



# Parallels<sup>®</sup> Workstation 6.0

User's Guide

Parallels Holdings, Ltd.  
c/o Parallels International GmbH.  
Parallels International GmbH  
Vordergasse 49  
CH8200 Schaffhausen  
Switzerland  
Tel: + 41 526320 411  
Fax: + 41 52672 2010  
[www.parallels.com](http://www.parallels.com)

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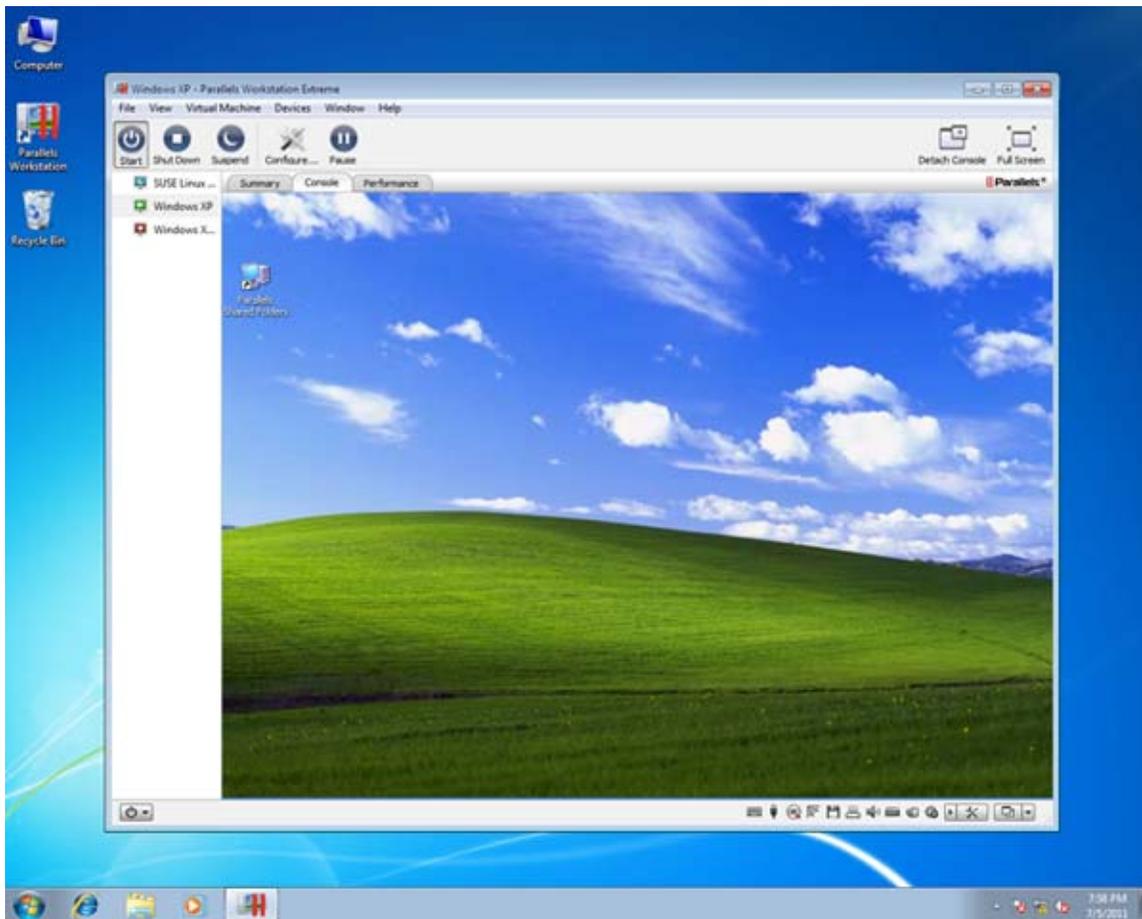
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# CHAPTER 1

## Welcome to Parallels Workstation

Congratulations on purchasing Parallels Workstation. Now you can create virtual machines, install different operating systems, and use them simultaneously on your computer.

Use this guide to quickly set up and start using Parallels Workstation.



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## What You Can Do

With Parallels Workstation, you can:

- Install and use 32-bit and 64-bit guest operating systems on your host computer
- Easily share files, devices, and other resources between operating systems
- Run host OS and Windows guest OS programs seamlessly on one desktop
- Copy and paste text and drag and drop objects between host OS and guest OS programs
- Transfer the operating system and all your data from a remote Windows or Linux computer and use them on your host computer
- If you have Parallels Workstation Extreme and your computer supports Intel VT-d, assign physical PCI Express (PCIe) devices directly to virtual machines
- And much more

## CHAPTER 2

# Install and Configure Parallels Workstation

Follow the instructions in this chapter to install and configure Parallels Workstation.

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## What You Need

To install and set up Parallels Workstation 6, your computer must meet the hardware and software requirements listed below:

### Hardware Requirements

- Minimum 1.66 GHz x86 (32-bit) or x64 (64-bit) CPU.

To run 64-bit guest operating systems, you need a processor that supports the Intel VT-x hardware virtualization technology.

To assign PCI Express (PCIe) devices directly to your virtual machines, you need a processor that supports the Intel VT-d technology.

The support for Intel VT-x and VT-d may be disabled by default in some computers that actually support them. To enable these features, in most cases enter BIOS, go to System Settings > Virtualization Support, and select the **Enable Intel Virtualization** and **Enable Intel VT for Direct I/O** check boxes.

For detailed information on enabling the Intel VT-x and VT-d features in BIOS, refer to the OEM supplier's documentation.

- 2 GB RAM minimum. 4 GB RAM or more is recommended.

The recommended amount of memory assigned to a virtual machine is 1-2 GB. You can assign up to 8 GB of RAM if Parallels Workstation is installed in the 32-bit host OS and up to 64 GB if in the 64-bit.

- 350 MB of hard disk space for the Parallels Workstation installation.
- About 30 GB of hard disk space for each virtual machine.

To store a virtual machine's temporary files, you need to have twice as much free disk space as the overall amount of this virtual machine's memory: (memory + video memory) +150 MB.

- DVD-ROM drive.
- Ethernet network adapter.

If you want to use a directly connected PCIe video card in your virtual machine, you need:

- Two PCIe video cards. One video card for your host computer and the other – for the virtual machine.

Parallels Workstation officially supports the NVIDIA Quadro® FX 1800, 3800, 4800, 5800, Q4000, Q5000, (Q2000? and Q6000?) video cards for virtual machines. For these video cards, use the latest drivers (starting from 182.65 for Windows and 180.51 for Linux ?) available on the manufacturer's website.

Direct assignment of PCIe video cards requires an NVIDIA Video BIOS version of 62.00.62.00.01 or later. If you have a supported video card which does not have this BIOS level, please contact your OEM supplier.

## Software Requirements

Parallels Workstation 6 officially supports the following host operating systems:

Host Operating Systems	32-bit	64-bit
Windows 7	✓	✓
Windows Vista SP1, SP2	✓	✓
Windows XP Pro SP3	✓	
Windows XP Home SP3	✓	
Windows XP Pro SP2		✓
Debian 6.0	✓	✓
Fedora 14, 15	✓	✓
RHEL 6, 6.1	✓	✓
SLED 11 SP1	✓	✓
Ubuntu 10.10, 11.04	✓	✓

Parallels Workstation 6 Extreme officially supports the following host operating systems:

Host Operating Systems	32-bit	64-bit
Windows 7		✓
Windows Vista SP2		✓
Windows XP SP2		✓
RHEL 6		✓

In Linux operating systems, make sure the following software packages are installed:

- kernel development packages

**Note:** In RedHat-based systems, such packages are called `kernel-<kernel_version>-devel`, in Debian-based systems - `linux-headers-<kernel_version>`.

- gcc of the version with which the host kernel was compiled

- 32-bit version of glibc 2.3.6 or later
- make or gmake
- the 32-bit version of the alsa-plugins-pulseaudio package in the Fedora 10 (64-bit) operating system

For 64-bit systems, it is also desired to have 32-bit alsa-lib installed in RedHat-based systems or lib32asound in Debian-based systems.

If you do not have any of the aforementioned packages installed on your Linux-based physical computer, the Parallels Workstation installer tries to install it automatically.

## Install Parallels Workstation

Read this section to learn how to install Parallels Workstation in Windows and Linux operating systems.

### Install Parallels Workstation in Windows

You can be up and running with Parallels Workstation in a few easy steps.

