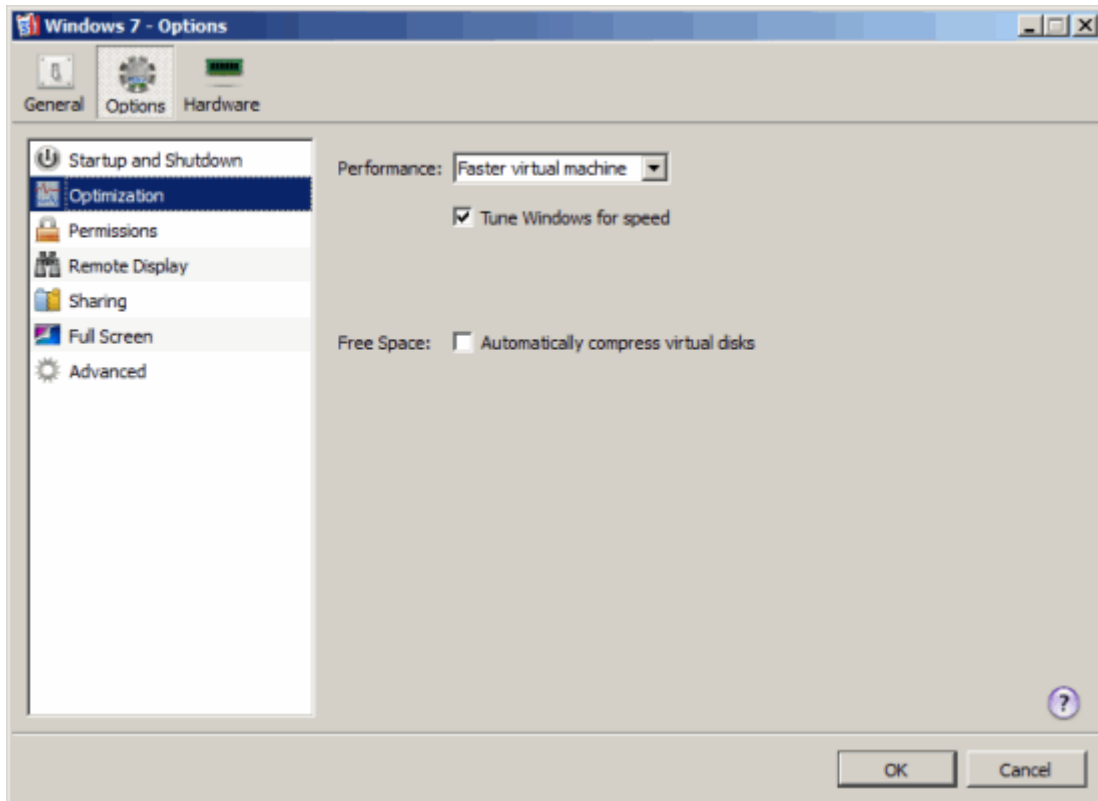
Selecting actions to perform on powering on and off the host computer

- **On host startup.** Select the operation the virtual machine should do when you start up the Parallels server: **Do nothing**, **Start**, or **Restore previous state**. You may use the **Startup delay** field to set the delay time interval for the virtual machine.
- **On host shutdown.** Select the operation the virtual machine should do when you shut down the Parallels server: **Stop**, **Shutdown**, **Suspend**.

When you are done, click **OK** to save the changes and quit the Virtual Machine Configuration dialog. If you do not want to save the changes, click **Cancel**.

Optimization Settings

In the **Optimization** pane of the **Virtual Machine Configuration** dialog, you can configure the settings related to the virtual machine performance.



Optimizing Performance

- **Faster virtual machine.** Select this option to allocate more physical computer memory resources to the virtual machine and its applications. Selecting this option may significantly increase the virtual machine performance. However, it may slow down the productivity of your host computer applications.
- **Faster Host computer.** Select this option to allocate more memory resources to the host computer and its applications.

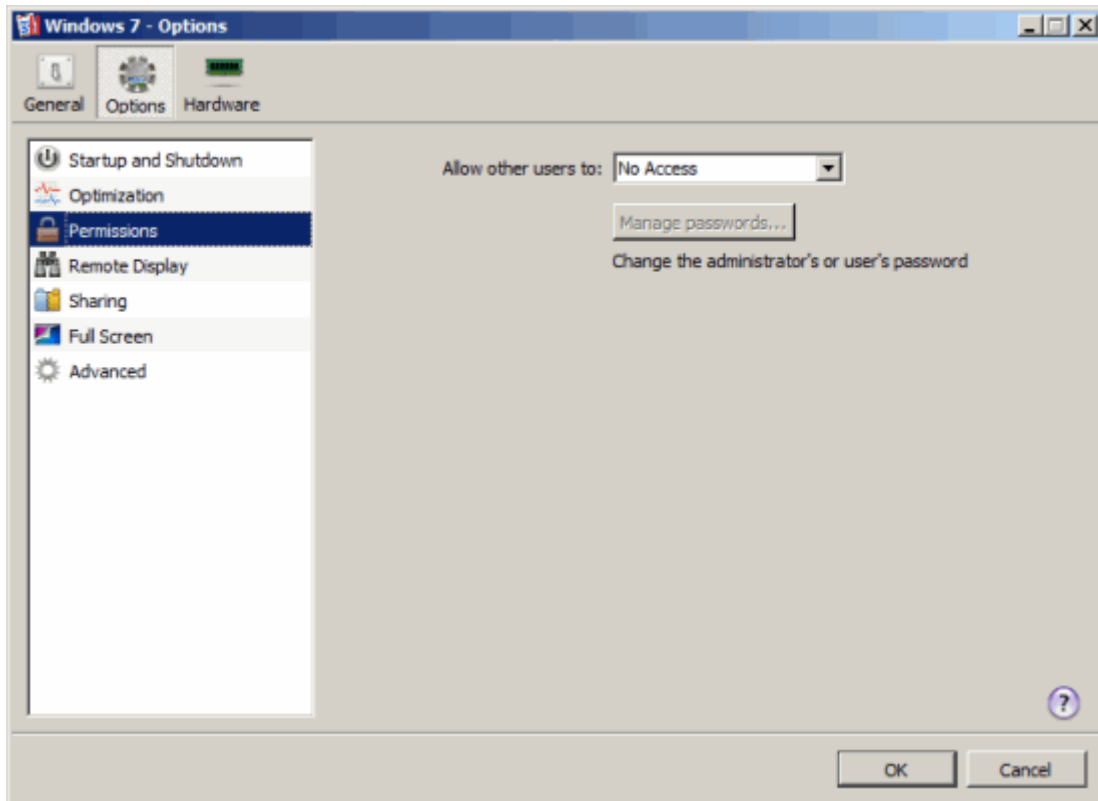
When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Compressing Virtual Disks

Select the **Automatically compress virtual disks** option to enable the automatic compression of disks in the virtual machine. When this option is enabled, virtual disks are automatically defragmented, unused space on them is cleaned.

Permissions Settings

To manage the virtual machine permissions, use the **Permissions** pane of the **Virtual Machine Configuration** dialog.



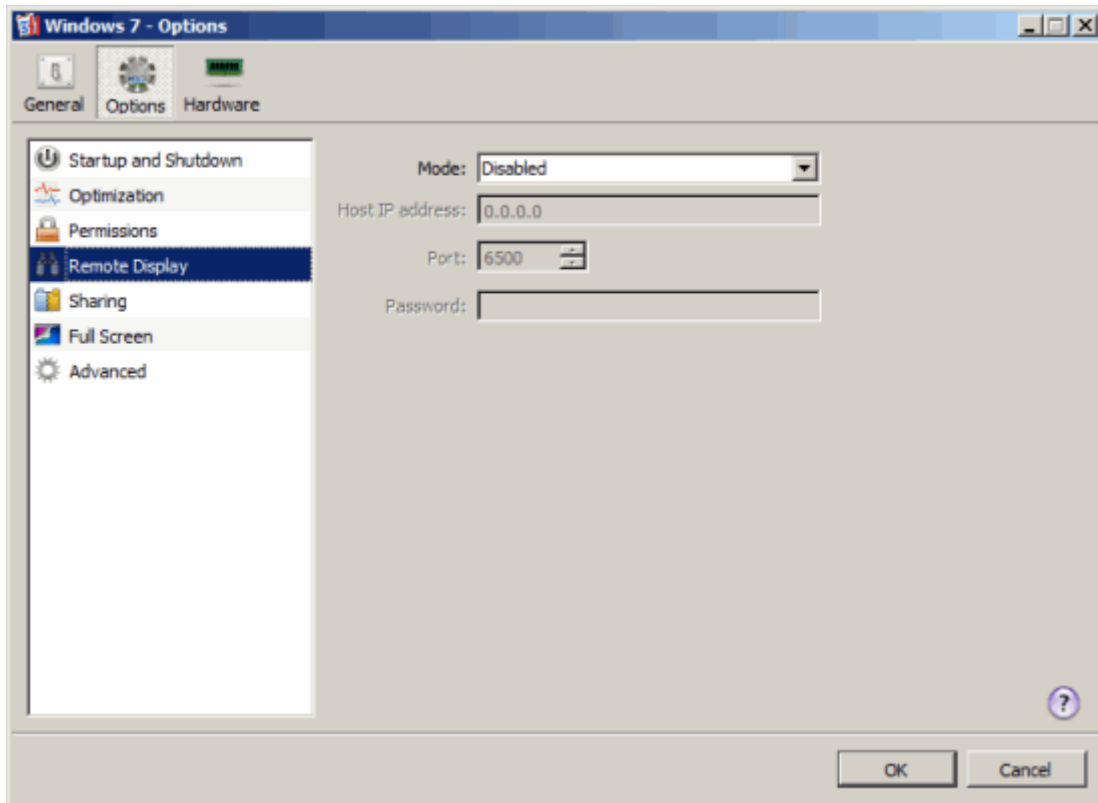
Sharing the virtual machine with other users

To specify other users' access rights for the virtual machine, choose one of the following from the **Allow other users to** menu:

- **No Access.** If you select this option, other users will have no access to the virtual machine.
- **View.** If you select this option, other users will be able to add this virtual machine to the virtual machines list and view its console. They will not be able to start, stop or otherwise control this virtual machine.
- **View and run.** If you select this option, other users will be able to control the virtual machine and work in it. They will not be able to change the virtual machine configuration.
- **View, run and configure.** If you select this option, other users will be able to perform any operations on the virtual machine and its files.

Remote Display Settings

To enable the virtual machine display sharing, use the **Remote Display** pane of the **Virtual Machine Configuration** dialog.



You can share the virtual machine desktop using VNC protocol.

To enable the virtual machine display sharing, select the **Enabled** option in the **Mode** list and set the following parameters:

- **Host IP address.** In this field, type the host computer IP address.
- **Port.** In this field, you can set the TCP port for the virtual machine. VNC protocol uses ports 5900 through 5906.
- **Password.** If you want to specify a password for viewing the virtual machine desktop, type it in this field.

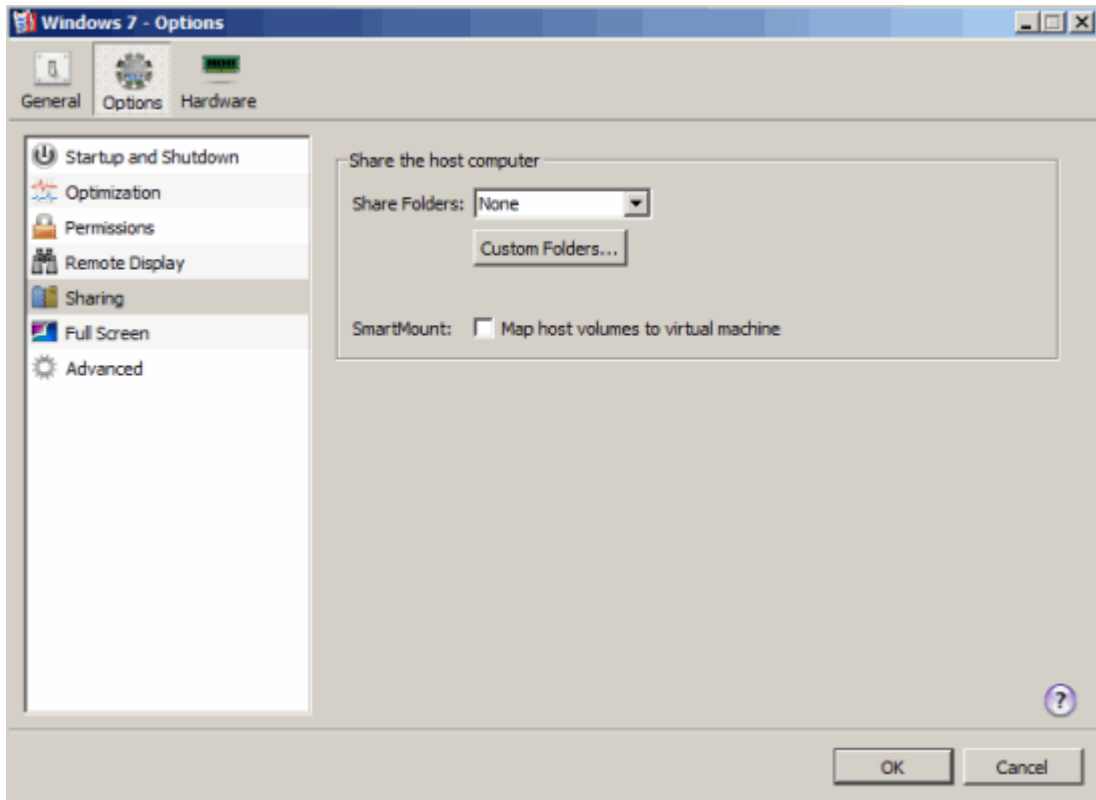
Note: If you start the virtual machine with the remote display disabled, you cannot change this option when the virtual machine is running.

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Shared Folders Settings

To manage shared folders and their settings, use the **Sharing** pane of the **Virtual Machine Configuration** dialog.

When you share the host computer disks or folders with a virtual machine, they still reside and occupy space on the host computer hard disk.



Sharing Host Computer Disks to the Virtual Machine

Select the **All disks** option in the **Shared Folders** list to provide the virtual machine access to all disks on the host computer.

Sharing Host Computer Home Folder

Select the **Home folder only** option in the **Shared Folders** list to allow the virtual machine to access only the Home folder on the host computer.

Sharing Custom Folders

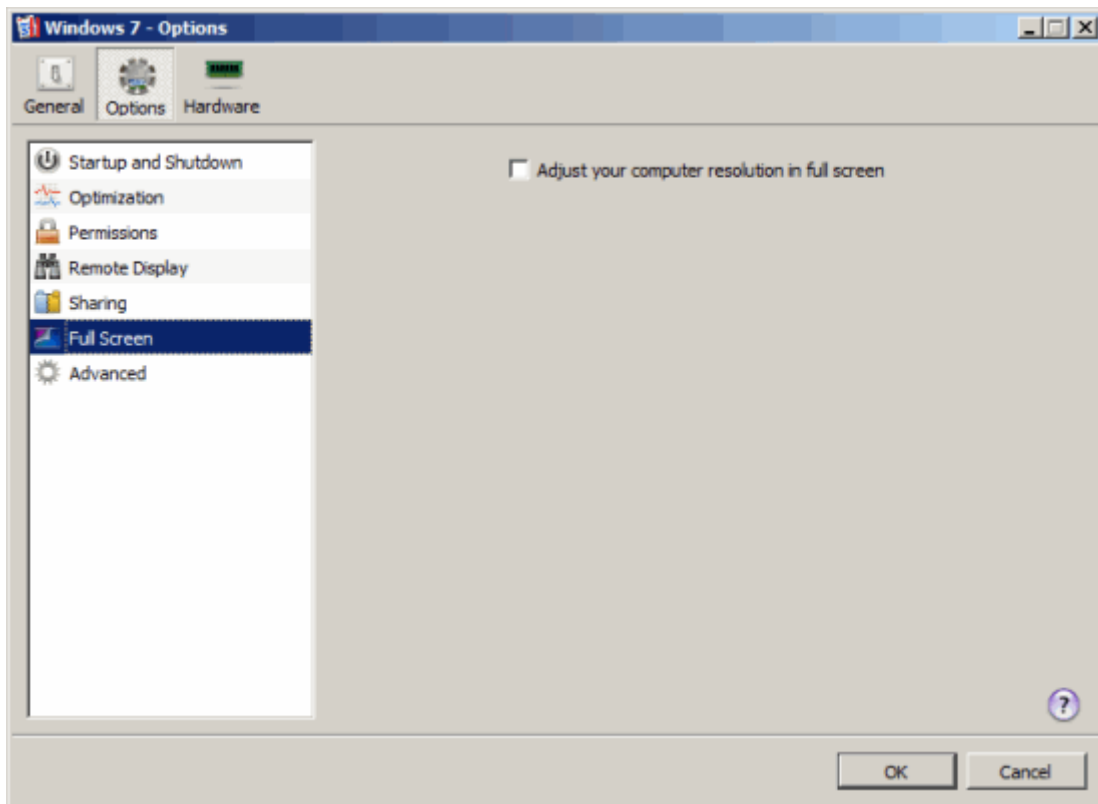
Use the **Custom Folders** button to specify one or more folders on the host computer you want to share with the virtual machine. For more information on sharing custom folders, see **Setting Up a Shared Folder** (p. 84).