**Note:** To install Parallels Workstation in Windows, you must have administrator's rights.

To install Parallels Workstation:

- 1** Locate the Parallels Workstation setup file (`ParallelsWorkstation-parallels-en_US-6.0.xxxxxx.xxxxxx.exe`) and double-click it. This file is available either:
  - on the Parallels Workstation installation disc included in the boxed version of Parallels Workstation; or
  - you can download it from the Parallels website.
- 2** If your computer is connected to the Internet, Parallels Workstation checks for available updates. If an update is available, click "**Download and Install New Version**" to get the latest version of Parallels Workstation.
- 3** Follow the onscreen instructions to install Parallels Workstation.

**Note:** When you're presented with information about the Parallels Customer Experience program, you can choose whether you want to participate. If you choose not to, you can join the program later using [the Feedback pane](#) (p. 26) of Parallels Workstation Preferences.

## Install Parallels Workstation in Linux

Before installing Parallels Workstation on a Linux computer, make sure that the packages and libraries listed in the [system requirements](#) (p. 10) for Linux host operating systems are installed in your system.

**Note:** You must have the `root` privileges to be able to install Parallels Workstation in a Linux operating system.

To install Parallels Workstation in Linux, you need a RUN installation package. It is available on the Parallels Workstation installation disc included in the boxed version of Parallels Workstation or can be downloaded from the Parallels website.

To install Parallels Workstation in Linux:

- 1 Disable SELinux in the host operating system (you can enable it again after the installation is complete). For the detailed information on how to do this, please refer to your Linux distribution documentation and/or support resources.
- 2 Locate the `.run` installation package in a terminal and make sure it is executable. To do this, use the following command:

```
# chmod +x parallels-workstation-parallels-en_US-6.0.xxxxx.xxxxxx.run
```

where `parallels-workstation-parallels-en_US-6.0.xxxxx.xxxxxx.run` is the name of your `.run` installation package.

- 3 Start the Parallels Workstation installation by executing the following command:

```
# ./parallels-workstation-parallels-en_US-6.0.xxxxx.xxxxxx.run
```

- 4 Parallels Workstation connects to the Parallels update server and checks for available updates. If there is a newer version of Parallels Workstation available, you will be offered to install the most recent version of Parallels Workstation. If you do not want to install the most recent version, you can choose to install the version from the installation media.

**Note:** If the host computer is accessing the Internet only via a proxy server, configure the proxy server settings to allow Parallels Workstation to check for available updates during the installation process. For more information on how to configure the proxy server settings, refer to the corresponding subsection below.

If there are no updates available or your host computer is not connected to the Internet, Parallels Workstation will be installed from the current installation source.

- 5 Parallels Workstation Installer starts. In the **Welcome** screen, click **Next**.
- 6 In the **License Agreement** screen, read the license agreement scrolling it by pressing `spacebar` on your keyboard. To accept the agreement, click the **Accept** button.
- 7 In the **CEP Agreement** screen, you can choose to participate in the program that will help us improve Parallels Workstation according to your experience. Read carefully the information about the program and click the **Agree** button if you want to participate in it. Otherwise click **Disagree**.

**8** When the installation is complete, click **Exit**.

**9** To exit the terminal, enter:

```
exit
```

### Configure Proxy Server Settings

If the host computer is accessing the Internet only via a proxy server, you should configure the proxy server settings to allow Parallels Workstation to check for available updates during the installation process. To this effect, start the Parallels Workstation installation as follows:

**1** Execute the following command to start the installation:

```
sudo ./parallels-workstation-parallels-en_US-6.0.xxxxx.xxxxxx.run -- -p  
proxy_server_host_name:port
```

or

```
sudo ./parallels-workstation-parallels-en_US-6.0.xxxxx.xxxxxx.run -- -p ip_address:port
```

where *proxy\_server\_host\_name* stands for the proxy server host name, *ip\_address* stands for the proxy server IP address, and *port* stands for the proxy server port.

**2** Continue the installation as it was described above.

If the proxy-server requires authentication, you will be prompted to enter your name and password in one of the steps.

# Activate and Register Parallels Workstation

## Activate Parallels Workstation

Once the installation is finished, you must activate Parallels Workstation to use all of its features.

- 1 Open Parallels Workstation.
- 2 Click **Activate Product**.
- 3 Enter your Product Activation Key.

**Note:** If you bypass the activation dialog, you can activate Parallels Workstation later by choosing **Help > Activate product** and entering your Product Activation Key.

## If You Don't Have A Product Activation Key

If you don't have a key already, you can get one by choosing **Help > Activate Product**. Then, to get a free trial Product Activation Key so you can try out Parallels Workstation for a limited time, click **obtain a free trial activation key**. Or to purchase a key that lets you use Parallels Workstation permanently, click **purchase a permanent activation key**.

## Registering Parallels Workstation

During installation, you're presented with the opportunity to register Parallels Workstation. Registering allows you to:

- Download and install the latest Parallels Workstation updates.
- Create a backup copy of the product key on the Parallels web server and restore it at any time.
- Easily contact the Parallels support team, using the support code.
- Stay informed about Parallels news and announcements.

**Note:** If you choose not to register Parallels Workstation during installation, you can register anytime by choosing **Help > Register product** when the program is open.

# Configure Parallels Workstation Preferences

Common preferences for the Parallels Workstation application and its virtual machines can be configured using the **Preferences** dialog. You can open this dialog by choosing **Preferences** from the **File** menu.

The preferences on the **Memory** and **Network** tabs affect all the users that work on the computer and all the virtual machines. The other preferences may be different for each user.

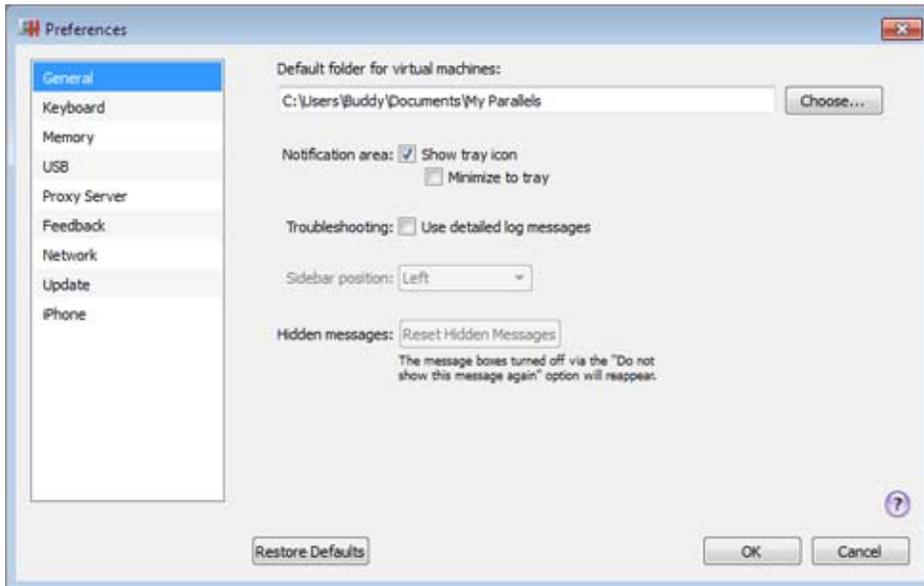
### General

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

- change the default location for storing virtual machines;
- configure Parallels Workstation to become available in tray when you minimize its window;
- choose to create a more detailed log file;
- change the sidebar position; and
- restore hidden messages.

To edit these settings:

- 1 Open the **File** menu and click **Preferences**.
- 2 In the **Preferences** dialog, select **General** in the sidebar.



## Change Default Folder for Virtual Machines

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

## Manage Parallels Workstation from the tray

If you want to be able to manage Parallels Workstation and the running or paused virtual machines from the tray, select the **Show tray icon** option. For more details, refer to **Parallels Workstation Tray Icon** (p. 45) and **Managing Virtual Machines From the Tray** (p. 162).

If you want Parallels Workstation to become available from the tray when minimized, select **Minimize to tray**.

**Note:** Minimizing main window to tray does not quit Parallels Workstation.

## Troubleshooting

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

## Change the sidebar position

In the **Sidebar position** list, you can choose the sidebar location. It can be located in the right or in the left part of the main window.

## Reset Hidden Messages

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

## Restoring Default Settings

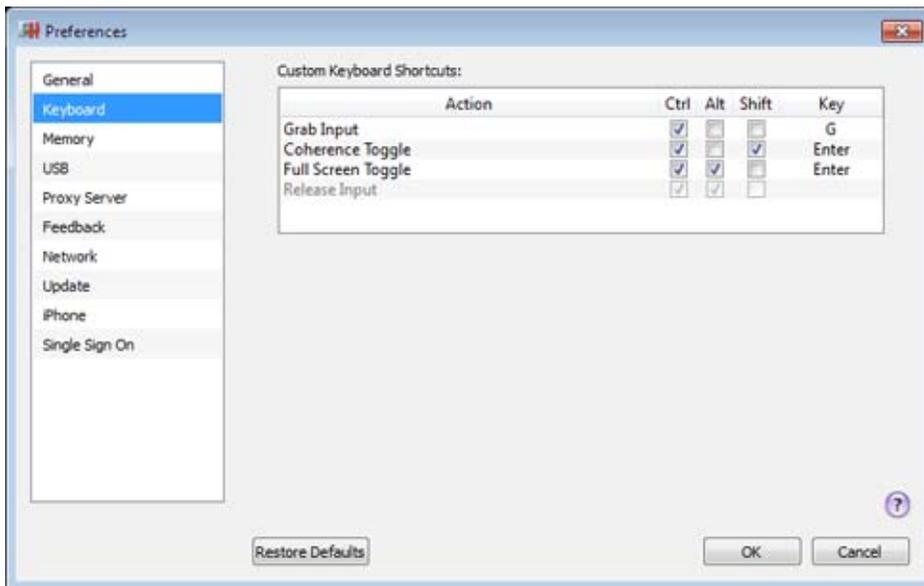
The **Restore Defaults** button allows you to restore the default settings for all options available in this pane.

## Keyboard

In the **Keyboard** pane, you can change keyboard shortcuts for some commands that allow you to work with Parallels Workstation in a more convenient way.

To edit these settings:

- 1 Open the **File** menu and click **Preferences**.
- 2 In the **Preferences** dialog, select **Keyboard** in the sidebar.



- Grab input from the keyboard and mouse - the default keyboard shortcut is `Ctrl + G`.
- Switch a virtual machine to the Coherence view mode and back - the default keyboard shortcut is `Ctrl+Shift+Enter`.
- Switch a virtual machine to the Full Screen view mode and back - the default keyboard shortcut is `Ctrl+Alt+Enter`.
- Return the keyboard and mouse input back to the host operating system - the default keyboard shortcut is `Ctrl + Alt`.

To change a keyboard shortcut, change the modifier keys selected. If you want to add an ordinary key, double-click the **Key** field and press the necessary key on the keyboard.

**Note:** If [Parallels Tools are installed](#) (p. 60), the keyboard and mouse input is released automatically.

### Restoring Default Settings

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

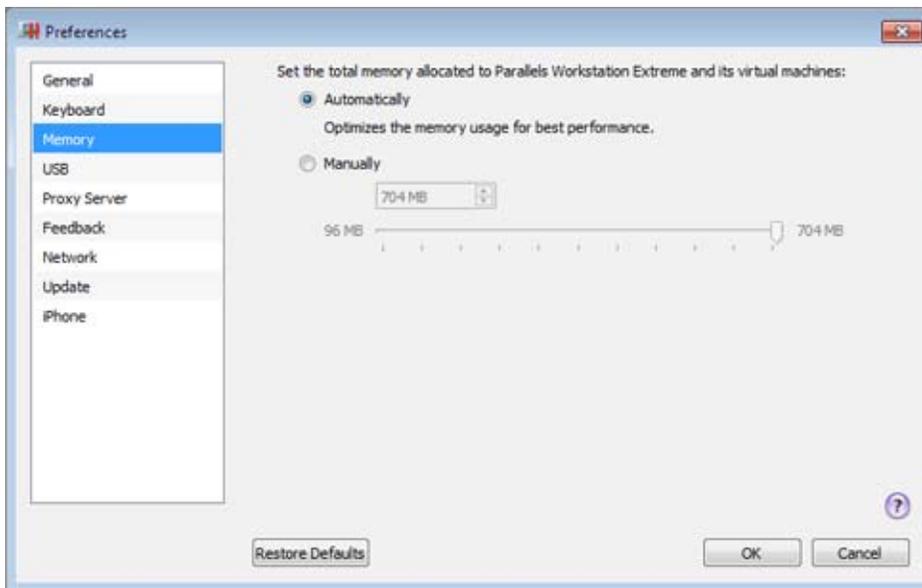
## Memory

In the **Memory** pane, you can set the maximum amount of memory (RAM) that will be reserved for all virtual machines running on the host computer.

**Note:** You must have the `root` privileges to change the memory settings in Parallels Workstation for Linux.

To edit these settings:

- 1 Open the **File** menu and click **Preferences**.
- 2 In the **Preferences** dialog, select **Memory** in the sidebar.



The **Automatically** option (selected by default) means that the total amount of memory reserved for all running virtual machines is calculated automatically.

To set this amount manually, select **Manually** and specify the needed value.

The allocated memory is shared among all running virtual machines. You can set the amount of RAM for a particular virtual machine on [the General tab](#) (p. 104) of the **Virtual Machine Configuration** dialog.

### Restoring Default Settings

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

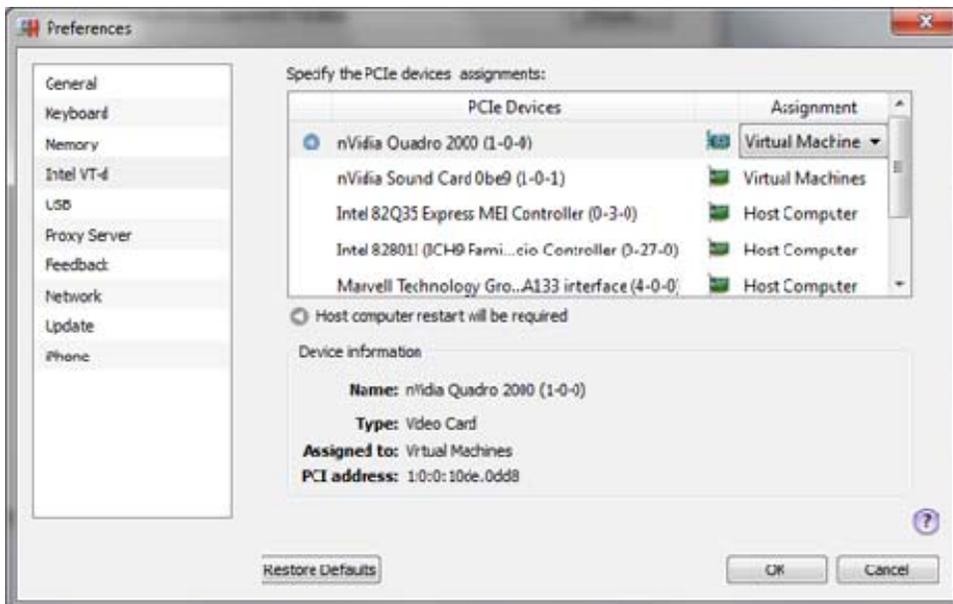
## Intel VT-d

In the **Intel VT-d** pane, you can assign some of the host computer's PCI Express (PCIe) video and network adapters to your virtual machines.

**Note:** This pane appears in Parallels Workstation Extreme Preferences only if your host computer supports the Intel VT-d technology and the Intel VT-d support is enabled in BIOS.

To edit these settings:

- 1 Open the **File** menu and click **Preferences**.
- 2 In the **Preferences** dialog, select **Intel VT-d** in the sidebar.



The **PCI Devices** column of the **Specify the PCI devices assignments** table lists all PCIe video and network adapters available on the host computer. In the **Assignments** column, you can see these PCIe devices assignments. There are two types of assignments:

- **Host Computer.** If you select this assignment, the device will be available to the host computer only.
- **Virtual Machines.** If you select this assignment and click **OK**, Parallels Workstation will automatically install an appropriate pass-through driver in the host operating system. This driver will make the PCIe device invisible to the host operating system. This allows you to assign the device directly to one of your virtual machines. To use the device in a virtual machine, you should add it to the virtual machine configuration.

To change the device assignment, select it in the **PCI Devices** list, double-click the corresponding field in the **Assignment** column and select the necessary assignment. Changing the assignment of devices marked by  will require the host computer restart.

**Note:** If you have only one PCIe video adapter, its name will be grayed out in the **PCI Devices** list and you will not be able to allocate it to your virtual machines.