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Full Screen Settings

In the **Full Screen** pane, you can configure the virtual machine's appearance and behavior when it is running in the Full Screen view mode. In the Full Screen mode, the guest operating system window occupies the whole screen.

You can configure the **Full Screen** settings even when the virtual machine is running.



Adjusting the Client Computer Screen Resolution to the Virtual Machine Resolution in Full Screen

When you switch the virtual machine to the Full Screen mode, its screen resolution:

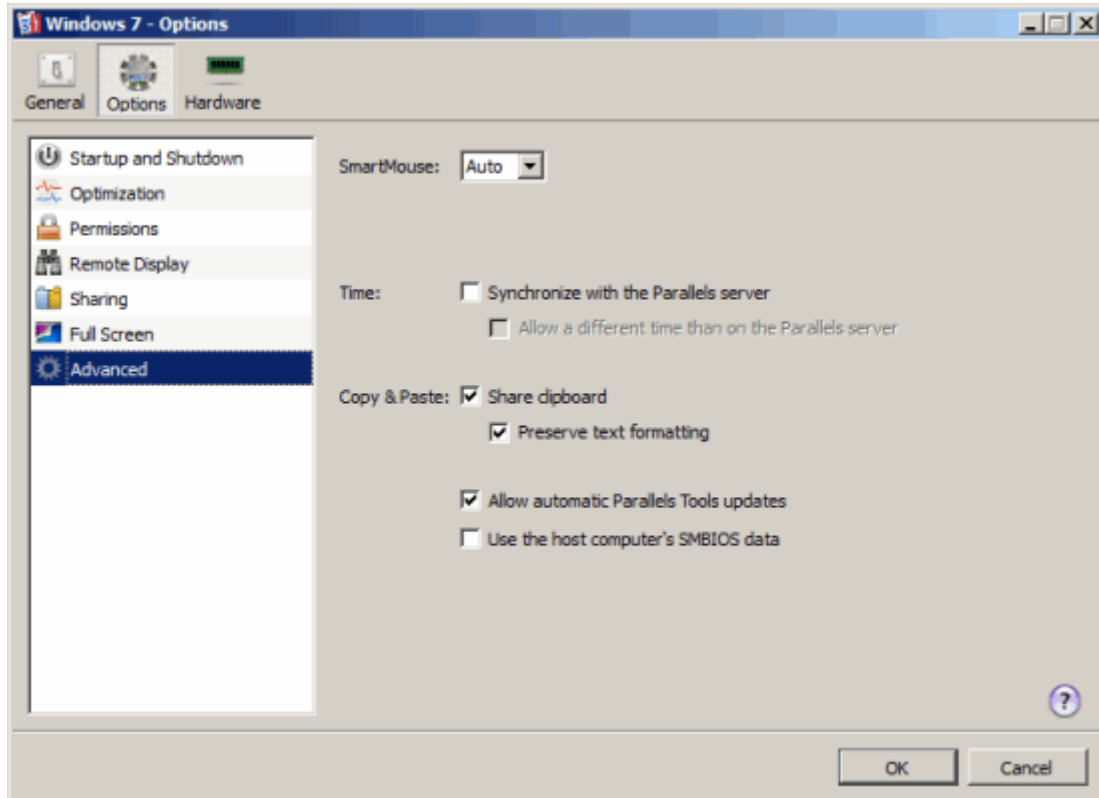
- Changes to the client computer screen resolution if Parallels Tools installed are installed in the virtual machine.
- Remains the same if Parallels Tools are not installed in the virtual machine.

In the second case, if the virtual machine screen resolution is lower than that of your physical computer, in the Full Screen mode, the virtual machine's screen will appear on a black background. If the virtual machine's screen resolution is higher than that of the host computer, in the Full Screen mode, the virtual machine's screen will have scroll bars.

To adjust the screen resolution of the client computer to that of the virtual machine, select the **Adjust your computer resolution in full screen** option. In this case, your computer will change its screen resolution each time the virtual machine is switched to the Full Screen mode.

Advanced Settings

The **Advanced** pane of the **Virtual Machine Configuration** dialog allows you to configure a number of advanced settings for a virtual machine.



All settings on this tab are related to Parallels Tools and, consequently, are applied only to the virtual machines that have Parallels Tools installed.

SmartMouse

The **SmartMouse** option allows the mouse to move smoothly between the virtual machine and your server. With this option enabled, Parallels Server Bare Metal automatically grabs the mouse input when you move the pointer to the virtual machine and releases it when you move it back to the server. You can configure this option as follows:

- Set the option to **On**. In this case, the mouse input is automatically captured in the virtual machine when you place the mouse pointer over it and released when you move it back to the server.
- Set the option to **Off**. In this case, you need to click inside the virtual machine to capture the mouse input and press Ctrl+Alt to release it back to the server.

Note: Ctrl+Alt is the default key combination. You can set another key combination for releasing the mouse in the server preferences (**File > Preferences**).

- Set the option to **Auto**. In this case, the SmartMouse option is automatically turned off each time you run a game, graphic application, or any other program that uses its own mouse pointer instead of using the operating system pointer. The option is automatically turned on once you quit the game or application.

Synchronizing Time

Select the **Synchronize time with the Parallels server** option to have the virtual machine time settings automatically synchronized with the time settings on the Parallels server. This option is disabled by default to avoid possible conflicts with third-party time synchronization tools, if you use any in your virtual machine.

If the time zone specified for the virtual machine differs from that of the Parallels server, you can maintain this time difference by selecting **Allow a different time than on the Parallels server**.

Copy & Paste

If you want to copy and paste data between the server and the virtual machine, select the **Share clipboard** option. If the data you copy and paste is text and you want to preserve text formatting in the destination document, select the **Preserve text formatting** option.

Updating Parallels Tools

If you select the **Allow automatic Parallels Tools updates** option, Parallels Tools in the virtual machine is automatically updated once you update the Parallels Server Bare Metal software on the Parallels server. If you disable this option, you can manually check for available Parallels Tools updates and install them in the virtual machine by choosing the **Update Parallels Tools** option from the **Virtual Machine** menu.

Use the host computer's SMBIOS data

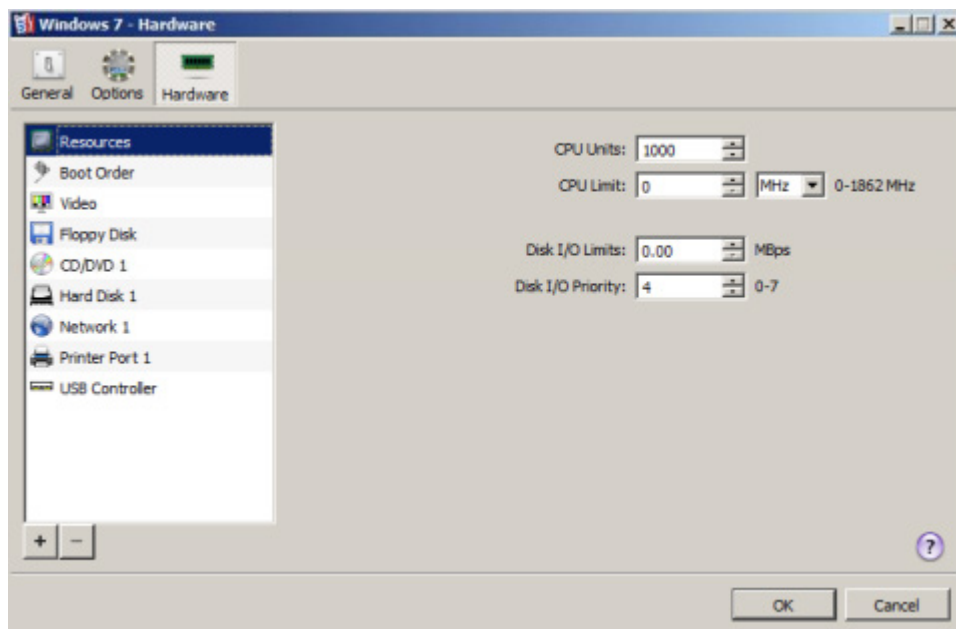
Select the **Use the host computer's SMBIOS data** option to use the SMBIOS data of the host computer in the virtual machine (for example, if some applications in the virtual machine requires this data). By default, virtual machines use their own virtualized SMBIOS data.

Hardware

This section describes the settings available on the **Hardware** tab of the virtual machine configuration window.

Resource Settings

The **Resource** pane of the virtual machine configuration window allows you to manage a number of CPU- and disk-related parameters.



Configuring CPU Parameters

On the **Resource** pane, you can configure two CPU-related parameters:

- **CPU Units**—guaranteed CPU power. This is a positive integer number, which determines the minimal guaranteed share of the CPU the virtual machine or Container receives. The virtual machine or Container can consume more than the guaranteed value if no other Containers are competing for the CPU and the `CPU Limit` parameter is not defined. Parallels Server Bare Metal consider one 1 GHz CPU to be approximately equivalent to 50 000 CPU units.
- **CPU Limit**—CPU limit, in percent or megahertz (MHz). This is the CPU limit the virtual machine or Container may never exceed. The range of allowed values is displayed to the right of the **CPU Limit** field.

Configuring Disk I/O Parameters

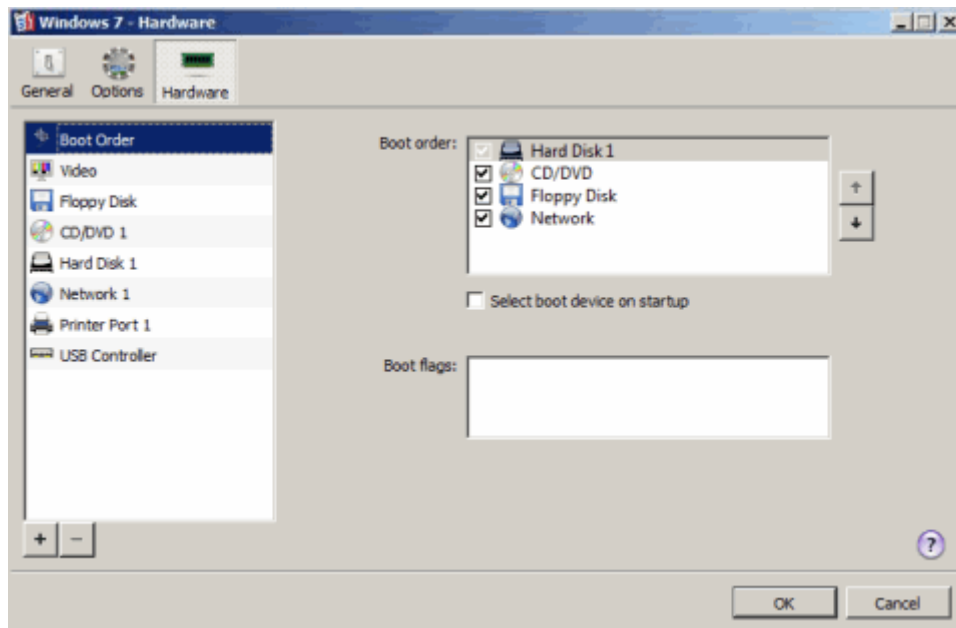
You can also configure the bandwidth a virtual machine is allowed to use for its disk input and output (I/O) operations. Limiting the disk I/O bandwidth can help you prevent the situations when high disk activities in one virtual machine (generated, for example, by transferring huge amounts of data to/from the virtual machine) can slow down the performance of other virtual machines on the Parallels server. By default, the I/O bandwidth limit for all newly created virtual machines is set to 0, which means that no limits are applied to any virtual machine. To limit the disk I/O bandwidth for a virtual machine, set the desired limit, megabytes per second (MB/s), in the **Disk I/O Limits** field.

Note: In the current version of Parallels Containers, the maximum I/O bandwidth limit you can set for a Container is 2 GB per second.

You can configure the disk input/output (I/O) priority level of a virtual machine. The higher the I/O priority level, the more time the virtual machine will get for its disk I/O activities as compared to the other virtual machines on the server. By default, any virtual machine has the I/O priority level set to 4. However, you can change the default priority level in the range from 0 to 7 by specifying the necessary value in the **Disk I/O Priority** field.

Boot Order Settings

To set the boot sequence for your virtual machine, use the **Boot Order** pane of the **Virtual Machine Configuration** dialog.



When the virtual machine starts, it can use one of these boot devices:

- **Hard Disk.** Select this device if you want the virtual machine to boot up from its virtual hard disk.
- **CD/DVD.** Select this device if you want the virtual machine to boot up from the media connected to its CD/DVD-ROM drive.

Note: The virtual machine will use the CD/DVD-ROM specified as **CD/DVD-ROM 1** in the virtual machine configuration.

- **Floppy Disk.** Select this device if you want the virtual machine to boot up from the media connected to its floppy disk drive.
- **Network Adapter.** Select this device if you want the virtual machine network adapter to use a PXE server for booting.

Note: The virtual machine will use the network adapter specified as **Network Adapter 1** in the virtual machine configuration.

When the virtual machine starts up, it is trying to boot from the device that appears as the first device in this list. If the device has no media or it is not bootable, the virtual machine proceeds to the next device in the sequence, and so on.

To change the booting sequence, select a device and move it using the arrows.

To remove a device from the sequence, clear the check box next to its name.

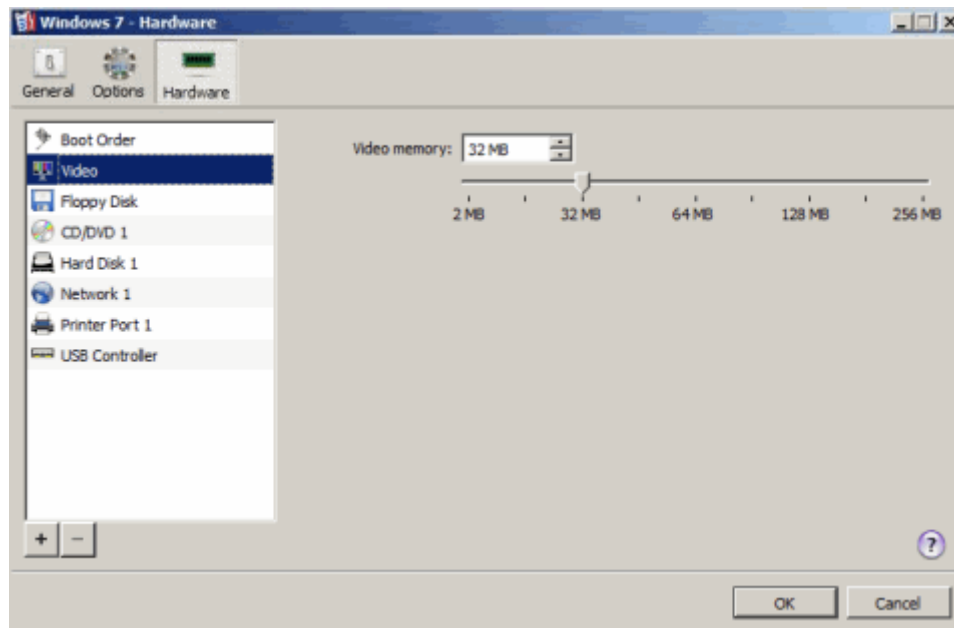
You can also enable the **Select boot device on startup** option. If you choose this option, you will see the following message at the virtual machine startup: "Press ESC to select boot device". If you press ESC pending 5 seconds, you will be able to select a boot device. If you do not press ESC, the virtual machine will try to boot from the devices specified in the **Boot order** list.

Note: Make sure that the device you wish to use for your virtual machine booting (hard disk drive, CD-ROM drive, floppy disk drive, or network adapter) is available to the virtual machine and configured properly. If you do not have any boot devices configured in your virtual machine, you will see the following error message after you start the virtual machine: "No boot device is available". In this case, you should stop the virtual machine and configure at least one boot device for it.

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Video Settings

To set the amount of video memory available to the virtual machine video card, use the **Video** pane of the **Virtual Machine Configuration** dialog.



In the **Video memory** field, you can set the amount of video memory that will be available to the virtual machine. You can specify any value from 2 to 256 MB; however, we recommend that you choose the value from the range given in the **Recommended size** field below the slider. This will provide the most optimal performance for your virtual machine and the physical computer where this virtual machine is hosted.

The **Maximum screen resolution** field shows the maximum screen resolution that will be supported in the virtual machine with the specified amount of video memory.

To configure the video memory limit, do one of the following:

- drag the slider
- use the spin box arrows
- type the value directly into the **Video memory** field

Keeping the Virtual Machine's Screen Resolution in Full Screen Mode

When you switch the virtual machine to the [Full Screen mode](#) (p. 79), its screen resolution:

- changes to the client computer screen resolution if you have Parallels Tools installed

Note: If dynamic resolution does not work when switching to Full Screen mode in virtual machines with Linux guest operating system installed, increase the amount of video memory available to the virtual machine's video card up to 16 MB.

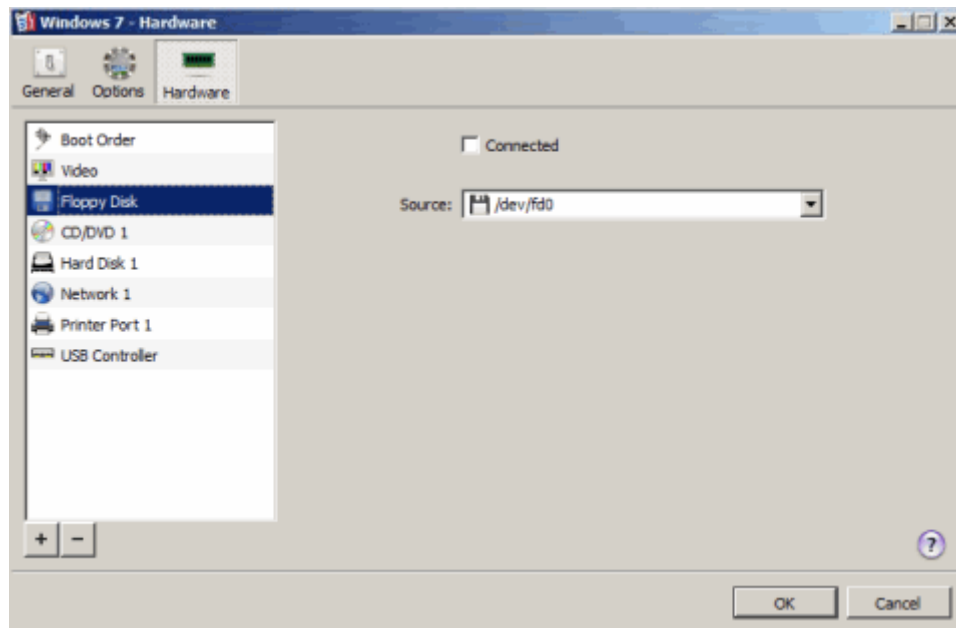
- remains the same.

To always keep the virtual machine's screen resolution in the Full Screen mode, select the **Keep the virtual machine's screen resolution in full screen** option. With this option selected, if the virtual machine's screen resolution is, for example, 1280x1024 in the Window mode, it will also be 1280x1024 in the Full Screen mode.

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Floppy Disk Settings

To view and edit the virtual machine floppy disk drive settings, use the **Floppy Disk** pane of the **Virtual Machine Configuration** dialog.



Enabled. Select this option to enable floppy disk drive operations in the virtual machine. To temporarily disable floppy drive operations without removing the floppy drive from the virtual machine configuration, clear this option.

Note: The **Enabled** option can be selected or cleared only when the virtual machine is stopped.

Connected. Select this option if you want the floppy disk drive or floppy disk image to be automatically connected to the virtual machine on its startup.

You can choose one of the following devices to emulate the virtual machine floppy disk drive:

- To use a real floppy disk drive, select **Real Device** and specify the device to use.
- To use a floppy disk image, select **Image File** and specify the path to the floppy disk image file in the **File** field. You can also use the **Choose** button to locate the file.

If you want to create a new floppy disk image or to replace the currently used floppy disk image by a blank floppy disk image, click the **Recreate** button.

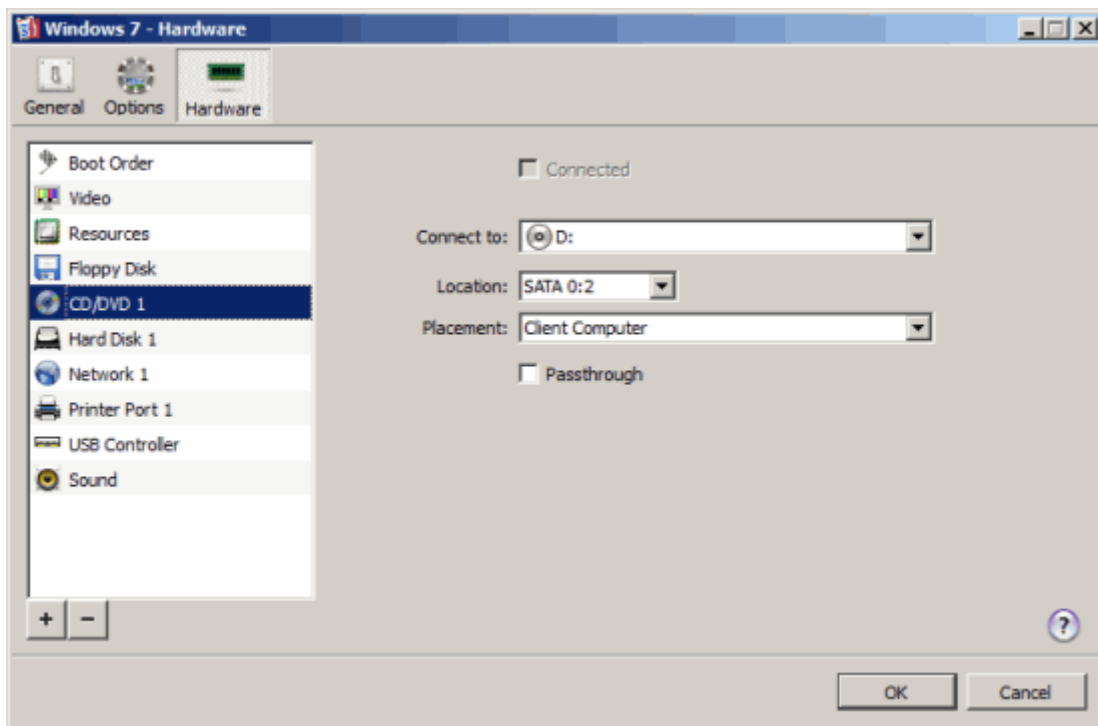
Warning: Recreating the current floppy disk image deletes all the data stored on this disk image.

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

CD/DVD-ROM Settings

To configure the virtual machine CD/DVD-ROM drive settings, use the **CD/DVD-ROM** pane of the **Virtual Machine Configuration** dialog. Virtual CD/DVD-ROM drives can be connected either to physical CD/DVD-ROM drives or to CD/DVD images. The real device and the image file can belong both to the host and the client computers.

Note: You can connect up to 4 IDE devices, 6 SATA devices, and 15 SCSI devices to a virtual machine. Each device (hard disk or CD/DVD drive) is listed separately in the **Virtual Machine Configuration** dialog and has its own number.



Select the **Connected** option if you want the CD/DVD-ROM drive to be automatically connected to the virtual machine on its startup.

To emulate the virtual CD/DVD-ROM drive, you can connect one of the real CD/DVD-ROM drives on your physical computer or a CD/DVD-ROM image file to the virtual machine.

Note: Parallels virtual machines support ISO and DMG image files and may support CUE and CCD image files.

Connecting Real Device

To use a real device as the virtual machine CD/DVD-ROM drive:

- 1 Select the **Real Device** option.
- 2 Select the computer that hosts the device from the **Placement** list.
 - **Host Computer.** Select this option if you want to use the real device located on the host computer.
 - **Client Computer.** Select this option if you want to use the real device located on the client computer.
- 3 Specify the device to connect by choosing it from the **CD/DVD-ROM** list.
- 4 Choose the type of interface to connect the device. Two types are available:
 - **IDE.** Using this interface type, you can connect up to four virtual devices (hard disks or CD/DVD drives).
 - **SCSI.** Using this interface type, you can connect up to seven virtual devices (hard disks or CD/DVD drives).

Note: Red Hat Linux Enterprise 5 guest OS does not support the SCSI controller.

- 5 Select the device position in the **Location** list.
- 6 Select the **Passthrough** option to connect your real CD/DVD-ROM drive to the virtual machine in the passthrough mode. In this mode, the CD/DVD-ROM drive is directly assigned to the virtual machine. If you connect a recordable optical drive to a virtual machine in the passthrough mode, you will be able to use it to burn CD or DVD discs in the virtual machine.

Note: If you select the **Passthrough** option, the physical computer will have no access to this CD/DVD-ROM drive.

- 7 Click **OK** to apply the settings and close the **Virtual Machine Configuration** dialog.

Connecting Image File

To use an image file as the virtual machine CD/DVD-ROM drive:

- 1 Select the **Image File** option.
- 2 Select the computer that hosts the image file from the **Placement** list.

- **Host Computer.** Select this option if you want to use the image file located on the host computer.
 - **Client Computer.** Select this option if you want to use the image file located on the client computer.
- 3 Type the path to the image file in the **File** field. You may use the **Choose** button to locate the file.
 - 4 Choose the type of interface to connect the image file. Two types are available:
 - **IDE.** Using this interface type, you can connect up to four virtual devices (hard disks or CD/DVD drives).
 - **SCSI.** Using this interface type, you can connect up to seven virtual devices (hard disks or CD/DVD drives).

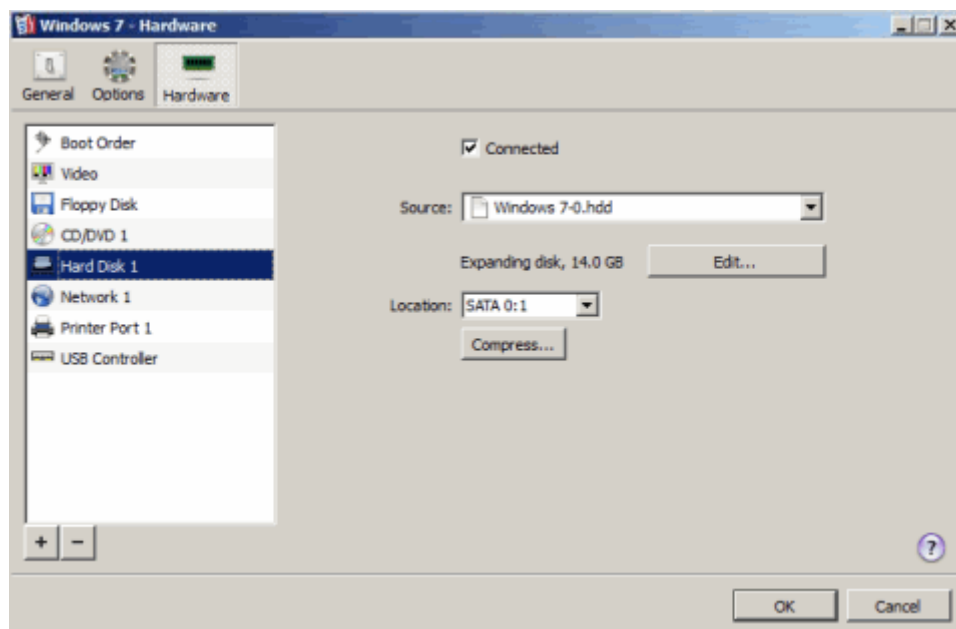
Note: Red Hat Linux Enterprise 5 guest OS does not support the SCSI controller.

- 5 Select the position in the **Location** list.
- 6 Click **OK** to apply the settings and close the **Virtual Machine Configuration** dialog.

You can also connect an image file using the **Device** menu or the CD/DVD-ROM icon in the status bar. To connect an image, select the CD/DVD-ROM icon in [the status bar](#) (p. 14) and choose **Connect Image**.

Hard Disk Settings

To view and configure the settings of a virtual disk, use the **Hard Disk** pane of the **Virtual Machine Configuration** dialog. Hard disk images have the `.hdd` format.



Connecting and disconnecting disks

Select the **Connected** option if you want the virtual machine to use this hard disk drive. To temporarily disable operations with the hard disk without removing it from the virtual machine configuration, clear the **Connected** check box.

Specifying the source file for disks

To use a hard disk image file as a virtual hard disk:

- 1 Choose the desired file from the **Source** menu, or click the **Choose an image file** link and navigate to the file.
- 2 In the **Location** list box, choose the disk interface type and location:
 - **IDE**. Using this interface type, you can connect up to four virtual devices (hard disks or CD/DVD-ROM drives) to the virtual machine.
 - **SCSI**. Using this interface type, you can connect up to 15 virtual devices to the virtual machine.
 - **SATA**. Using this interface type, you can connect up to 6 virtual devices to the virtual machine.

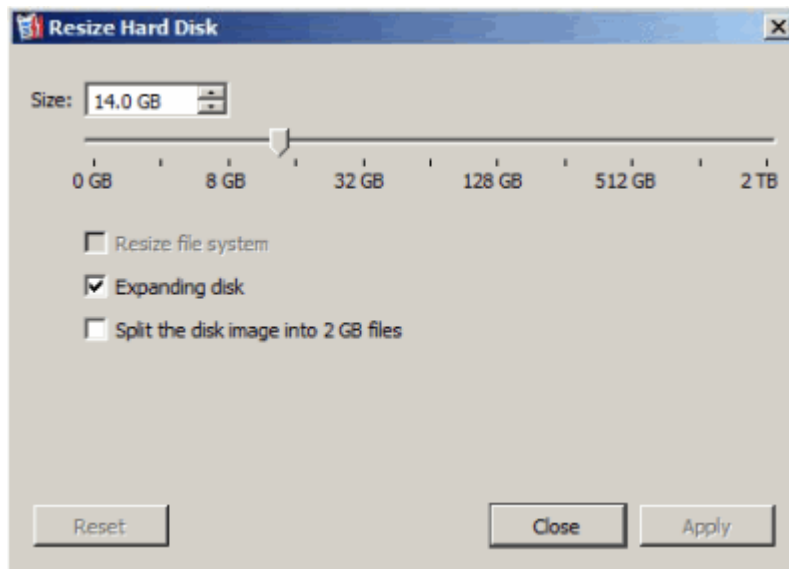
Notes:

1. SATA disks can be added to and removed from running and stopped virtual machines while operations on IDE and SCSI disks are allowed for stopped virtual machines only.
2. The SCSI 7:0 location is not available for selecting, since it is occupied by the SCSI controller itself.

- 3 Click **OK**.

Resizing virtual hard disks

To reduce or increase the virtual hard disk size, use the **Edit** button. If you click this button, the **Resize Hard Disk** window is displayed.



To reduce the virtual hard disk size, you can do one of the following:

Note: Reducing dynamic disks is not supported.

- If the virtual hard disk image is blank, specify the new size and click **OK**.
- If the virtual hard disk already has a file system, specify the new size, select **Resize file system**, and click **OK**.

To increase the virtual hard disk size, you can do one of the following:

- If the virtual hard disk image is blank, specify the new size and click **OK**.
- If the virtual hard disk already has a file system, specify the new size and click **OK**. In this case, the added space will be unallocated. You will have to create a logical drive or a partition on the unallocated space and then format the newly created drive or partition.
- If the virtual hard disk already has a file system, specify the new size, select **Resize file system**, and click **OK**. In this case, you will not have to format the added space and it will be available to the existent drive.
- If the virtual hard disk is dynamic, specify the new size and click **OK**. You will have to format the newly added space manually.

Note: When increasing the dynamic virtual hard disk size, make sure the **Resize file system** option is not selected.

Compressing disks

If you use an expanding virtual hard disk in your virtual machine, its image file size on the physical hard disk increases as you add new data to the virtual disk. When you delete some data from this virtual hard disk, free unused space appears on the disk, but the amount of space the virtual machine occupies on the hard disk of the Parallels server does not reduce. To free the unused space on the physical server, click the **Compress** button.

Note: Compressing is available only for Windows- and Linux-based virtual machines that have Parallels Tools installed and does not have any snapshots.

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Support for Virtual and Real Disks

This section lists the types of disks that can be used by Parallels virtual machines and provides the information about basic operations that you can perform with these disks.

Supported Types of Hard Disks

Parallels virtual machines use virtual hard disks as their hard disks.

Virtual Hard Disks

The capacity of a virtual hard disk can be set from 100 MB and up to 2 TB.

Virtual hard disks can be either *plain* or *expanding*. When you create a virtual machine in **Express Windows** or **Express Linux**, or **Typical** mode (in [New Virtual Machine Wizard](#) (p. 48)), the disk is created in the *expanding* format.

plain A plain virtual hard disk image file has a fixed size. The size is determined when the disk is created.

expanding An expanding virtual hard disk image file is stored on the Parallels server and is small initially. Its size grows as you add applications and data to the virtual hard disk in the guest OS.

Split disks

A virtual disk of either format can be a single-piece disk or a split disk. A split disk is cut into 2 GB pieces and is stored as a single `.hdd` file.

CD/DVD Discs and Their Images

A virtual machine can access real CD/DVD discs and images of CD/DVD discs.

There are no limitations on using multisession CD/DVD discs. Virtual machines can play back audio CDs without any limitations on copy-protected discs.

Parallels virtual machines support CD/DVD disc images in the ISO and DMG formats. They may also support CD/DVD disc images in the CUE and CCD formats.