## Restoring Default Settings

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

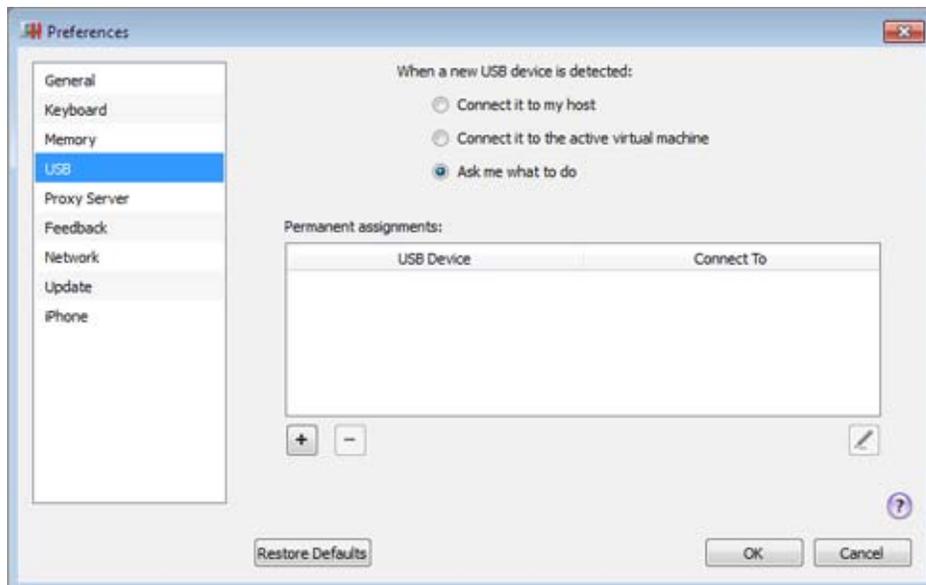
## USB

In the **USB** pane, you can specify how to connect USB devices that are plugged into the host computer.

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

To edit these settings:

- 1 Open the **File** menu and click **Preferences**.
- 2 In the **Preferences** dialog, select **USB** in the sidebar.



Choose a general action to perform when a new USB device is plugged into the host computer:

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

## Permanent Assignments

In the **Permanent assignments** list, you can set certain USB devices to connect to certain virtual machines or to the host computer automatically.

To add a new assignment:

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

After that, the specified USB device will be automatically connected to the specified destination each time you plug it in to the host computer.

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

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

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

For more information about using USB devices in a virtual machine, refer to **Using USB Devices in a Virtual Machine**.

## Restoring Default Settings

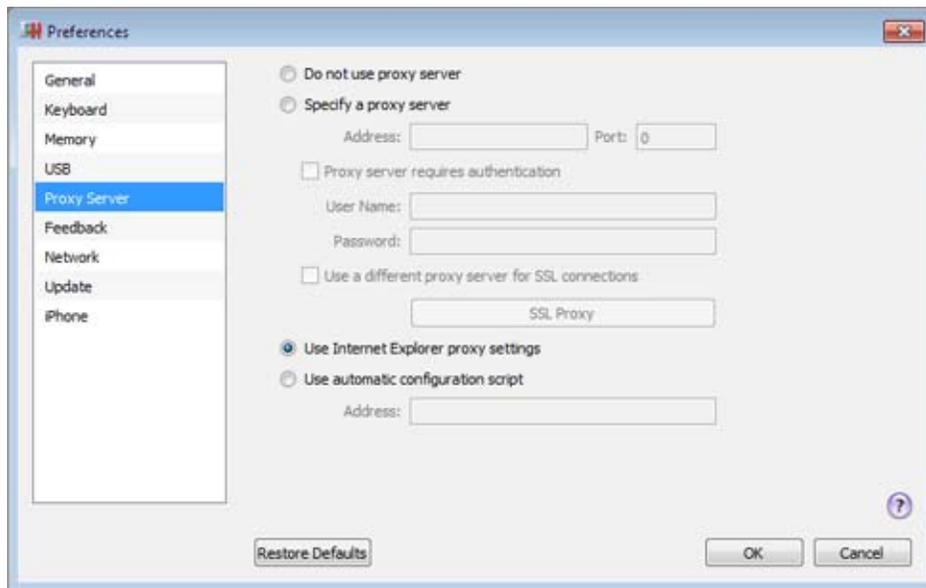
The **Restore Defaults** button allows you to restore the default settings for all options available in this pane.

## Proxy Server

In the **Proxy Server** pane, you can configure a number of proxy server-related settings.

To edit these settings:

- 1 Open the **File** menu and click **Preferences**.
- 2 In the **Preferences** dialog, select **Proxy Server** in the sidebar.



If you don't want Parallels Workstation to use a proxy server for network connections, select **Do not use proxy server**.

If you want to use a proxy server, you can choose one of the following:

- You can choose the **Specify a proxy server** option and provide the proxy server settings manually.

Specify the address and port of the proxy server. If it requires authentication, select **Proxy server requires authentication** and type the corresponding credentials in the **User Name** and **Password** fields.

If you want to use a SSL proxy server for your secure connections, choose **Use a different proxy server for SSL connections**. Click **SSL Proxy** and provide the SSL proxy server address and port in the **SSL Proxy** window. In this window, you can also provide the credentials for accessing this server if needed. If you clear **Use a different proxy server for SSL connections**, the first proxy server specified in this pane will be used for all connections.

- In Parallels Workstation for Windows, you can choose the **Use Internet Explorer proxy settings** option to import the proxy server setting from the connections settings of Internet Explorer.
- In Parallels Workstation for Windows, you can also choose **Use automatic configuration script** and provide the path to this script in the **Address** field to automatically configure the proxy server settings.

## Restoring Default Settings

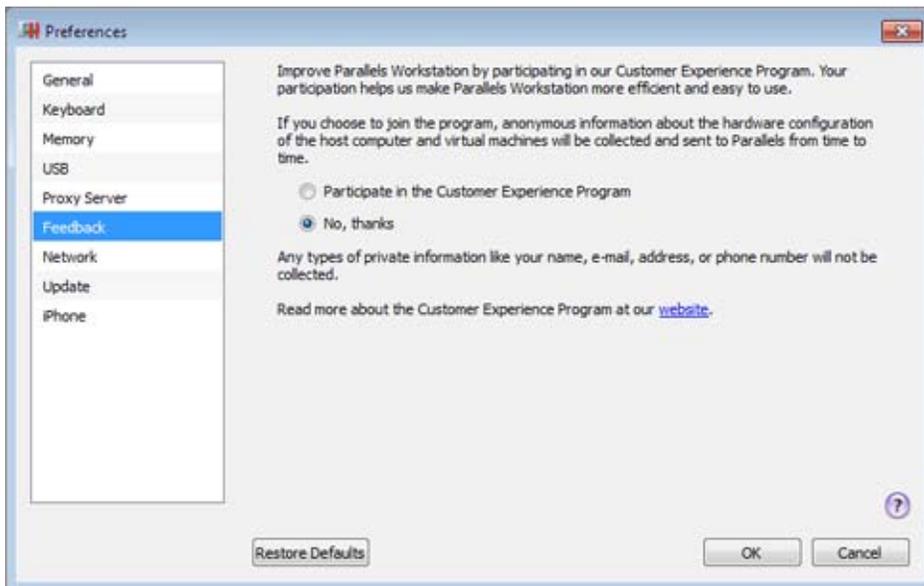
The **Restore Defaults** button allows you to restore the default settings for all options available in this pane.

## Feedback

In the **Feedback** pane, you can join the Parallels Customer Experience Program if you didn't do that during the Parallels Workstation installation or cancel participation.

To edit these settings:

- 1 Open the **File** menu and click **Preferences**.
- 2 In the **Preferences** dialog, select **Feedback** in the sidebar.



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

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

- hardware configuration of the host computer;
- software configuration of the host computer and virtual machines (the names and versions of the operating systems and programs installed); and
- configuration files of your virtual machines.

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

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

### **Restoring Default Settings**

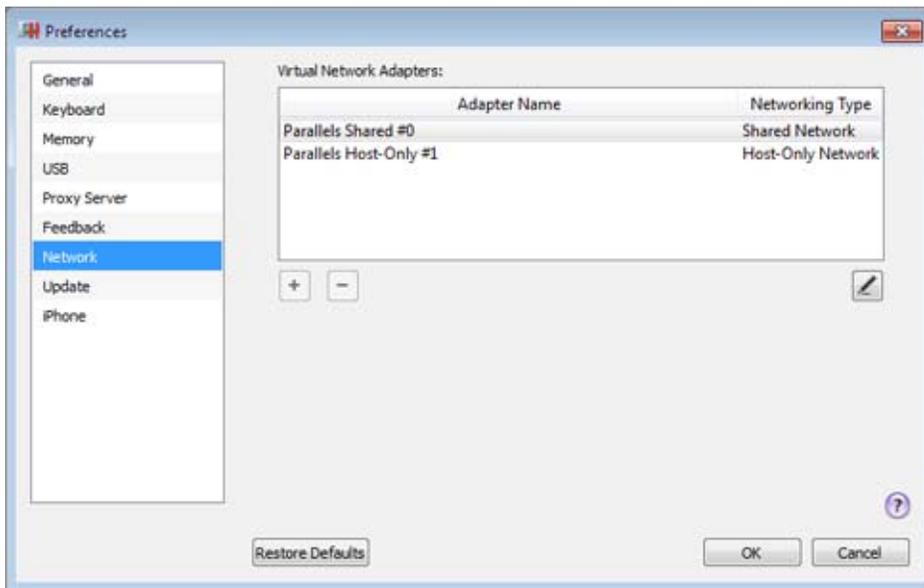
The **Restore Defaults** button allows you to restore the default settings for all options available in this pane.