Floppy Disks and Floppy Disk Images

Parallels virtual machines can use two types of floppy disks:

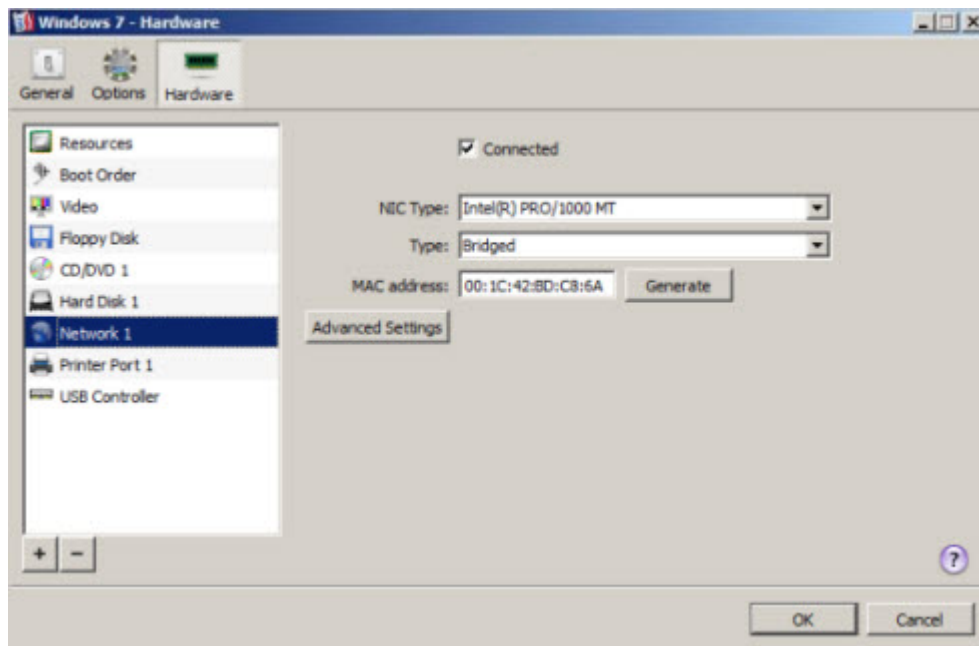
- Real diskettes inserted into a real floppy disk drive that is connected to the virtual machine.
- Floppy disk image files with the `.fdd` extension connected to the virtual machine.

Floppy disk images are treated like real diskettes. Virtual machines support floppy disk image files that have `.fdd` extension and 1.44 MB size.

Note: Parallels Management Console cannot create images of real diskettes.

Network Adapter Settings

The **Network** pane of the **Virtual Machine Configuration** dialog allows you to manage the network settings of virtual machine network adapters.



On this pane, you can configure the following settings:

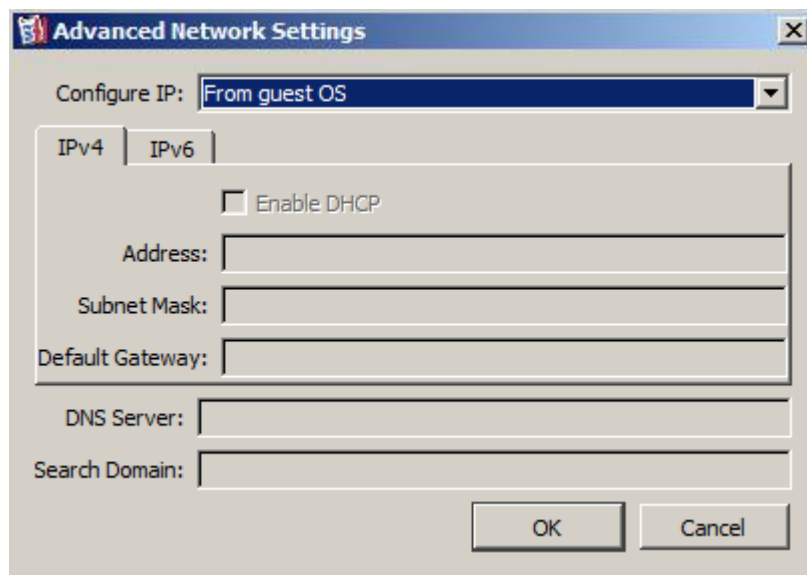
- **Connected.** Select this option if you want the network adapter to start up with this network adapter connected.
- **NIC Type.** Configure the type of network adapter in the virtual machine by choosing the desired adapter in the drop-down list. By default, a virtual machine is created with an Intel Pro 1000 MT adapter.
- **Type.** Choose the networking mode for the virtual adapter. You can set the virtual adapter to operate in one the following modes:
 - *Virtual network.* In the virtual network mode, you connect the network adapter to one of the virtual networks available on the physical server. For more information on virtual networks, see **Managing Virtual Networks** (p. 41).
 - *Host-routed.* In the host-routed mode, all virtual machines use special virtual adapters on the server to connect to each other, the server, and computers on external networks.

Note: For detailed information on networking modes, see the *Parallels Server Bare Metal 5.0 User's Guide*.

- **Mac address.** Change the MAC address assigned to the virtual network adapter. MAC addresses are automatically generated when you create a virtual machine. However, you can modify the default MAC address by typing another value in the **MAC address** field or clicking the **Generate** button. When specifying a new MAC address manually, make sure that it is unique within your network.

Configuring Advanced Network Settings

To configure a number of additional network settings for the virtual network adapter, click the **Advanced Settings** button.



The screenshot shows a dialog box titled "Advanced Network Settings" with a close button (X) in the top right corner. At the top, there is a dropdown menu labeled "Configure IP:" with "From guest OS" selected. Below this are two tabs: "IPv4" (selected) and "IPv6". Under the "IPv4" tab, there is a checkbox for "Enable DHCP" which is unchecked. Below the checkbox are four text input fields: "Address:", "Subnet Mask:", "Default Gateway:", and "DNS Server:". At the bottom of the dialog, there is a "Search Domain:" text input field and two buttons: "OK" and "Cancel".

In the **Configure IP** field, you can choose the way of managing the settings of your network adapter. Choosing **From guest OS** allows you to configure the adapter settings from inside the virtual machine. Choosing **Manually** allows you to configure the adapter settings using Parallels tools: Parallels Management Console, Parallels Virtual Automation, and Parallels command-line utilities.

If your system (for example, in Parallels Server Bare Metal 5.0) supports using both IPv4 and IPv6 addresses, you can click the desired tab and configure the following settings:

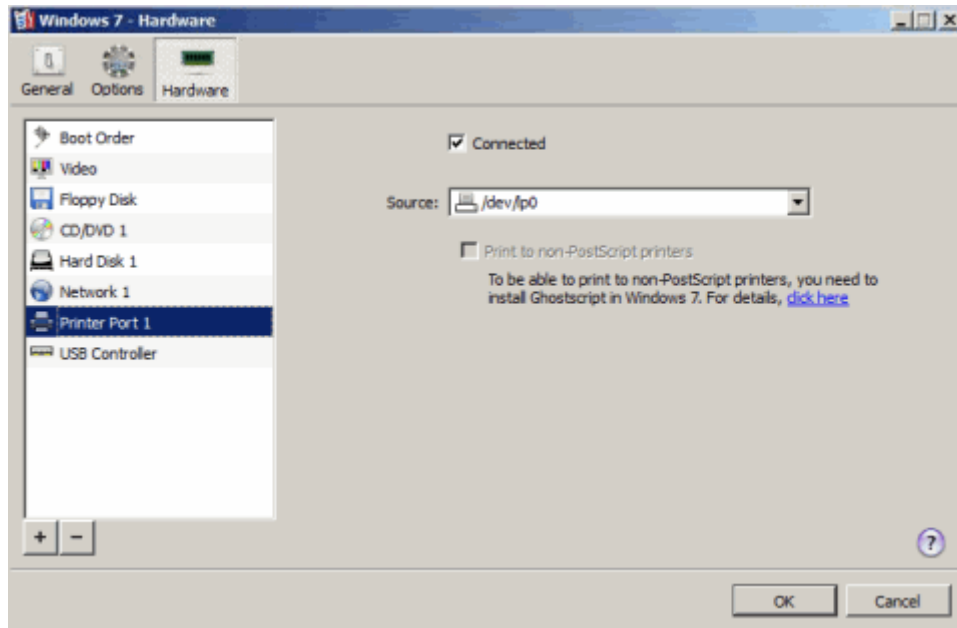
- **Enable DHCP.** Select this option to set the adapter to receive its network settings (IP address, subnet mask, and default gateway) from a DHCP server. This option is not available for adapters operating in the host-routed mode.
- **Address.** Specify the IP address to assign to the network adapter.
- **Subnet Mask/Prefix Length.** Indicate the subnet mask for the network adapter.
- **Default Gateway.** Set the default gateway for the network adapter. This option is not available for adapters operating in the host-routed mode.
- **DNS Server.** Specify a DNS server for the network adapter.
- **Search Domain.** Specify a search domain for the network adapter.

Once you are finished, click **OK** to save the changes; otherwise, click **Cancel**.

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Parallel Port Settings

In the **Parallel Port** pane of the **Virtual Machine Configuration** dialog, you can configure the virtual machine parallel port settings. A virtual machine can have up to three parallel ports.



Enabled. Select this option if you want to enable this parallel port in the virtual machine. To temporarily disable the parallel port without deleting it from the virtual machine configuration, clear this option.

Note: The **Enabled** option can be selected or cleared only when the virtual machine is stopped.

Connected. Select this option if you want the virtual machine to start up with the parallel port connected.

A parallel port can be emulated by one of the following devices:

- **Real Port.** Select this option to connect one of the host computer parallel ports to the virtual machine parallel port. In this case, you will need to specify the appropriate physical port in the **Parallel port** field.
- **Printer.** Select this option to connect a printer using the virtual machine parallel port. In this case, you will need to select the appropriate printer in the **Printer** list.

By default, the HP Color LaserJet 8500 PS printer supporting PostScript is installed in Windows virtual machines, irrespective of the real printer model and version. In most cases, modern printers support PostScript and that is why you should disregard the printer name you see in the Windows printing wizard and complete the procedure.

- **Output File.** Select this option to emulate the parallel port by using an output file. In this case, a new output file with the default name will be created in the virtual machine folder. The path to the output file will be displayed in the **File** field. If you want to use another output file, type the full path to it in the **File** field or use the **Choose** button to locate the file.

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Serial Port Settings

In the **Serial Port** pane, you can configure the virtual machine serial port settings.

Using serial ports, you can establish a connection between

- the virtual machine and the host computer devices (using a real port) or
- between two virtual machines located on the same host computer (using a socket).

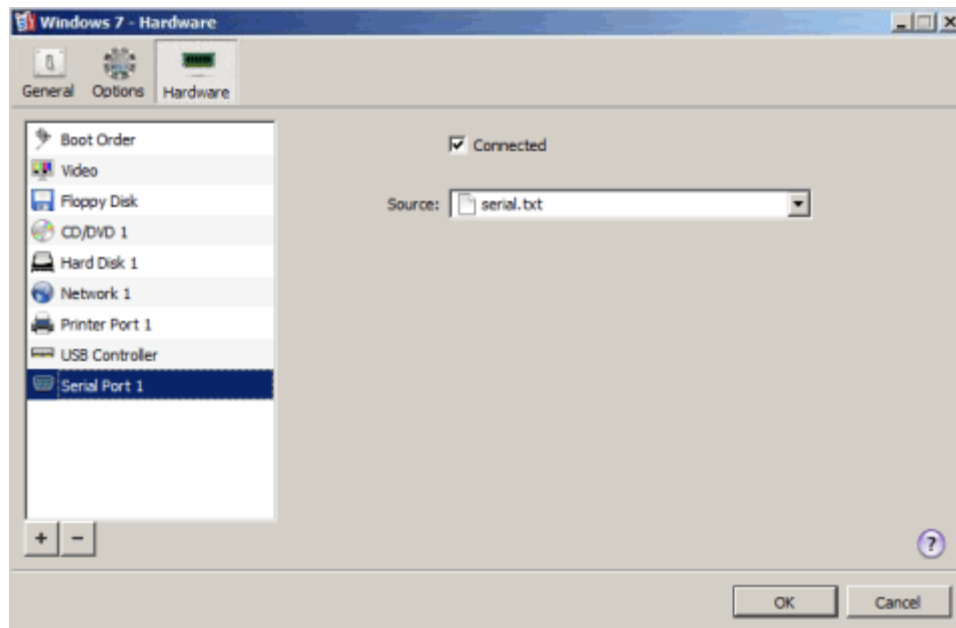
If you want to connect your virtual machine to the host computer device, you should create a serial port emulated by a real port. The **Serial Port** list comprises the devices on the host computer that are available for connection. The connected device, being used in any virtual machine, cannot be used by the host computer. To be able to use it in the host computer, you should first disconnect it from the virtual machine. To do that, use the virtual machine [status bar](#) (p. 18).

If you want to connect two virtual machines with each other, you need to create a serial port emulated by a socket in each virtual machine. The names of the serial ports should be identical. The connection between the virtual machines via serial ports is bidirectional. It means that the working modes of the sockets set during the port creation can be changed later in the **Serial Port** pane.

If you need to log the performance activity of your virtual machine or to record the data from it and use this information later on, you can connect your virtual machine serial port to an output file on the physical server. You will be able to view and analyze the activity history of the virtual machine any time you need it by exploring this file.

You can add a new serial port to your virtual machine using Add Hardware Wizard. For the instruction on how to create serial ports, refer to **Adding Serial Port**.

Note: You can connect up to four serial ports to a virtual machine.



Enabled. Select this option if you want to enable this serial port in the virtual machine. To temporarily disable the serial port without deleting it from the virtual machine configuration, clear this option.

Note: The **Enabled** option can be selected or cleared only when the virtual machine is stopped.

Connected. Select this option if you want the virtual machine to start up with the serial port connected.

Serial ports can be emulated by the following devices:

- **Real Port.** Select this option to connect the virtual machine serial port to one of the existing serial ports on the host computer. In this case, you will need to choose the appropriate port on the host computer in the **Serial port** list.
- **Socket.** Select this option to connect two virtual machines through the sockets. When connecting the virtual machine to a socket, you can use the default path to the socket or type a new one in the **Socket** field. You can also configure the role the virtual machine will play in the connection by selecting the necessary role in the **Mode** list. Selecting **Server** enables you to use this virtual machine to direct the other one. Selecting **Client** enables you to direct this virtual machine from the other one.

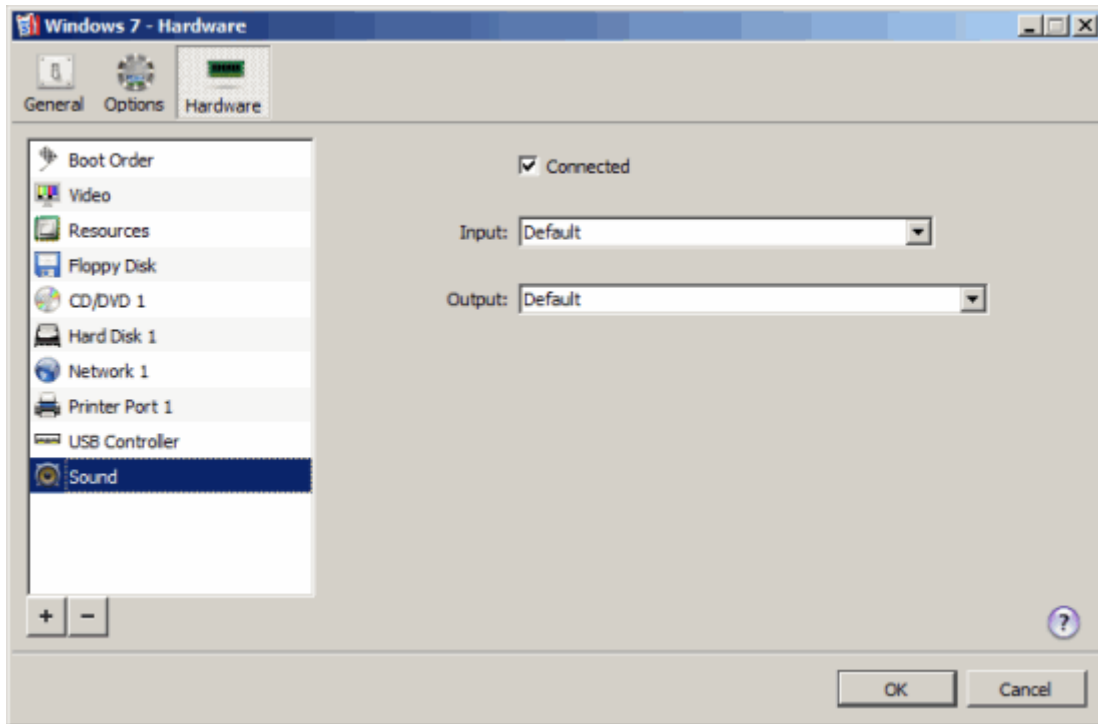
Note: If you change the socket mode of the first virtual machine, make sure that the socket mode of the second virtual machine is also modified.

- **Output File.** Select this option to connect the virtual machine serial port to an output file. You can accept the default path or type your own one in the **File** field. You can also use the **Choose** button to locate the necessary file.

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Sound Settings

In the **Sound Settings** pane of the **Virtual Machine Configuration** dialog, you can configure the sound device settings.



Connected. Select this option to have the sound device automatically connected on the virtual machine startup.

Output. Use the output list to choose the necessary device. You can choose one of the following devices:

- **Default.** Select this option if you want to use the input device set as default in the primary operating system.
- **Null device.** Select this option if you want to mute the output device.
- **Built-in output.** Select this option if you want to use one of the output devices connected to the primary operating system.

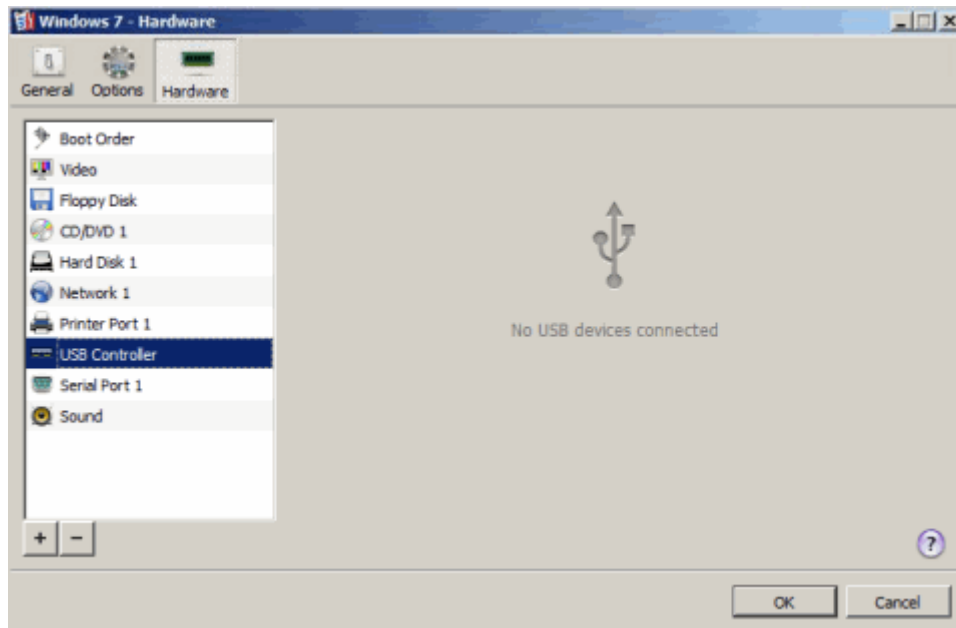
Input. Use the input list to choose the necessary device. You can choose one of the following devices:

- **Default.** Select this option if you want to use the input device set as default in the primary operating system.
- **Null device.** Select this option if you want to mute the input device.
- **Built-in input.** Select this option if you want to use one of the input devices connected to the primary operating system.

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

USB Settings

In the **USB Controller** pane of the **Virtual Machine Configuration** dialog, you can enable the USB controller support in your virtual machine. A virtual machine can emulate only one USB controller, which provides you with the possibility to connect up to eight USB 2.0 and eight USB 1.1 devices to the virtual machine.



Enabled. Select this option to allow using USB devices in the virtual machine. If you want to temporarily disable USB operations without deleting the USB controller from the virtual machine configuration, clear this option.

If the USB controller is disabled, such USB devices as keyboard, mouse, microphone will still be available to the virtual machine with other emulated subsystems, such as sound, keyboard or mouse emulation, etc.

Note: The **Enabled** option can be selected or cleared only when the virtual machine is stopped.

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Generic SCSI Device Settings

To view and edit the settings of a generic SCSI device used by the virtual machine, use the **Generic SCSI** pane of the **Virtual Machine Configuration** dialog.

The **SCSI device** list displays the SCSI devices available in the hardware configuration of the Parallels physical server. You may change the device connected to the virtual machine SCSI device by choosing it from the list.

You can also change the device position in the **Location** list.

Note: The SCSI 7:0 location is not available for selecting, since it is occupied by the SCSI controller itself.

You may add a brief description of the device in the **Description** field.

When you finish configuring the hard disk settings, click **OK** to save the changes and quit the **Virtual Machine Configuration** dialog. If you do not want to save the changes, click **Cancel**.

Adding and Removing Devices


Adding new devices to a virtual machine is easier than connecting new devices to a real computer. Removing or disconnecting devices is also easy. The following virtual devices can be added to the configuration or removed from it:

- virtual hard disk drives
- CD/DVD drives
- floppy disk drives
- network adapters
- serial ports
- printer ports
- sound devices
- USB controllers
- generic SCSI devices
- PCI devices

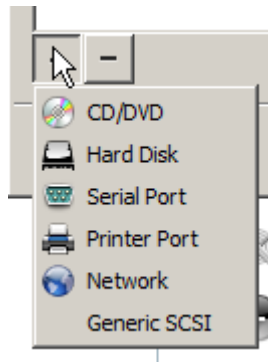
Any of the aforementioned devices can be added to the corresponding virtual machine only when it is stopped.

Note: To be able to connect any virtual device to a real one, you should have system privileges to access the real device. Otherwise, the real device will not appear in the list of available devices even though it is installed on your computer.

Adding a New Device to a Virtual Machine

- 1 Choose **Configure** from the **Virtual Machine** menu to open Virtual Machine Configuration.
- 2 Click the **Hardware** button at the top of the **Virtual Machine Configuration** dialog to open the pane for editing hardware devices.
- 3 Click the **Add** button  in the bottom part of the **Virtual Machine Configuration** dialog and select the device to be added to your virtual machine.

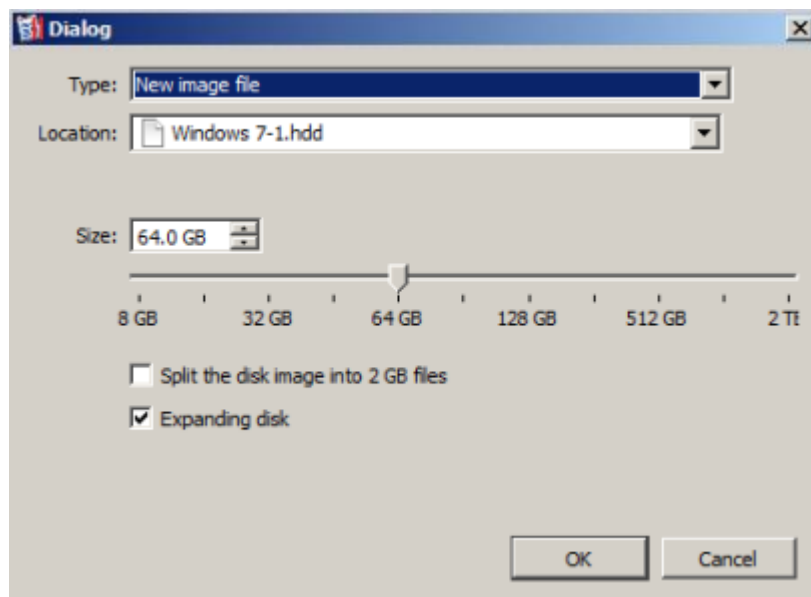
Note: The **Add** button is disabled when the virtual machine is running. You need to stop the virtual machine before you can use this button.



- 4 If you selected any device except for a hard disk, the corresponding device with a typical configuration is added at once and ready for use.

If you selected a hard disk, you should specify some parameters:


- The hard disk type: a new image file or an existing one. Select *Boot Camp* if you want to add an existing Boot Camp partition as a hard disk to your virtual machine (available for Parallels Server for Mac only).
- The hard disk location. Provide the path on the physical server to an existing image file or the path and name for the new image file.
- The hard disk size for the new hard disk image file.
- For the new hard disk image file, you can choose one of the following formats: *expanding* or *plain*. By default, the hard disk will have the *expanding* format. To create a *plain* hard disk, clear the **Expanding disk** option. If you want the virtual hard disk to be split, select the **Split the disk image to 2 GB files** option. For more information on hard disk formats, refer to **Support for Virtual and Real Disks** (p. 114).



Click **OK**, to add the hard disk. After you added a new virtual hard disk to the virtual machine configuration, it will be invisible to the operating system installed inside the virtual machine until the moment you initialize it. For detailed information on how to initialize the newly added hard disk, see **Initializing the Newly Added Disk** (p. 130).

Once the new device is added, you can manage its properties as usual and start using it.

Removing Devices From the Virtual Machine Configuration

- 1 Choose **Configure** from the **Virtual Machine** menu to open Virtual Machine Configuration.
- 2 Click the **Hardware** button at the top of the **Virtual Machine Configuration** dialog to open the pane for editing hardware devices.
- 3 Select the device you want to remove and click the **Remove** button  in the bottom part of the **Virtual Machine Configuration** dialog.

Note: If you accidentally click the **Remove** button , click **Cancel** in Virtual Machine Configuration. Once you click **OK**, the device will be removed.

Initializing the Newly Added Disk

After you added a new blank virtual hard disk to the virtual machine configuration, it will be invisible to the operating system installed inside the virtual machine until the moment you initialize it.

Initializing the New Virtual Hard Disk in Windows

To initialize a new virtual hard disk in a Windows guest OS, you will need the Disk Management utility available. For example, in Windows 7 and Windows XP you can access this utility by doing the following:

- In Windows 7, click **Start > Control Panel > System and Security > Administrative Tools > Computer Management Storage > Disk Management**.
- In Windows XP, click **Start > Control Panel > Administrative Tools > Computer Management > Storage > Disk Management**.

When you open the Disk Management utility, it automatically detects that a new hard disk was added to the configuration and launches the **Initialize and Convert Disk** wizard:

- 1 In the introduction window, click **Next**.
- 2 In the **Select Disks to Initialize** window, select the newly added disk and click **Next**.
- 3 In the **Select Disks to Convert** window, select the newly added disk and click **Finish**.

The added disk will appear as a new disk in the Disk Management utility window, but its memory space will be unallocated. To allocate the disk memory, right-click this disk name in the Disk Management utility window and select **New Simple Volume** in Windows Vista or **New Volume** in Windows XP. The **New Simple Volume Wizard/New Volume Wizard** window will appear. Follow the steps of the wizard and create a new volume in the newly added disk.

After that your disk will become visible in **Computer/My Computer** and you will be able to use it as a data disk inside your virtual machine.

Initializing the New Virtual Hard Disk in Linux

Initializing a new virtual hard disk in a Linux guest OS comprises two steps: (1) allocating the virtual hard disk space and (2) mounting this disk in the guest OS.

To allocate the space, you need to create a new partition on this virtual hard disk using the `fdisk` utility:

Note: To use the `fdisk` utility, you need the `root` privileges.

- 1 Launch a terminal window.
- 2 To list the IDE disk devices present in your virtual machine configuration, enter:

```
fdisk /dev/hd*
```

Note: If you added a SCSI disk to the virtual machine configuration, use the `fdisk /dev/sd*` command instead.

- By default, the second virtual hard disk appears as `/dev/hdc` in your Linux virtual machine. To work with this device, enter:

```
fdisk /dev/hdc
```

Note: If this is a SCSI disk, use the `fdisk /dev/sdc` command instead.

- To get detailed information about the disk, enter:

```
p
```

- To create a new partition, enter:

```
n
```

- To create the primary partition, enter:

```
p
```

- Specify the partition number. By default, it is 1.

- Specify the first cylinder. If you want to create a single partition on this hard disk, use the default value.

- Specify the last cylinder. If you want to create a single partition on this hard disk, use the default value.

- To create a partition with the specified settings, enter:

```
w
```

When you allocated the space on the newly added virtual hard disk, you should format it by entering the following command in the terminal:

```
mkfs -t <FileSystem> /dev/hdc1
```

Note: `<FileSystem>` stands for the file system you want to use on this disk. It is recommended to use `ext3` or `ext2`.

When the added virtual hard disk is formatted, you can mount it in the guest OS.

- To create a mount point for the new virtual hard disk, enter:

```
mkdir /mnt/hdc1
```

Note: You can specify a different mount point.

- To mount the new virtual hard disk to the specified mount point, enter:

```
mount /dev/hdc1 /mnt/hdc1
```

When you mounted the virtual hard disk, you can use its space in your virtual machine.

Managing Virtual Machines

This chapter provides information on the main day-to-day operation you are likely to perform on your virtual machines:

- [cloning a virtual machine](#) (p. 133)
- [deleting a virtual machine](#) (p. 135)
- [working with virtual machine templates](#) (p. 138)
- [managing virtual machines from the notification area](#) (p. 143)
- [working with snapshots](#) (p. 144)
- [migrating virtual machines](#) (p. 149)
- [working with virtual machine backups](#) (p. 150)

In This Chapter

Cloning a Virtual Machine	133
Deleting and Removing a Virtual Machine	135
Managing Virtual Machine Templates.....	138
Managing Virtual Machines From the Tray	143
Working With Snapshots.....	144
Migrating a Virtual Machine	149
Working With Virtual Machine Backups.....	150

Cloning a Virtual Machine

If you need to create an exact copy of a virtual machine, to back it up or for some other purposes, use:

- Clone Virtual Machine Wizard (if Parallels Management Console is installed on a Windows- or Linux-based physical computer)
- Clone Virtual Machine Assistant (if Parallels Management Console is installed on a Mac-based physical computer)

The cloned virtual machine has the same configuration as the original virtual machine does. If a device in the original machine was connected to an external resource, in the cloned virtual machine, this device will be connected to the same external resource.

Notes: 1. If the original virtual machine has a parallel or serial port connected to an output file, the virtual machine clone will have empty output files.

2. If a network adapter is enabled in the original configuration, a new MAC address will be generated for the virtual machine clone.

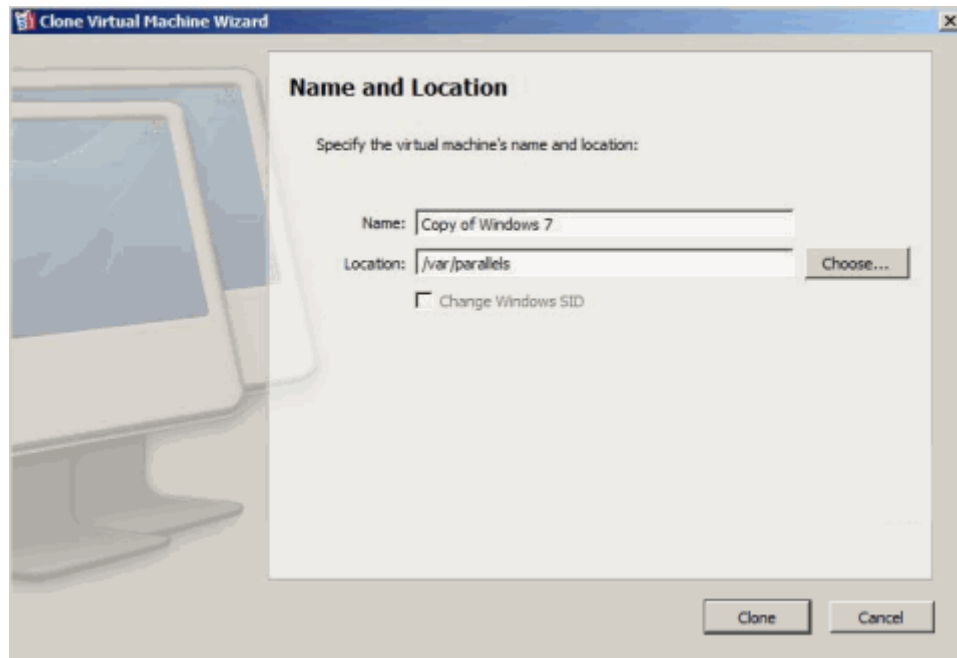
Before you start cloning a virtual machine, make sure that the virtual machine is not running.

To clone a virtual machine:

- 1 Launch Parallels Management Console.
- 2 In the sidebar, select the virtual machine you want to clone.
- 3 Start Clone Virtual Machine Wizard by doing one of the following:
 - choosing **Clone** from the **File** menu
 - right-clicking the virtual machine in the sidebar and choosing **Clone** from the shortcut menu
- 4 In the **Name and Location** window, type the name of the virtual machine clone and specify the folder for its files to be stored. You can use the **Choose** button to locate the folder.

By default, the files of the virtual machine clone will be placed to the following folder:

- Mac OS X: `/Users/Shared/Parallels/<Virtual_Machine_Name>/`
- Parallels Server Bare Metal: `/var/parallels/<Virtual_Machine_Name>`
- Parallels Server for Mac Bare Metal Edition:
`/var/parallels/<Virtual_Machine_Name>`



When finished, click **Clone**.

- 5 When the operation is complete, click **Done** in the **Cloning Finished** window.

The clone of the virtual machine will appear in the sidebar of the Parallels Management Console window.

Deleting and Removing a Virtual Machine

If you do not need any of your virtual machines, you can either temporarily remove or delete it from Parallels Management Console.

When removing a virtual machine from Parallels Management Console, you do not remove the virtual machine files from the Parallels server. You can easily add the removed virtual machine back to the virtual machines list with the help of Add Existing Virtual Machine Assistant. For more information about adding existing virtual machines, see **Adding an Existing Virtual Machine** (p. 72).

Deleting a virtual machine means permanently erasing its files from the Parallels server. Make sure you transferred all the necessary data from the virtual machine before deleting it: this operation is irreversible. All the virtual machine data will be lost.

You can delete a virtual machine using Delete Virtual Machine Assistant (or Delete Virtual Machine Wizard if Parallels Management Console is installed on a Windows- or Linux-based physical computer) that finds and deletes all the virtual machine files. Or you can delete a virtual machine manually. However, we recommend that you use Delete Virtual Machine Assistant.