## Network

In the **Network** pane, you can configure network-related settings for Parallels Workstation and your virtual machines. [expand]

To edit these settings:

- 1 Open the **File** menu and click **Preferences**.
- 2 In the **Preferences** dialog, select **Network** in the sidebar.



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

To edit the settings of the available network adapter, double-click it and make the necessary changes.

To remove a virtual network adapter, select it in the list and click the **Remove** button .

To add a virtual network adapter, click the **Add** button  and configure the necessary settings.

### Restoring Default Settings

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

## Shared Network Settings

To make changes the shared networking settings, double-click the Shared network adapter name in the **Network** pane of Parallels Workstation Preferences.

In the displayed window, you can make the necessary changes to the settings of the Parallels DHCP servers for IPv4 and IPv6. These servers, enabled by default, automatically assign IP addresses to your virtual machines operating in the shared networking mode.

For more information about configuring shared networking, refer to **Share Network Settings Between the Host Computer and Virtual Machine**.

## Port Forwarding

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

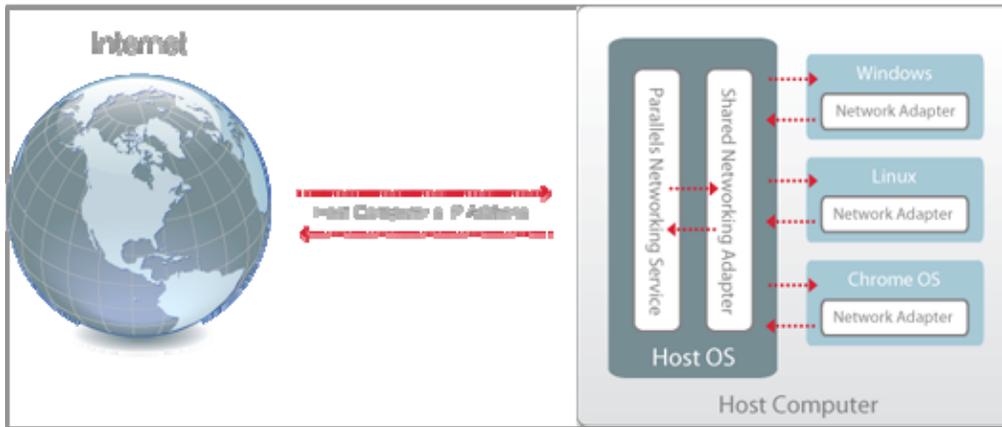
To add a port forwarding rule:

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



3 Click **OK** to add the rule.

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



To edit a rule, select it in the **Port forwarding rules** list, click the **Edit** button , modify the necessary settings, and click **OK** to apply them.

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

Click **OK** to save the changes, otherwise, click **Cancel**. To restore the default settings, click **Restore Defaults**.

## Host-Only Network Settings

To make changes to the host-only networking settings, double-click the Host-Only network adapter name in the **Network** pane of Parallels Workstation Preferences.

In the displayed window, you can make the necessary changes to the settings of the Parallels DHCP servers for IPv4 and IPv6. These servers, enabled by default, automatically assign IP addresses to the virtual machines operating in the host-only networking mode.

For more information on configuring the host-only networking settings, refer to **Use Host-Only Network Settings**.

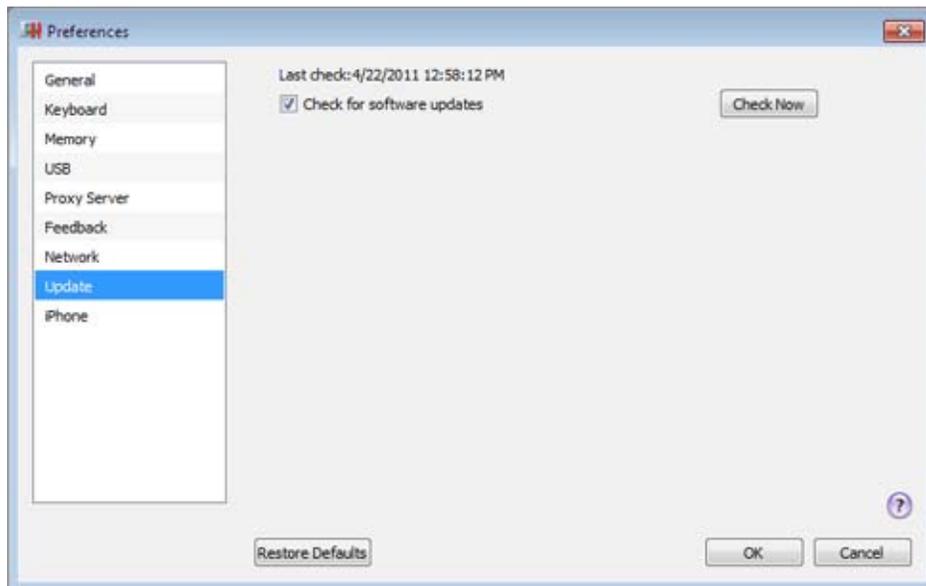
Click **OK** to save the changes, otherwise, click **Cancel**. To restore the default settings, click **Restore Defaults**.

## Update

In the **Update** pane, you can check for available updates at any time and disable automatic update checks.

To edit these settings:

- 1 Open the **File** menu and click **Preferences**.
- 2 In the **Preferences** dialog, select **Update** in the sidebar.



To check for updates, click **Check Now**.

The **Check for software updates** option (selected by default) makes Parallels Workstation automatically check for available updates once a week, provided that Parallels Workstation is launched and the host computer is connected to the Internet. If you want to disable automatic update checks, clear this option.

### Restoring Default Settings

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

### iPhone

In the **iPhone** pane, you can set up external connections to Parallels Workstation and its virtual machines from Parallels Mobile application installed on your iPad, iPhone, or iPod touch.

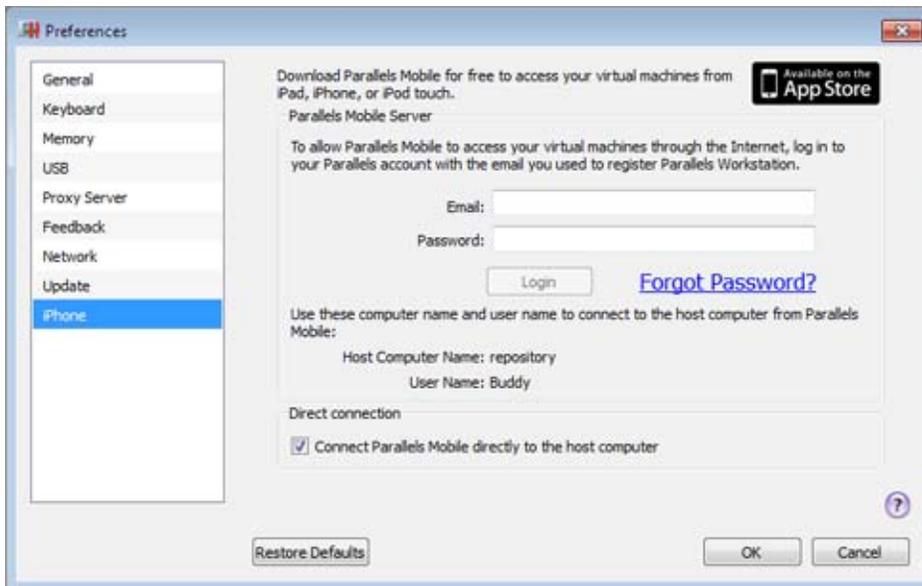
To edit these settings:

- 1 Open the **File** menu and click **Preferences**.
- 2 In the **Preferences** dialog, select **iPhone** in the sidebar.

Parallels Mobile lets you:[what about Linux vms?]