By default, Delete Virtual Machine Assistant removes all files that are stored in the virtual machine folder, including:

- configuration file
- virtual hard disk file(s)
- floppy disk image file(s), if any
- output files of serial and parallel ports, if any

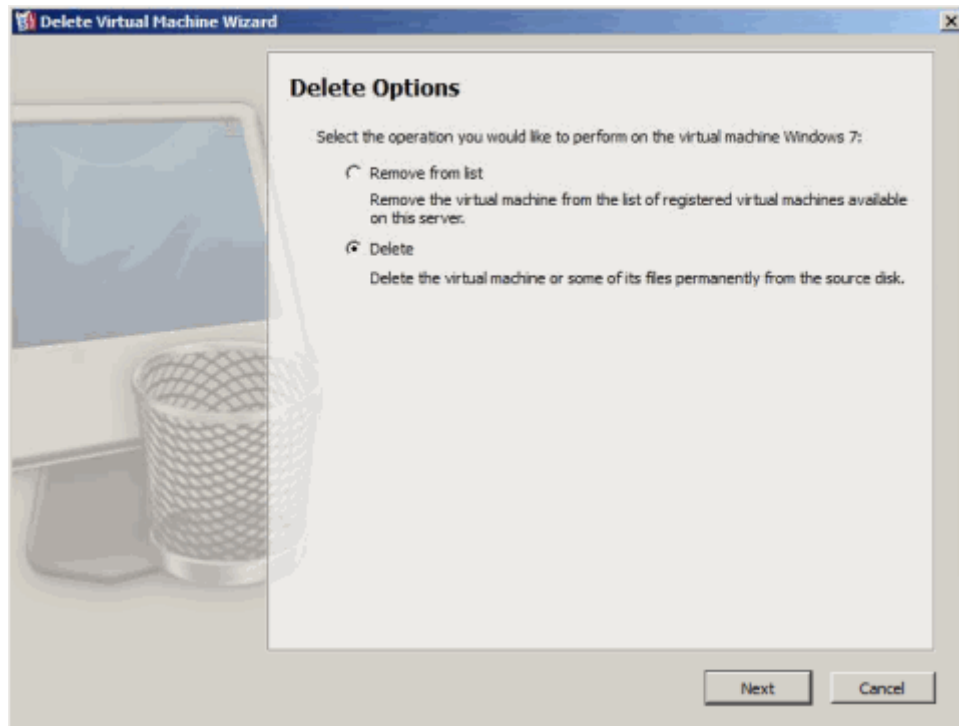
To delete a virtual machine or remove it from the list:

- 1 Launch Parallels Management Console.
- 2 In [the sidebar](#) (p. 14), select the virtual machine you want to delete or remove from the list.
- 3 Start Delete Virtual Machine Assistant by doing one of the following:
 - choose **Remove** from the **File** menu
 - click **Remove** in the **Operations** section of the virtual machine **Summary** tab

Note: Before deleting a virtual machine, make sure that the virtual machine is stopped.

- 4 In the **Delete Options** window, select the operation you want to perform on the virtual machine.
 - To delete the virtual machine, select **Delete** and click **Continue**.
 - To remove the virtual machine from the list, select **Remove from list** and click **Remove**.

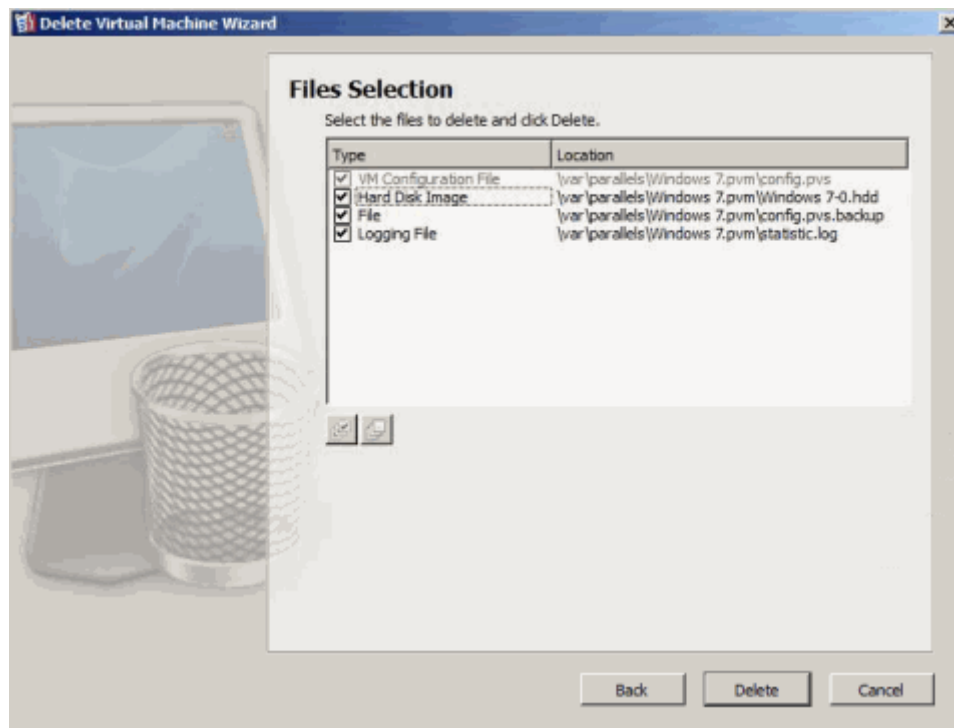
Note: If you remove the virtual machine from the list visible in Parallels Management Console, its files will not be removed from the Parallels server. You will be able to add this virtual machine back.



- 5 If you chose to delete the virtual machine, you would be presented with the **Files Selection** window. This window displays all the files that belong to the virtual machine. In the **File Selection** window, choose the virtual machine files to be deleted from the Parallels server and click **Delete**.

The assistant automatically selects the files that belong to the virtual machine, such as:

- **VM Configuration File.** The file has the `.pvs` extension and defines hardware and resources configuration of the virtual machine.
- **Hard Disk Image.** The file has the `.hdd` extension and represents a virtual hard disk of the virtual machine.
- **Floppy Image.** The file has the `.fdd` extension and is a floppy disk image file.
- **File.** The file has the `.DS_Store` extension and is a hidden file created by the host OS to store custom attributes of a folder.
- **Logging File.** The file has the `.log` extension and serves to record the data.



- 6 Once the operation is complete, click **Done** to exit the assistant.

Managing Virtual Machine Templates

To create several virtual machines with a similar configuration, you can make a virtual machine template and use it as the basis for creating new virtual machines. You can use one of the following ways to create a virtual machine template:

- Convert an existing virtual machine into a virtual machine template. In this case, the virtual machine will be moved from the virtual machines list to the templates list once the conversion is complete. It means that the virtual machine will be available as a template only (that is, you will not be able to run it).
- Clone an existing virtual machine to a virtual machine template. By cloning a virtual machine, you make its exact copy and can use it to create virtual machines with the same configuration.

Creating a Virtual Machine Template

To convert an existing virtual machine into a template:

- 1 Choose the virtual machine you want to convert into a template by clicking its icon in the sidebar.
- 2 Choose **Convert to Template** from the **File** menu or right-click the virtual machine icon in the sidebar and choose **Convert to Template** from the shortcut menu.

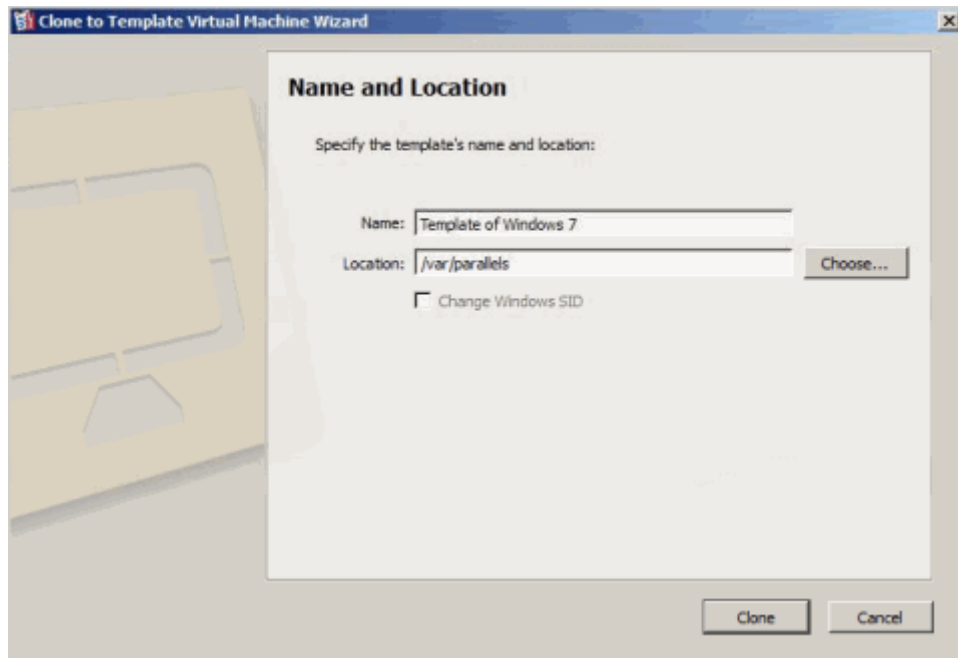
The virtual machine will be moved to the templates list.

To clone a virtual machine to a template:

- 1 Launch Parallels Management Console.
- 2 In the sidebar, select the virtual machine you want to be cloned to a virtual machine template.
- 3 Start Clone to Template Virtual Machine Wizard (or Clone to Template Virtual Machine Assistant if Parallels Management Console is installed on a Mac-based physical computer) by doing one of the following:
 - choosing **Clone to Template** from the **File** menu
 - right-clicking the virtual machine in the sidebar and choosing **Clone to Template** from the shortcut menu
- 4 In the Clone to Template Virtual Machine Wizard **Introduction** window, click **Next**. To skip this window next time you start the wizard, select **Always skip introduction**.
- 5 In the **Name and Location** window, specify the name and location for the virtual machine template and click **Clone**. You can use the **Choose** button to change the location.

By default, the virtual machine template files will be placed to the following folder:

- Mac OS X: `/Users/Shared/Parallels/<Template_Name>/`
- Parallels Server Bare Metal: `/var/parallels/<Template_Name>`
- Parallels Server 4.0 for Mac Bare Metal Edition: `/var/parallels/<Template_Name>`



6 In the **Creation Finished** window, click **Done** to quit the wizard.

Deploying a Virtual Machine Template

The virtual machine template cannot be run as a virtual machine. To be able to run it as a virtual machine, you should create a virtual machine that will have the same configuration the template does.

There are two ways of creating a virtual machine from a template:

- convert the template to a virtual machine
- deploy the template to a new virtual machine

If you convert a virtual machine template into a virtual machine, its icon will be moved from the templates list to the virtual machines list, and you will be able to use it as a virtual machine.

If you deploy a virtual machine template to a virtual machine, Deploy Virtual Machine Template Wizard will create a new virtual machine, but the template will not be removed from the templates list.

To convert a virtual machine template into a virtual machine:

- 1 In the sidebar, select the template you want to convert into a virtual machine.
- 2 Choose **Convert to Virtual Machine** from the **File** menu or right-click the template icon in the sidebar and choose **Convert to Virtual Machine** from the shortcut menu.

The virtual machine template will be moved from the templates list to the virtual machines list.

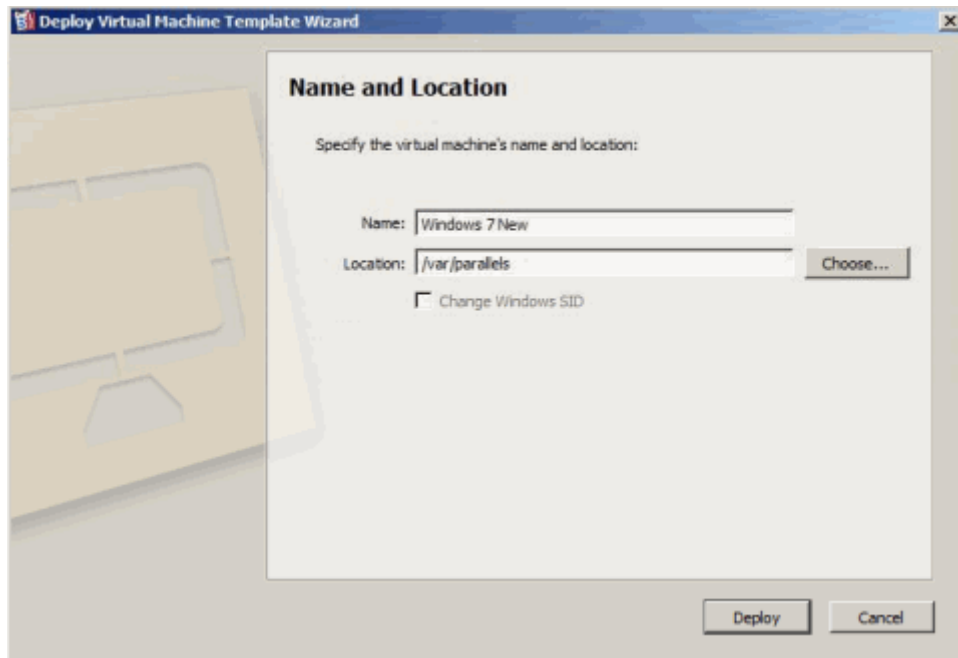
To deploy a virtual machine template to a new virtual machine:

- 1 Launch Parallels Management Console.
- 2 In the sidebar, select the virtual machine template you want to be deployed to a new virtual machine.
- 3 Start Deploy Virtual Machine Template Wizard (or Deploy Virtual Machine Template Assistant if Parallels Management Console is installed on a Mac-based physical computer) by doing one of the following:
 - choosing **Deploy to Virtual Machine** from the **File** menu
 - right-clicking the virtual machine in the sidebar and choosing **Deploy to Virtual Machine** from the shortcut menu
- 4 In the Deploy Virtual Machine Template Wizard **Introduction** window, click **Next**. To skip this window next time you start the wizard, select **Always skip introduction**.
- 5 In the **Name and Location** window, specify the name and location for the virtual machine and click **Deploy**. You can use the **Choose** button to change the location.

By default, the virtual machine files will be placed to the following folder:

- Mac OS X: `/Users/Shared/Parallels/<Virtual_Machine_Name>/`
- Parallels Server Bare Metal: `/var/parallels/<Virtual_Machine_Name>`

- Parallels Server for Mac Bare Metal Edition:
`/var/parallels/<Virtual_Machine_Name>`



6 In the **Deployment Finished** window, click **Done** to close the wizard.

The resulting virtual machine will have the same configuration that the original template had.

Managing Virtual Machines From the Tray

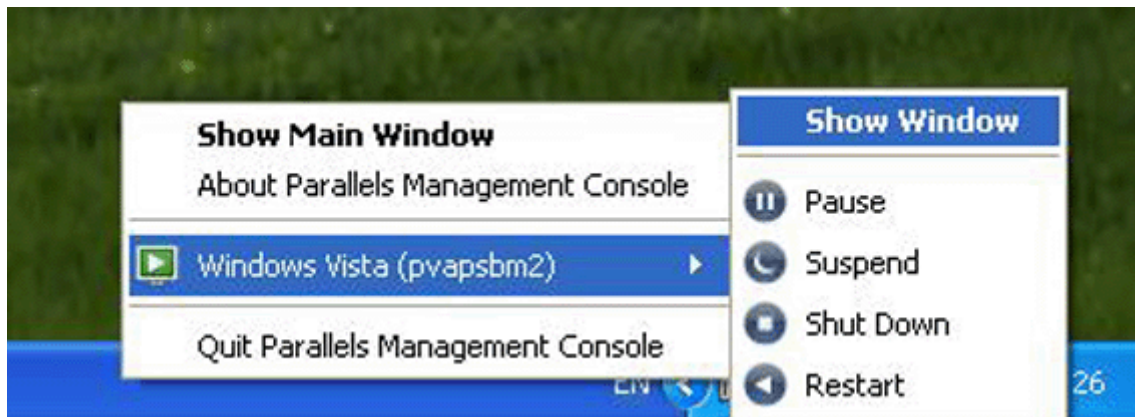
When working with Parallels Management Console, you can use the [Parallels Management Console tray icon](#) (p. 20) to easily manage your running and paused virtual machines:

- Double-click the tray icon to bring the [Parallels Management Console window](#) (p. 14) to focus.
- Right-click the tray icon to open its context menu where you can see your running and paused virtual machines.

Note: Suspended and stopped virtual machines are not listed in the tray icon context menu.

Point to a virtual machine and do one of the following:

- Choose **Show Window** to bring the virtual machine window to focus. If this window is detached, only the detached window will be brought to focus.
- If the virtual machine is paused, choose the corresponding item to resume, suspend, shut down or restart this virtual machine.
- If the virtual machine is running, choose the corresponding item to pause, suspend, shut down or restart this virtual machine.



Working With Snapshots

A snapshot is a saved state of the virtual machine. Snapshots can be created manually or automatically when the virtual machine is running. After you make a snapshot, you can continue working with the virtual machine and revert to the created snapshot at any time of your work.

Snapshots are stored inside the virtual machine bundle, in the `Snapshots` subfolder. Each snapshot has a number of files, including the `.sav` file that contains the virtual machine's state, the `.mem` file that contains the memory dump for the virtual machine, and other different files of the virtual hard disk.

Note: Snapshots are not backup copies or clones of your virtual machine. You cannot use them alone without your virtual machine or move them from the virtual machine bundle.