- access any virtual machine running in Parallels Workstation
- use any application in your virtual machine, from Internet Explorer to Outlook
- remotely start, stop and reset virtual machines
- stay connected via WiFi or 3G networks
- access your applications from anywhere over the Internet
- optimize for either speed or graphics performance.

You can download Parallels Mobile for free from the App Store.



## Download Parallels Mobile

You can download the Parallels Mobile application for free from the App Store:

- 1** In the **iPhone** pane of Parallels Workstation Preferences, click the black icon in the top right corner. The browser window opens and you can see the Parallels Mobile description.
- 2** Click **View In iTunes**. The iTunes window with Parallels Mobile opens.[?]
- 3** To download the application, click **Free App**.
- 4** Enter your Apple ID and password, click **Get** and the download starts. Parallels Mobile is downloaded to **iTunes > Libraries > Apps**. To install Parallels Mobile, you need to sync it with your iPad, iPhone, or iPod touch.

## Connect Parallels Mobile to Host Computer and Virtual Machines

There are two ways to connect Parallels Mobile to the host computer and virtual machines:

- through the Internet, using Parallels Mobile server, or
- directly, when the host computer and your iPad, iPhone, or iPod touch are within the same network

It is recommended to use the first mode, as it allows you to access the host computer from almost anywhere through the Internet or 3G networks.

### Connect through the Internet

To connect to your virtual machines from iPad, iPhone, or iPod touch through the Internet, do the following:

- 1** Make sure you have a Parallels account. This is the account you created when registering Parallels Workstation.
- 2** On the host computer, open **Parallels Workstation > Preferences > iPhone** and log in to your Parallels account using the email and password you used to register your copy of Parallels Workstation.
- 3** Install Parallels Mobile on your iPad, iPhone, or iPod touch.
- 4** On your iPad, iPhone, or iPod touch, open Parallels Mobile and also log in to your Parallels account.



You will see your host computer listed in the corresponding section.

- 5 Now you need to connect to the host computer. Tap it and enter your user name (this name can be found in the **Parallels Workstation > Preferences > iPhone** pane) and password. After that, you will see the list of your virtual machines and will be able to manage them.

### Direct connection

To connect to your virtual machines directly (if your Apple mobile device and the host computer are within the same network), do the following:

- 1 Install Parallels Mobile on your iPad, iPhone, or iPod touch.
- 2 On your iPad, iPhone, or iPod touch, open **Settings**, find the Parallels icon (in the **Apps** section), and tap it. In the **General** section, slide the **Direct Connection** switch to the ON position, and close **Settings**.
- 3 On the host computer, open **Parallels Workstation > Preferences > iPhone** and select **Connect Parallels Mobile directly to the host computer**.
- 4 Use the IP address (specified under this option), your Mac user name, and password to connect to your virtual machines from Parallels Mobile.[?]

For more detailed information about Parallels Mobile, please refer to Parallels Mobile Quick Start available here.

### Restoring Default Settings

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

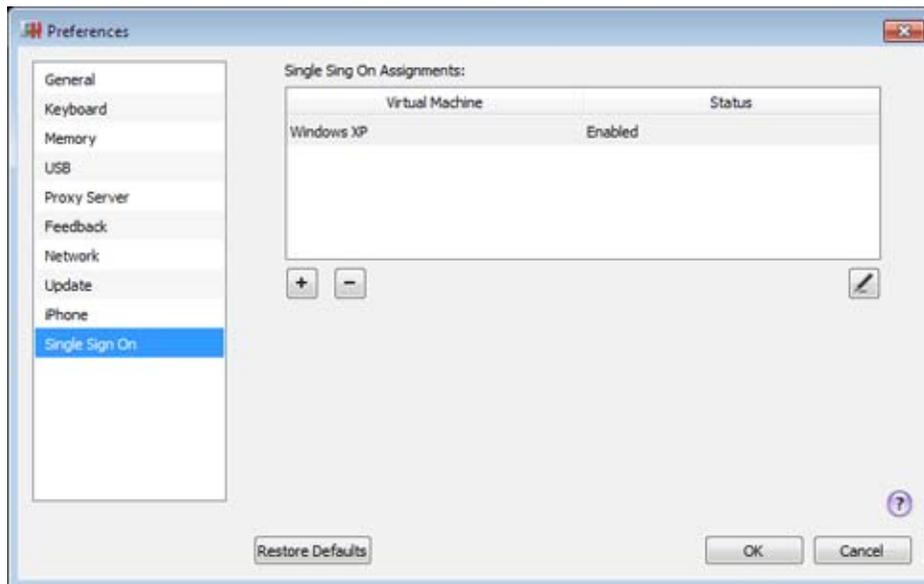
## Single Sign On

In the **Single Sign On** pane, you can configure single sign on settings for your Windows XP virtual machines. These settings allow you to:

- Enable automatic logon to Windows XP: you won't have to enter your user name and password every time you start the virtual machine - your user account will log in to Windows XP automatically.
- Configure the guest operating system to lock/unlock automatically when you lock/unlock the host operating system.

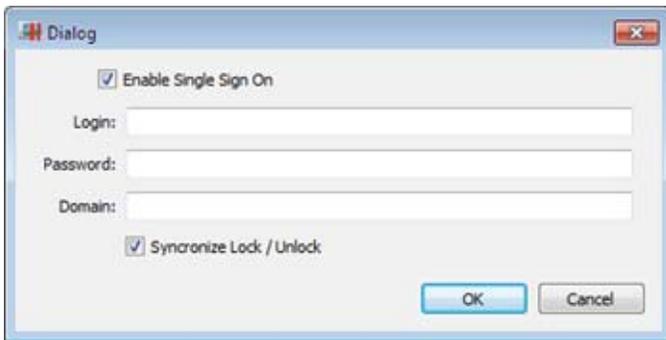
To edit these settings:

- 1 Open the **File** menu and click **Preferences**.
- 2 In the **Preferences** dialog, select **Single Sign On** in the sidebar.



To configure single sign on settings for a Windows XP virtual machine, create a single sign on assignment for it:

- 1 Click the **Add** button .
- 2 Double-click the virtual machine listed in the **Virtual Machine** column and choose the necessary Windows XP virtual machine from the menu. By default, single sign on settings are disabled.
- 3 To enable them, click the **Edit** button . The following window appears:



- To enable automatic logon, select **Enable Single Sign On** and specify your credentials.
  - To enable the automatic lock/unlock feature, select **Synchronize Lock/Unlock**.
- 4 When ready, click **OK**.

To delete a single sign on assignment for a Windows XP virtual machine, select it in the table and click the **Remove** button .

# Interface Basics

When you launch Parallels Workstation, the Parallels Workstation window opens. The Parallels Workstation window consists of several parts:

**Menus** - contain all the controls available for Parallels Workstation and its virtual machines. For detailed information, see [the Menus subsection](#) (p. 39).

**Toolbar** - comprises buttons that can be used to manage the virtual machine and its appearance. For detailed information, see [the Toolbar subsection](#) (p. 40).

**Sidebar** - contains the list of all virtual machines registered in Parallels Workstation. If you right-click a virtual machine name in the list, you can use a set of commands for managing the virtual machine from the virtual machine context menu.

**Virtual Machine window** - acts as the virtual machine display or shows the properties and main operations of the virtual machine you selected in the sidebar. It consists of three tabs:

- The **Summary** tab displays the main information about the virtual machine (its name, location, OS, state and description), the main operations you can perform on it, and the virtual machine configuration. This tab is always available.
- The **Console** tab is available when the virtual machine is running and acts as the virtual machine's display.
- The **Performance** tab shows the CPU and memory usage when the virtual machine is running.

**Status Bar** - displays the devices information when the virtual machine is running. For detailed information, see [the Status Bar subsection](#) (p. 43).



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# Menus

The Parallels Workstation menus contain all the controls available for Parallels Workstation and its virtual machines.

There are the following menus:

- The **File** menu allows you to:
  - [create a new virtual machine](#) (p. 46)
  - [add an existing virtual machine to Parallels Workstation](#) (p. 55)
  - [remove the virtual machine from the Parallels Workstation sidebar](#) (p. 163)
  - delete the virtual machine
  - [download Parallels Virtual Appliances](#) (p. 57)
  - [clone the virtual machine](#) (p. 155)
  - clone the virtual machine to a template
  - convert the virtual machine to a template
  - deploy the template to a virtual machine
  - convert the template to a virtual machine
  - quit Parallels Workstation
- The **View** menu includes commands for switching between different view modes: Full Screen, Coherence, and Window. You can also customize how you view the Parallels Workstation window, enable or disable automatic changes of the virtual machine screen resolution, and make screenshots of the guest OS window.
- The **Virtual Machine** menu allows you to:
  - manage the virtual machine
  - edit the virtual machine configuration
  - [install Parallels Tools](#) (p. 60)
  - [update Parallels Tools](#) (p. 68)
  - launch Parallels Compressor
- The **Devices** menu is available only when the virtual machine is running. It allows you to configure certain devices and shared folders at runtime.
- The **Window** menu allows you to choose the application window you want to appear on top. This menu simplifies the navigation between the virtual machines.
- The **Applications** menu enables you to manage certain elements of the Windows desktop such as the Start menu, the Windows taskbar and recycle bin.