You may need to make snapshots in the following cases:

- If you are configuring software that requires a lot of settings, you may want to explore the settings functions before selecting them. For testing the settings, create snapshots at branching points.
- If you want to mark milestones in the development process. If something goes wrong, you can always revert to the previous state or create a branch of snapshots starting with the particular milestone snapshot.

Making Snapshots

To make a snapshot:

- 1 Make sure that you completed all operations of installing, downloading, or writing to external devices before taking a snapshot.

Notes:

1. You can create a snapshot at any time. But it is recommended to complete all operations of installing, downloading, or writing to external devices before taking a snapshot. You should also complete or cancel any transactions performed via the virtual machine in external data bases.
2. You cannot create a snapshot or revert to a snapshot when your virtual machine is paused.

- 2 Choose **Take Snapshot** from the **Virtual Machine** menu or use the **Take Snapshot** button




on the toolbar of your virtual machine's window. If the toolbar does not contain this button, you can add it to the toolbar. For more information, refer to the [Customizing Toolbar section](#) (p. 18).

Note: To make a snapshot, you can also use Virtual Machine Snapshots. Just choose **Manage Snapshots** from the **Virtual Machine** menu and click the **New** button. A new snapshot will be created.

- 3 In the **Snapshot Parameters** window, you can provide a name and a short description for the snapshot. This information and the date of creation will be visible in Virtual Machine Snapshots when you hover the pointer over the snapshot icon.
- 4 Click **OK** to take a snapshot.


After the snapshot is created, you can continue working with your virtual machine current state or use any of its snapshots.

To revert to a snapshot, open Virtual Machine Snapshots by choosing **Manage Snapshots** from

the **Virtual Machine** menu or by clicking the **Manage Snapshots** button  on the toolbar of the virtual machine window.

Managing Snapshots

You can use Virtual Machine Snapshots to revert to a specific snapshot, as well as to manage the snapshots. To open Virtual Machine Snapshots, do one of the following:

- choose **Manage Snapshots** from the **Virtual Machine** menu
- click the **Manage Snapshots** button  in [the toolbar](#) (p. 16)

Note: To add this button to the toolbar, you should customize the toolbar. To learn how to do that, refer to the [Customizing Toolbar](#) section (p. 18).

Using Virtual Machine Snapshots, you can:

- create new snapshots and delete the unused ones
- view the snapshot tree of a particular virtual machine
- select a snapshot to revert to

Note: You cannot create a snapshot manually or automatically or revert to a snapshot when your virtual machine is paused.

The **Virtual Machine Snapshots** window consists of the following areas:

- The snapshots tree pane.
- The snapshots management pane.

Snapshots Tree Pane

Snapshot icons appear as screen shots of the guest OS window if the virtual machine was running at the time you created a snapshot.

The left icon with a flag is the *root* of the snapshots tree - it is the initial state of the virtual machine used as the reference point. You cannot delete the root icon. The root icon is visible if at least one snapshot exists. If you want to delete a snapshot which is parental for some other snapshots, you can decide whether to delete only this snapshot or delete it with all the subsequent snapshots.

All snapshots in the snapshots tree are descendants of the *root* state of the virtual machine. The first snapshot contains "differences" with respect to the root state. The second successive snapshot contains differences with respect to the first snapshot. You may want to return to one of the previous snapshots and work with it. If you then create a new snapshot, a new snapshots branch will be created.

When the pointer is hovered over an item, you will see a tooltip message with a short description.

Snapshots Management Pane

The snapshots management pane includes the buttons necessary for managing the snapshots.

- The **New** button. Click this button to create a new snapshot for the present state of your virtual machine.
- The **Go To** button. Select the snapshot you want to go to in the snapshots tree and click this button to move from the present state of your virtual machine to the state saved in this snapshot.

Note: Before you go to a specific snapshot, decide what you want to do with the current state of the virtual machine - by default, it will not be saved. To retain the changes made since the last snapshot, make a new snapshot.


- The **Delete** button. Select the snapshot you want to delete and click this button. If you delete an intermediate snapshot, the information it contains will be merged into the subsequent snapshot.

Note: You cannot delete the *root* icon. It disappears only when you delete all snapshots in the tree.

You can also manage snapshots by right-clicking them in the tree:

- If you right-click the icon that shows the present state of the virtual machine, you can create a new snapshot for this state.
- If you right-click any other intermediate snapshot, you can choose to go to it, to delete it alone or with all the subsequent snapshots, or to edit its name and description.

Going to a Snapshot

- 1 Launch Parallels Management Console and select a virtual machine.
- 2 Open Virtual Machine Snapshots by doing one of the following:
 - choosing **Manage Snapshots** from the **Virtual Machine** menu
 - clicking the **Manage Snapshots** button  in [the toolbar](#) (p. 16)
- 3 Select the snapshot you want to revert to and click **Go To**. If you revert to a snapshot from an unsaved state of the virtual machine, you will see the notification about that. Click **Yes** if you want to proceed without saving the state. Click **No** if you want to save the state and then go to the needed snapshot.

Note: If, after the Parallels Server update, you decide to revert to one of the snapshots made before the update, you will see the message that a new Parallels Tools update is available. We recommend you to install them to work effectively with the virtual machine.

Deleting a Snapshot

- 1 Launch Parallels Management Console and select a virtual machine.
- 2 Open Virtual Machine Snapshots by doing one of the following:
 - choosing **Manage Snapshots** from the **Virtual Machine** menu

- clicking the **Manage Snapshots** button  in [the toolbar](#) (p. 16)

- 3** Select the snapshot you want to delete and click the **Delete** button if you want to delete only this snapshot. If you want to delete all the snapshots that come after it, right-click the snapshot and choose the **Delete Snapshot with children** option.

If you delete an intermediate snapshot, the information it contains will be merged into the snapshot that follows it.

Note: You cannot delete the root icon, but it gets automatically deleted after you delete all the other snapshots.

Merging Snapshots

Merging is performed automatically when you delete any snapshot except the last one in the branch. When you delete an intermediate snapshot, the information it contains is merged into the next snapshot of the same branch.

If you delete the snapshot belonging to two branches, the information is merged into the next snapshot of each branch.

Note: If you delete the snapshot that comes after the root icon and that belongs to two branches, the branches will start from the initial state icon directly.

The snapshots are also merged automatically if you manage the capacity of your virtual hard disk with the help of Parallels Image Tool. Before applying any changes to the virtual hard disk, Parallels Image Tool merges and deletes all the snapshots except for the last one. Unlike merging the snapshots in Virtual Machine Snapshots, the results of merging process via Parallels Image Tool are not reflected in the snapshots tree, and the icons of already deleted snapshots are still present in the tree.

Migrating a Virtual Machine

If you have two or more Parallels servers registered in Parallels Management Console, you can migrate your virtual machines between them. The cases when you need to move a virtual machine from one Parallels server (source server) to another (destination server) can be quite numerous. A migration can be performed to distribute the workload between physical servers, or in view of an interruption in the source physical server operation.

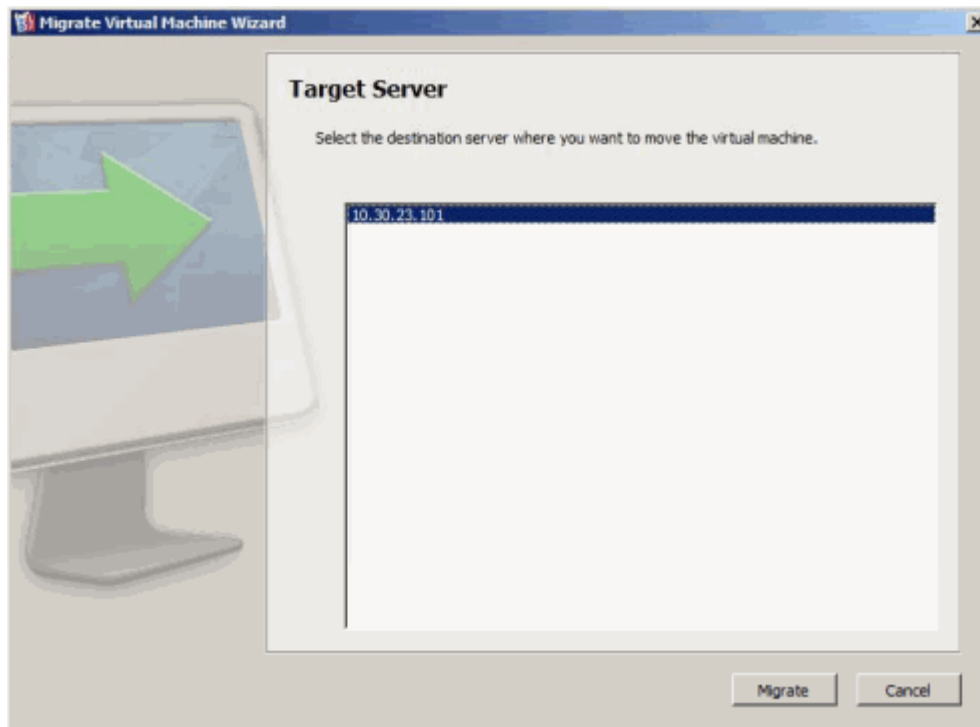
You can migrate any number of virtual machines at a time. However, before migration, you should check if the amount of free disk space, CPU numbers, and memory on the destination server is enough to run your virtual machine(s).

To migrate a virtual machine:

- 1 Launch Parallels Management Console.
- 2 Select a virtual machine in the [sidebar](#) (p. 14).

Note: You can migrate a virtual machine in any of the following states: running, stopped, paused, suspended.

- 3 Choose **Migrate** from the **File** menu to start the **Migrate Virtual Machine** wizard (or Migrate Virtual Machine Assistant if Parallels Management Console is installed on a Mac-based physical computer).
- 4 In the **Target Server** window, select a server to which the virtual machine will be migrated.



- 5 Click **Migrate** to start the procedure. The virtual machine will be migrated to the specified Parallels server.

Warning: After you click **Migrate**, do not work with the virtual machine or you may prevent it from being properly migrated to the destination server. Wait till the migration process is over.

Working With Virtual Machine Backups

Parallels Management Console allows you to back up the virtual machines residing on the registered Parallels servers. A regular backing up of virtual machines is essential for any physical server reliability.

Note: If you back up a virtual machine that has snapshots, the snapshots will not be included into the backup, and as a consequence, a virtual machine restored from this backup will have no snapshots either.

To work with virtual machine backups, select a virtual machine in the [sidebar](#) (p. 14) and go to the **Backup** tab. If the virtual machine has any backups, the information about these backups is presented in the form of the following table:

Column Name	Description
ID	The ID assigned to the backup archive.
Date	The date when the backup archive was created.
Size	The size of the backup archive, in megabytes.
Type	The backup type: <ul style="list-style-type: none">• A full backup indicated by f.• An incremental backup indicated by i and containing only the files changed since the previous full or incremental backup.
Description	Description of the backup archive.

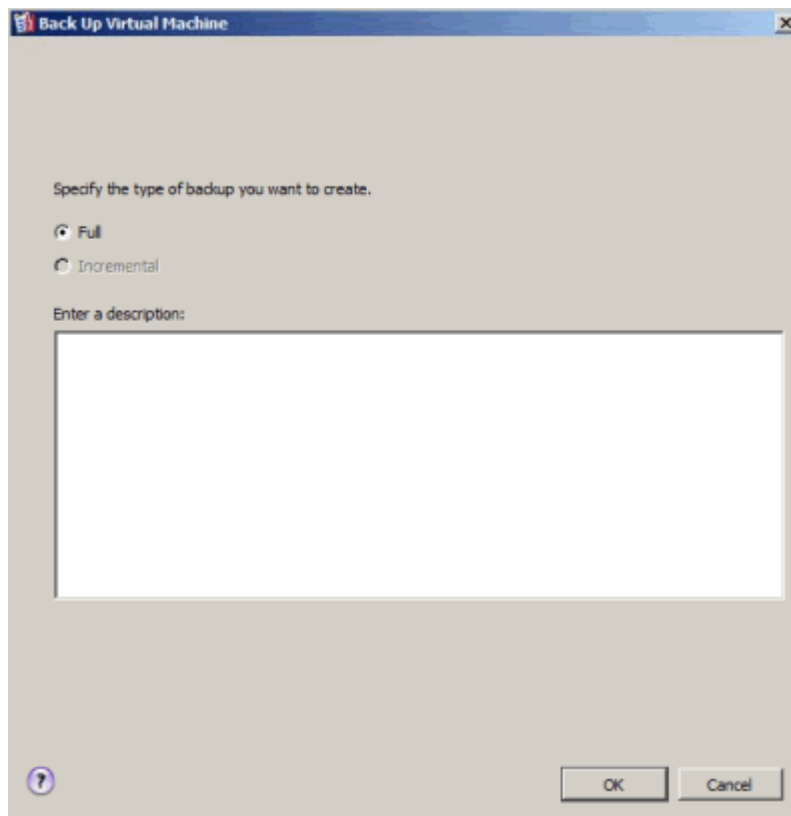
The **Backup** tab also contains the necessary controls allowing you to create a new backup, to restore a backup, or remove it from the Parallels server. More detailed information on how to do these operations is given in the following subsections.

Backing Up a Virtual Machine

To back up a virtual machine, do the following:

Note: The snapshots of a virtual machine are not included in the backup, and the restored virtual machine will not have any snapshots.

- 1 Select the virtual machine in the [sidebar](#) (p. 14), and click the **Backup** tab.
- 2 Click the **New** button. The **Back Up Virtual Machine** window appears.



3 In this window, select the backup type:

- **Full.** If the virtual machine has no backups at all, you will be able to choose only this backup type.
- **Incremental.** This backup type is available only if the virtual machine has a full backup. An incremental backup contains only the files changed since the previous full or incremental backup.

You can also add a short description to the backup.

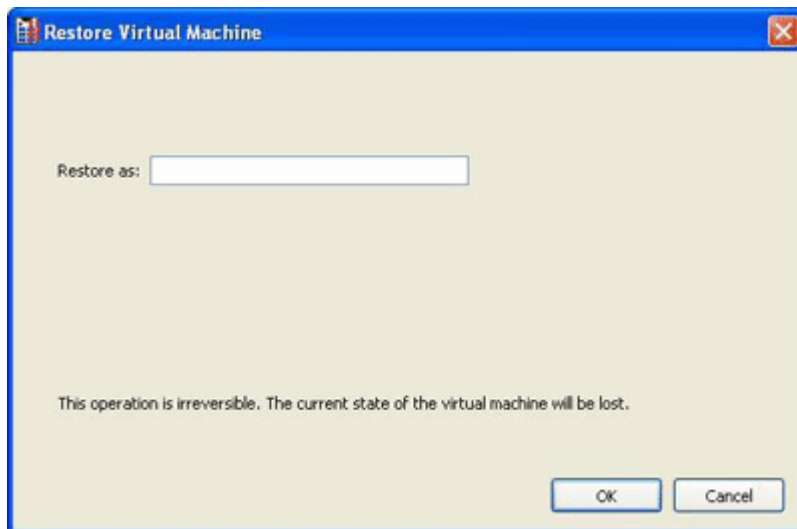
4 Click **OK**.

Note: Backing up a virtual machine may take you some time. Do not work with the virtual machine until the procedure is over.

Restoring and Removing Virtual Machine Backups

To restore a virtual machine backup, do the following:

- 1 Select a virtual machine in the [sidebar](#) (p. 14), and click the **Backup** tab.
- 2 On this tab, select the backup you want to restore, and click **Restore**.



Note: Restoring a virtual machine backup may take some time. Please wait until the procedure is over.

To remove a virtual machine backup, do the following:

- 1 Select a virtual machine in the [sidebar](#) (p. 14), and click the **Backup** tab.
- 2 On this tab, select the backup you want to remove, and click **Delete**.

Using Parallels Compressor

Parallels Compressor is an easy-to-use Parallels utility which will help you keep your virtual machines efficient for many purposes.

Parallels Compressor is a part of the Parallels Tools set and is installed, updated, and removed with Parallels Tools. To start Parallels Compressor, choose **Run Parallels Compressor** from the **Virtual Machine** menu.

Parallels Compressor allows users to:

- effectively clean up disk space in a virtual machine
- significantly reduce the size of virtual hard disks files
- efficiently use the resources of a physical hard disk

Note: Compressing of a virtual machine cannot be performed if the virtual machine has the Undo disks option enabled, or if it has snapshots. Compressing is also unavailable for the virtual machines with [plain disks](#) (p. 114).

If, nevertheless, you want to compress the virtual machine that has snapshots, delete all the snapshots with the help of Snapshot Manager before you start compressing the virtual machine's disks. For more information, refer to **Managing Snapshots** (p. 146).

To compress the virtual machine with Undo Disks, first disable the Undo disks feature in Virtual Machine Configuration.

In This Chapter

Guest Operating System Requirements	154
Parallels Compressor Working Principles	155
How to Run Parallels Compressor	156

Guest Operating System Requirements

Parallels Compressor supports the following guest operating systems:

32-bit operating systems:

- Windows 2000 Server SP4, Professional SP4
- Windows XP Professional SP2, SP3, Home SP2, SP3
- Windows Server 2003 Web, Standard, Enterprise, Datacenter SP2, R2
- Windows Vista Home, Business, Ultimate, Enterprise SP0, SP1
- Windows 2008

64-bit operating systems:

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

Parallels Compressor Working Principles

Compressor processes a virtual machine in the following way:

- defragments virtual disks and cleans up unused space
- compacts virtual disks

The actions performed on your particular virtual machine depend upon the running mode:

- in *automatic* mode Parallels Compressor compresses only the current system disk performing the pre-defined set of actions
- 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 *Parallels Compressor Help*.

Steps of the Compression Procedure

Parallels Compressor is designed to perform the most efficient compression of a virtual machine. The procedure consists of two steps:

- a preparatory step performed in the guest operating system (deleting temporary and unnecessary files, defragmenting virtual disks and cleaning unused disk space);
- a compacting step (reducing the size of the virtual disk files) performed in the primary operating system.

How to Run Parallels Compressor

Before Starting Parallels Compressor

Before starting the utility, back up your virtual machine by cloning it or by copying its hard disk files to a safe location. This will allow you to restore your virtual machine in case you do not like the results of the compression.

Warning: The result of virtual machine compression is irreversible.

To start Parallels Compressor:

- 1 Start 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.

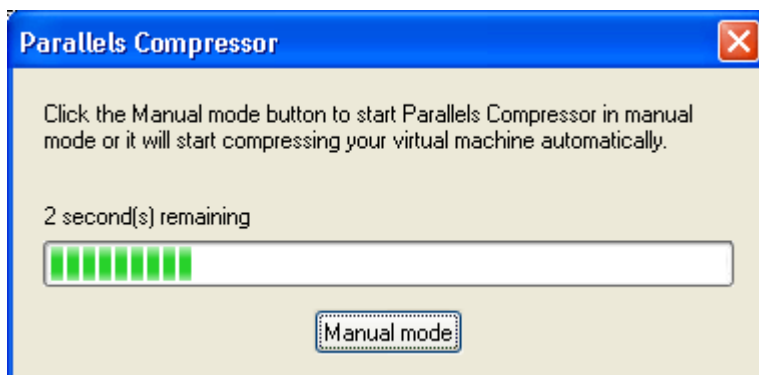
- 3 Choose **Run Parallels Compressor** from the **Virtual Machine** menu.

Running Parallels Compressor

Parallels Compressor has the following running modes:

- *automatic*, the default mode. In this mode Compressor uses the default compression options.
- *manual*, Parallels Compressor runs as a wizard which helps you select the options of virtual machine compression.

When you start Parallels Compressor, you will see 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, do not do anything, just wait until the timeout expires.
- 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 these modes is given in *Parallels Compressor Help*.

After Compressing Is Finished

When the compressing is complete, click **Finish** to exit Parallels Compressor.

Troubleshooting and Limitations

This chapter provides information about issues that may pose a problem when running Parallels Management Console and possible solutions for these problems.

In This Chapter

Getting Technical Support	158
Reporting a Problem to the Parallels Support Team	159
Memory Usage Problems	161
Problems With Antivirus Software	162
Upgrading or Installing Parallels Tools in Text Mode in a Linux Guest OS	163
Install the GCC Package and Kernel Sources in Linux	164

Getting Technical Support

If you have problems with using Parallels Management Console, please view Parallels Management Console FAQs first.

Parallels Technical Support team is ready to help: describe your problem and submit a FREE support request to Parallels Support team (<http://www.parallels.com/support/>).

To discuss your problem online, visit Parallels Forum (<http://forum.parallels.com/>).

Telephone support is available on a per incident fee basis. For more information, visit the web page of Parallels Support team (<http://www.parallels.com/support/>).

Reporting a Problem to the Parallels Support Team

To help improve the quality of Parallels Server, you can send problem reports to Parallels support team. If a fatal error occurs in a virtual machine, Parallels Management Console automatically opens the **Parallels Problem Report** window prompting you to send a report. If you notice an unusual virtual machine behavior, you can create a report manually by choosing **Report a Problem** from the **Help** menu and filling out the form. Parallels Management Console will create a status report and make a screen shot of the running virtual machine.

Note: Parallels team collects error reports and uses them for identifying performance issues, but does not respond to them. If you need assistance in resolving the issue, visit Parallels forum or Support page, or log us a support call.

The **Parallels Problem Report** window looks like the following:

Problem Report for Parallels Server

Do you have a problem with Parallels Server?

Please tell Parallels about this problem by sending this report. The report contains technical data to help us understand the problem and improve the product for you. No personal information will be collected.

Note that this report won't be considered as a customer support request.

Specify the problem type:

Please describe what you were doing when the problem occurred:

Name:

Email:

In the **Specify the problem type** field, you can select your problem from the list. In the next field, you can add a short problem description. These two fields are optional.

The **Technical Data** option includes the `.txt` status report file that has been generated for the error. The status report contains the product version and activation data, primary and guest OSs information, virtual machine configuration and system data information, processor status, etc. Click the **Technical Data** icon to view the `.txt` file and to choose the sections that will be added to the report. The file is saved on the host computer. If you want to locate it, click the **Go To File** button.

The **Guest OS Screenshot** option includes the session screen shot of the guest OS in a `.png` format. This option is available if you create a problem report during the virtual machine session. Click the **Guest OS Screenshot** icon to see the screen shot and the path to its location on the host computer.

The **Primary OS Screenshot** option includes the session screen shot of the primary OS in a `.png` format. This screen shot is made and put on the primary OS desktop whenever you create a problem report. Click the **Primary OS Screenshot** icon to see the screen shot.

In the **Contact Name** and **Contact e-mail** fields, type your name and e-mail. This information will be used by the Parallels support team to address you for more technical details if needed.

Sending a Report

After you revise the problem report components, click **Send Report**. The report will receive its unique id number and will be sent to the Parallels support team.

Memory Usage Problems

The amount of the host computer physical memory required for each virtual machine operation can be represented as follows:

Virtual Machine Memory = *Guest OS Memory* + *Video Memory* + *Virtual Machine Monitor Memory*

- *Guest OS Memory* is the amount of RAM available to your guest OS. You can configure the guest OS memory amount in the **Virtual Machine Configuration** dialog.
- *Video Memory* is the amount of physical memory available to the virtual machine's video card. You can adjust the video memory amount in [the Video pane](#) (p. 105) of Virtual Machine Configuration.
- *Virtual Machine Monitor* is the module responsible for the guest operating system virtualization. It consumes memory to perform operations of guest virtual devices and handle virtual paging emulation. The amount of memory required for the Virtual Machine Monitor operation depends on the guest OS and varies from 50 MB to 200 MB.

You can configure the whole amount of physical memory available for all running virtual machines in [the Memory tab](#) (p. 37) of the application Preferences.

Memory Overcommitment

If you have several virtual machines running at a time, and you are trying to start one more virtual machine, you can come across the memory over commit. The application will inform you with the corresponding message. This means that all your running virtual machines require more memory that is configured in [the Memory tab](#) (p. 37) of the application Preferences. If you start one more virtual machine, this may significantly slow down all your virtual machines. To solve this problem, you can:

- stop one or several of your running virtual machines, or
- edit your virtual machines' configurations to make them consume less memory, or
- edit the application memory preferences to allocate more memory to your virtual machines.

Problems With Antivirus Software

Because of the close integration with the operating system of the client computer, some actions performed by Parallels Management Console may be detected as malicious by the antivirus software.

However, such actions are necessary to ensure the proper functioning of Parallels Management Console. That is why you should prevent the antivirus software from blocking them. If you do not want the alerts to appear in future, perform a full system scan using the antivirus software and add these processes to the list of trusted ones if no viruses are detected. To find out how to do it, refer to your antivirus software Help.

Note: The names of Parallels Management Console processes usually start with `prl` or `parallels`.

Upgrading or Installing Parallels Tools in Text Mode in a Linux Guest OS

If the X Server fails to start in Linux virtual machines, you need to install Parallels Tools in text mode to fix the problem.

- 1 Start the virtual machine.
- 2 When you see a message about X Server that failed to start, switch to another virtual console using Ctrl+Alt+F1 and enter your login details.
- 3 Choose **Install Parallels Tools** from the **Virtual Machine** menu to connect the Parallels Tools ISO image to your virtual machine.

Note: If the **Install Parallels Tools** option is grayed out, make sure that Parallels Tools can be installed in your guest operating system. To see the list of guest OSs supported by Parallels Tools, see **Supported Operating Systems** (p. 63).

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

- 4 In the virtual machine console, type the following command to gain the `root` privileges:

```
su
```

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

```
mount | grep iso9660
```

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

If this command returns anything like

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

skip the next step and proceed to the following one.

If this command returns anything like

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

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

```
umount /dev/cdrom
```

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

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

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

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

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

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

```
./install
```

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

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

For general information about installing Parallels Tools in Linux, refer to **Installing Parallels Tools in a Linux Guest OS** (p. 65).

Install the GCC Package and Kernel Sources in Linux

When installing or upgrading Parallels Tools in a Linux virtual machine, you may need to install the `gcc` package and kernel sources in your Linux guest OS. Kernel sources can be either downloaded from the Internet or installed from Linux distribution disks.

To install the `gcc` package and kernel sources in the RHEL/Fedora/CentOS Linux distribution, enter the following command in a terminal:

```
yum install gcc kernel-devel  
make
```

To install the `gcc` package and kernel sources in the Debian/Ubuntu Linux distribution, enter the following command in a terminal:

```
apt-get install gcc make linux-headers-$(uname -r)
```

For information on how to install the `gcc` package and kernel sources in other Linux distributions, refer to the documentation for these distributions.

If you still experience any problems, try to find a solution in [Parallels Knowledge Base](http://kb.parallels.com/) (<http://kb.parallels.com/>) or refer to the [Parallels support team](http://www.parallels.com/en/support/desktop/) <http://www.parallels.com/en/support/desktop/>.

Glossary

This glossary defines terms and spells out abbreviations used in Parallels Management Console User's Guide. References to terms defined elsewhere in the glossary appear in *italics*.

Administrator. A user with server administration privileges.

Bridged networking. Virtual machine network connection mode that enables the virtual machine to appear as any other computer on the network, with its own IP address and network name.

Client computer. A computer where *Parallels Management Console* is installed.

Client operating system (client OS). An operating system of a remote client computer where *Parallels Management Console* is installed.

Configuration file. See *PVS file*. Configuration file specifies virtual machine's devices and resources. It is created automatically when you create a new virtual machine.

Expanding format. A virtual hard disk format. An expanding virtual hard disk image file resides on your host computer and is small initially. Its size grows as you add applications and data to the virtual hard disk in the *guest OS*.

Guest operating system (guest OS). Operating system that runs under the virtual machine control.

HDD file. A virtual hard disk file used by the virtual machine.

Host computer. A physical server where Parallels Server Bare Metal or Parallels Server for Mac is installed. This computer hosts virtual machines files.

Host-only networking. Virtual machine network connection mode that creates a private network between the host computer and its virtual machines, which makes the virtual machine available from the host computer only.

Localhost. Physical computer where both Parallels Server and Parallels Management Console, that you use to manage virtual machines, are installed.

Parallels Management Console. Client application that provides graphical user interface for managing Parallels Server Bare Metal or Parallels Server for Mac, their virtual machines, preferences, and settings.

Parallels Physical Server. A physical server where Parallels Server Bare Metal or Parallels Server for Mac is installed. This computer hosts virtual machines files.

Plain format. A virtual hard disk format. A plain virtual hard disk image file resides on your host computer and has a fixed size that cannot be changed.

Preboot Execution Environment (PXE). An environment to boot computers using a network interface independently of available data storage devices (like hard disks) or installed operating systems.

PVS file. A virtual machine *configuration file* that contains information about the virtual machine resources, devices and other settings.

Virtual hard disk. A file or a group of files that emulates virtual machine's hard disk.

Virtual Machine. A virtualized PC environment in which an operating system can be installed and run just like in a physical computer.

Virtual machine files. Files stored in the virtual machine folder. Virtual machine has at least two files: *configuration file* and *virtual hard disk* file.

Virtual machine template. A virtual machine that can be cloned to multiple virtual machines that will have the same configuration that the virtual machine template had.

VM. See *Virtual Machine*.

Index

A

- About Parallels Management Console - 7
- About This Guide - 8
- Activating a Parallels Server - 27
- Adding a Virtual Network - 45
- Adding an Existing Virtual Machine - 72
- Adding and Removing Devices - 127
- Advanced Settings - 99
- Assigning USB Devices to Virtual Machines - 38

B

- Backing Up a Virtual Machine - 151
- Boot Order Settings - 103

C

- Capture and Release the Keyboard and Mouse - 78
- CD/DVD-ROM Settings - 108
- Change Configuration at Runtime - 81
- Changing the View Mode - 79
- Choosing Installation Mode - 48
- Cloning a Virtual Machine - 133
- Configuring Backup Options - 35
- Configuring Bridged Network Settings - 44
- Configuring Host-Only Network Settings - 42
- Configuring Login Settings - 31
- Configuring Participation in the Parallels Customer Program - 40
- Configuring Server Settings - 30
- Configuring Virtual Machines - 86
- Connecting to a Registered Parallels Server - 29
- Create a New Virtual Machine - 47
- Creating a Virtual Machine Template - 139
- Creating Virtual Machines in Custom Mode - 55
- Creating Virtual Machines in Express Mode - 49

- Creating Virtual Machines in Typical Mode - 53
- Customizing Toolbar - 18

D

- Defining Host-Only Network Advanced Settings - 43
- Defining Security Settings - 33
- Deleting and Removing a Virtual Machine - 135
- Deploying a Virtual Machine Template - 141
- Disconnecting From a Parallels Server - 45
- Documentation Conventions - 9

E

- Editing Virtual Machine Configuration - 87
- Exploring Parallels Management Console Interface - 12

F

- Feedback - 11
- Floppy Disk Settings - 107
- Full Screen Settings - 98

G

- General Preferences - 21
- General Settings - 88
- Generic SCSI Device Settings - 126
- Getting a Permanent Activation Key - 28
- Getting a Trial Activation Key - 28
- Getting Help - 10
- Getting Started With Parallels Management Console - 12
- Getting Technical Support - 158
- Glossary - 165
- Guest Operating System Requirements - 154

H

- Hard Disk Settings - 110
- Hardware - 101
- Help

- getting help - 158
- getting technical support - 158
- How to Run Parallels Compressor - 156

I

- Initializing the Newly Added Disk - 130
- Install the GCC Package and Kernel Sources in Linux - 164
- Installing a Guest Operating System - 60
- Installing Parallels Tools in a Linux Guest OS - 65
- Installing Parallels Tools in a Mac OS X Guest OS - 68
- Installing Parallels Tools in a Windows Guest OS - 64
- Introduction - 6

K

- Keyboard Preferences - 23
- Keyboard Shortcuts in a Virtual Machine - 78

M

- Making Guest OS Screenshots - 85
- Making Snapshots - 145
- Managing Parallels Servers - 25
- Managing Snapshots - 146
- Managing Virtual Machine Templates - 138
- Managing Virtual Machines - 47, 132
- Managing Virtual Machines From the Tray - 143
- Managing Virtual Networks - 41
- Memory Usage Problems - 161
- Migrating a Virtual Machine - 149

N

- Network
 - kinds of networking - 165
- Network Adapter Settings - 115

O

- Optimization Settings - 93
- Options - 90
- Organization of This Guide - 9

P

- Parallel Port Settings - 118
- Parallels Compressor Working Principles - 155

- Parallels Management Console Overview - 14
- Parallels Management Console Tray Icon - 20
- Performing Main Operations on a Virtual Machine - 74
- Permissions Settings - 94
- Preferences - 20
- Primary operating system - 165
- Problem - 158
- Problems With Antivirus Software - 162
- Proxy Server Preferences - 24

R

- Registering a New Parallels Server - 25
- Remote Display Settings - 95
- Removing
 - server - 45
- Removing a Parallels Server - 46
- Removing Parallels Tools - 71
- Reporting a Problem to the Parallels Support Team - 159
- Resource Settings - 101
- Restoring and Removing Virtual Machine Backups - 152

S

- Serial Port Settings - 120
- Server
 - disconnecting - 45
- Setting General Options - 30
- Setting Up a Shared Folder - 84
- Setting Up Parallels Management Console Preferences - 20
- Settings Memory Options - 37
- Shared Folders Settings - 96
- Sound Settings - 123
- Starting a Virtual Machine and Shutting It Down - 75
- Starting Parallels Management Console - 12
- Startup and Shutdown Settings - 91
- Status Bar - 18
- Stopping and Resetting a Virtual Machine - 77
- Support for Virtual and Real Disks - 114
- Supported Operating Systems - 63
- Suspending and Pausing a Virtual Machine - 76

T

- Toolbar - 16
- Troubleshooting - 158
- Troubleshooting and Limitations - 158

U

- Updating Parallels Tools - 69
- Upgrading or Installing Parallels Tools in Text Mode in a Linux Guest OS - 163
- USB Settings - 125
- Use a Keyboard and Mouse - 78
- Using Parallels Compressor - 153
- Using Parallels Tools - 62
- Using Shared Folders - 83

V

- Video Settings - 105
- Virtual Machine - 165
 - problems with starting - 158

W

- Welcome Window - 13
- Working in a Virtual Machine - 74
- Working With Snapshots - 144
- Working With Virtual Machine Backups - 150