**Note:** The **Applications** menu is available only for Windows XP or Windows Vista guest OSs.

- The **Help** menu allows you to:
  - open Parallels Workstation Help
  - [activate Parallels Workstation](#) (p. 15)
  - check for updates
  - [report problems](#) (p. 166)

It also displays the **About Parallels Workstation** dialog.

## Toolbar

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

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



The default toolbar buttons:



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



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



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



**Detach Console.** Use this button to show the **Console** tab of the Parallels Workstation window in a separate window.



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

You can easily add other buttons to the toolbar: just right-click the toolbar, choose **Customize Toolbar** (p. 42) from the shortcut menu, and drag the items you need to the toolbar:



**Restart.** Use this button to restart the fully loaded guest operating system.



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



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

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



**Reset.** Use this button for hard reset of your virtual machine in cases when the machine does not run properly and prevents you from resetting it properly.



**Safe Mode.** Use this button to run the virtual machine in Safe Mode.



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

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



**Take Snapshot.** Use this button to create a snapshot for the virtual machine.



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



**Snapshot Manager.** Use this button to open Snapshot Manager. For more information, refer to the **Working with Snapshots** section.

## Customize the Toolbar

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

- **Icon & Text.** Use this command to make the toolbar display both the icon buttons and names.
- **Icon Only.** Use this command to make the toolbar display the icon buttons only.
- **Text Only.** Use this command to make the toolbar display the name buttons only.
- **Use Small Size.** Use this command to reduce the size of toolbar buttons.
- **Remove Item.** Use this command to remove items from the toolbar.
- **Customize Toolbar.** Use this command to 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 the virtual machine is running, the status bar of its window displays the information about devices connected to the virtual machine.

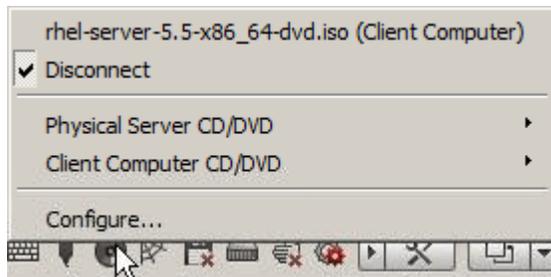


The following devices have icons in the status bar:

- keyboard 
- floppy disk drive 
- CD/DVD-ROM 
- hard disk 
- network adapter 
- serial port 
- parallel port 
- sound card 
- USB controller 
- assigned PCIe video adapter 
- 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. 160).

## Parallels Workstation Tray Icon

When working with Parallels Workstation, you can use the Parallels Workstation tray icon to:

- easily manage your running and paused virtual machines. For detailed information, refer to **Managing Virtual Machines From the Tray** (p. 162).
- bring the Parallels Workstation window to focus. To this effect, double-click the tray icon or right-click it and choose **Show Main Window**.
- set the Parallels Workstation window to be minimized to the tray. To this effect, right-click the tray icon and choose **Minimize to tray**. Now, if you click the minimize button on the Parallels Workstation window, it will be minimized to the tray.

**Note:** Minimizing main window to tray does not quit Parallels Workstation.

- quit Parallels Workstation. To this effect, right-click the tray icon and choose the corresponding item.

To enable the Parallels Workstation tray icon, select **Show tray icon** option [in the General pane](#) (p. 16) of Parallels Workstation Preferences.

## CHAPTER 4

# Set Up a Virtual Machine

The process of creating a virtual machine comprises the following steps:

- creating a virtual machine configuration
- installing a guest operating system
- installing Parallels Tools

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## 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.

## Supported Guest Operating Systems

Parallels Workstation 6 officially supports the following guest operating systems:

Guest Operating Systems	32-bit	64-bit	Express installation
Windows 7	✓	✓	✓
Windows Vista SP1, SP2	✓	✓	✓
Windows XP Pro SP3	✓		✓
Windows XP Home SP3	✓		✓
Windows XP Pro SP2		✓	✓
Debian 6.0	✓	✓	
Fedora 14, 15	✓	✓	
OpenSUSE 11.1	✓	✓	
RHEL 6, 6.1	✓	✓	
SLED 11 SP1	✓	✓	
Ubuntu 10.10, 11.04	✓	✓	

Parallels Workstation 6 Extreme officially supports the following guest operating systems:

Guest Operating Systems	32-bit	64-bit	Express installation
Windows 7		✓	✓
Windows Vista SP2		✓	✓
Windows XP SP3	✓		✓
Windows XP SP2	✓	✓	✓
Fedora 14, 15		✓	
RHEL 6, 6.1		✓	
RHEL 5.5		✓	

### New Virtual Machine Wizard

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

#### Express Windows Installation

This installation mode is available only for the following guest operating systems: Windows 7, Windows Vista, Windows XP, and Windows Server 2003.

**Note:** Not all Parallels products support these guest operating systems.

New Virtual Machine Wizard not only creates a virtual machine configuration, but also automatically installs the corresponding guest OS in it. It is the easiest way to make a new virtual machine: you only need to insert a Windows 7, Windows Vista, Windows XP, or Windows Server 2003 installation disc or specify the path to its image file, and New Virtual Machine Wizard will do the rest (including the installation of Parallels Tools). In this mode, virtual machines are created with typical configurations (see **Typical Configurations** for details) and placed to the default folder (see below).

For more information on this installation mode, see **Express Windows Installation Mode** (p. 50).

#### Typical Installation

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

For more information on this installation mode, see **Typical Installation Mode** (p. 51).

#### Custom Installation

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

For more information on this installation mode, see **Custom Installation Mode** (p. 52).

#### Default Folders for Virtual Machines

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

 **In Windows XP:** C:\Documents and Settings\*<User\_Name>*\My Documents\Parallels\

 **In Windows Vista:** C:\Users\*<User\_Name>*\My Documents\Parallels

 **In Linux:** /*<User\_Name>*/Parallels/

Where *<User\_Name>* stands for the user's home folder.

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

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

- 1 Choose **Preferences** from the **File** menu.
- 2 In the **Preferences** window, click the **General** tab, and specify the default destination for new virtual machines in the **Default folder for virtual machines** field.

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

## Express Windows Installation

- 1 Start Parallels Workstation and launch New Virtual Machine Wizard by choosing **New** from the **File** menu.
- 2 In the **Select Operating System Type and Version** window, select the Windows 7, Windows Vista, Windows XP, or Windows Server 2003 guest OS and click **Next**.

**Note:** Not all Parallels products support these guest operating systems.

- 3 In the **Virtual Machine Type** window, select **Express Windows** 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 that will be installed inside this virtual machine. If a virtual machine with such a name already exists, you will be prompted to indicate another name. The name must not exceed 50 characters.
  - **Location.** Use the **Choose** button if you want to change the default location of the virtual machine-related files.
- 5 In the **Express Windows Installation** window, specify your user details and the Windows product key necessary for the Windows guest OS installation.

**Note:** If you do not enter the Windows product key in this step, you will have to provide it later when the Windows guest OS installation starts.

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

Click **Create**.

- After the virtual machine is created, in the **Prepare to Install Operating System** window, specify the source of installation files and click **Start**.

**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.

- 6 After you click **Start**, New Virtual Machine Wizard will automatically start the new virtual machine and install the guest operating system in it. After the guest OS has been successfully installed, Parallels Workstation installs Parallels Tools.

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

To change the administrator password in Windows Vista:

- 1 Click the **Start** menu, then select **Control Panel -> User Accounts and Family Safety -> Change your Windows password**.

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

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

## Typical Installation Mode

To create a typical virtual machine:

- 1 Start Parallels Workstation and launch New Virtual Machine Wizard by choosing **New** from the **File** menu.
- 2 In the **Select Operating System Type and Version** window, select the operating system you are planning to install inside your 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 to be assigned to the virtual machine. By default, the virtual machine gets the same name as the operating system that is planned to be installed inside this virtual machine. If a virtual machine with such a name already exists, you will be prompted to indicate another name. The name must not exceed 50 characters.
  - **Location**. Use the **Choose** button if you want to change the default location of the virtual machine-related files.

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

Click **Next**.

- 5 After the virtual machine is created, in the **Prepare to Install Operating System** window, specify the source of installation files and click **Start**.

**Note:** Parallels Workstation does not provide you with operating systems installation media. You should purchase an OS installation disc or an image of it if you do not have any.

If you do not want to install the guest OS and start the virtual machine, click **Done**. When the installation is complete, install Parallels Tools if they are available for the guest OS you have just installed. Refer to [the Installing Parallels Tools section](#) (p. 60).

## Custom Installation Mode

To create a custom virtual machine:

- 1 Start Parallels Workstation and launch New Virtual Machine Wizard by choosing **New** from the **File** menu.
- 2 In the **Select Operating System Type and Version** window, select the guest OS you plan to install inside your 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 that will be installed inside this virtual machine. If a virtual machine with such a name already exists, you will be prompted to indicate another name. The name must not exceed 50 characters.
  - **Location.** Use the **Choose** button if you want to change the default location of the virtual machine-related files.
- 5 In the **CPU and Memory Options** window, specify the number of CPU(s) 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. You may need a virtual machine without a hard disk to work with live CDs/DVDs (CDs or DVDs containing a bootable operating system).
- 7 If you have selected the **No hard disk** option, go to Step 8.

If you chose to create a new virtual hard disk in the previous step, in the **New Virtual Hard Disk** window, specify the capacity and type for the disk and click **Next**. If you have chosen to use an existing image file, in the **Existing Virtual Hard Disk** window, specify the hard disk image to be connected, its interface type and position. Click **Next**.
- 8 In the **Networking Type** window, select the type of networking you want to use in the virtual machine and click **Next**.
  - **Shared Networking.** If you select this option, the virtual machine will use the host computer's network connections and will be visible only for the host computer and other virtual machines registered on this server.
  - **Bridged Networking.** If you select this option, the virtual machine will be visible on the network as a separate computer.
  - **Host-Only Networking.** If you select this option, the virtual machine will access only the host computer and the virtual machines running on it.

- **Direct Assignment (using Intel VT-d).** If you select this option, the virtual machine will be able to access the local network and Internet through a PCIe network adapter. This option is available only if you have a PCIe network adapter and the Intel VT-d technology is enabled in your host computer.
- **No Networking.** If you select this option, the virtual machine will have no network adapter.

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

- 9** If you have selected the **Shared Networking, Host-Only Networking, or No Networking** option, go to Step 10.

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

- **Default Adapter.** Select this option to use the adapter specified as default in the primary OS.
- **Parallels Shared Networking Adapter.** Select this option to use Parallels Shared Networking adapter installed together with Parallels Workstation.
- **Parallels Host-Only Networking Adapter.** Select this option to use Parallels Host-Only Networking adapter installed together with Parallels Workstation.

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

If you selected the **Direct Assignment (using Intel VT-d)** option, on the next step select the PCIe network adapter you want to use. Before using the PCIe adapter in your virtual machine, you will need to assign it to your virtual machines in [the Intel VT-d pane](#) (p. 20) of Parallels Workstation Preferences and install the manufacturer's driver for this PCIe device inside the virtual machine. The driver should support the Intel VT-d technology. For detailed information, see [Networking Using a PCIe Adapter](#) (p. 95).

- 10** In the **Optimization Options** window, select the optimization mode you prefer and click **Next**. The available options are:

- **Virtual machine (Recommended).** Select this option to allocate more host computer resources to the virtual machine and its applications.
- **Host Computer.** Select this option to allocate more resources to the host computer and its applications.

- 11** In the **Prepare to Install Operating System** window, specify the source of installation files and click **Start**.

**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 do not want to install the guest OS and start the virtual machine now, click **Done**.

When the installation is complete, install Parallels Tools if they are available for the guest OS you just installed. Refer to [the Installing Parallels Tools section](#) (p. 60).

## Using Parallels Transporter

Parallels Transporter allows you to import all your data from a remote PC to Parallels Workstation on the host computer. Then you can continue to work with all your programs, files, and data, side-by-side with the host OS.

To learn how to work with Parallels Transporter, please refer to *Parallels Transporter User's Guide* available on the Parallels website.

## Import from an Earlier Parallels Workstation or Other Virtualization Application

If you already have a virtual machine stored on the host computer but it is missing from the list of virtual machines registered in Parallels Workstation, you can easily add it with the help of Add Existing Virtual Machine Wizard.

### To add an existing virtual machine

- 1 Choose **Add Existing** from the **File** menu to start Add Existing Virtual Machine Wizard.
- 2 In the **Select a Virtual Machine** window, locate the virtual machines you want to add:
  - You can set the path to a specific 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 **Next** to register this virtual machine in Parallels Workstation.
  - You can find 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**.



## Set Up a Virtual Machine

---

- 3** If you chose **Search for virtual machines in this folder**, in the next window the wizard displays all the virtual machines found in the specified folder that are not registered in Parallels Workstation. Select the virtual machines you want to add.

If you want to select all items at a time, click the Select All button  displayed below the list.

If you want to clear all items at a time, click the Clear All button  displayed below the list.

Review the selection and click **Add**.



## Download Pre-configured Virtual Appliances

If you don't have enough time to create a new virtual machine with the required configuration, you can download a ready-to-use virtual machine with a predefined configuration. Besides the basic configuration, prebuilt virtual machines may have a set of applications installed, so that you can do without spending time on installing and setting up the required software.

### Downloading Parallels Virtual Appliances

Parallels Virtual Appliances are prebuilt Linux virtual machines with preinstalled services and applications that were created either by Parallels or by Parallels partners and are available for free on the Parallels Technology Network website.

To download such an appliance from Parallels Workstation:

- 1 Choose **Download from Website** from the **File** menu.
- 2 Find the necessary appliance on the Parallels Technology Network page and click its title to view the configuration details and the administrative credentials.
- 3 To download the selected appliance, click **GET APP** and choose the download link with the suitable archive file format.
- 4 When the download is complete, open the virtual appliance file and double-click the PVS file to start the virtual machine.

## Installing a Guest Operating System

You can install a guest operating system in a virtual machine 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 input back to the host OS, press Ctrl+Alt. For more information, refer to **Capturing and Releasing the Keyboard and the Mouse** (p. 74).

### Installing from the network

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

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

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

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

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

### Installing from a floppy disk image

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

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

### Reinstalling the guest OS

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

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

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

## Installing Parallels Tools

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

Parallels Tools are located on disc images that are installed together with Parallels Workstation. 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.

These disc images can be found in the following folder:

- **In 64-bit Windows:** `C:\Program Files (x86)\Parallels\Parallels Workstation\Tools\`
- **In Linux:** `/usr/share/parallels-workstation/tools/`

## Parallels Tools Overview

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

Parallels Tools include the utilities listed below. Many of these utilities are available for the most popular Windows and Linux operating systems.

Mouse Synchronization Tool	Windows, Linux	Mouse Synchronization Tool captures the mouse input in the virtual machine each time the pointer moves over to the guest OS window and automatically releases the input when the pointer moves out of the guest OS window.
Time Synchronization Tool	Windows, Linux	Time Synchronization Tool enables you to customize your virtual machine and the host computer time settings. With this tool, you can: <ul style="list-style-type: none"> <li>• Automatically synchronize the time settings of your virtual machine with the host computer time settings.</li> <li>• Set up and maintain the time difference between your host computer and the guest OS installed in your virtual machine.</li> </ul>
Clipboard Synchronization Tool	Windows, Linux	Clipboard Synchronization Tool enables you to easily exchange texts between: <ul style="list-style-type: none"> <li>• different virtual machines irrespective of the guest operating systems installed in them.</li> <li>• a virtual machine and the physical computer hosting this virtual machine.</li> </ul>
Dynamic Resolution Tool	Windows, Linux	Dynamic Resolution Tool enables you to work with dynamic resolution. When you resize the guest OS window by dragging its lower right corner, the guest OS window resolution changes automatically.
<div style="border: 1px solid gray; padding: 5px; background-color: #f0f0f0;"> <p><b>Note:</b> If dynamic resolution does not work when switching to the Full Screen mode in virtual machines with Linux guest operating system installed, go to the <a href="#">Video pane</a> (p. 127) of Virtual Machine Configuration and increase the amount of video memory available to the virtual machine's video card up to 16 MB.</p> </div>		
Shared Folders Tool	Windows, Linux	Shared Folders Tool enables you to share the primary OS folders to access them from the guest OS. With this tool, you can access the host computer shared folders from the virtual machine.

## Set Up a Virtual Machine

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Shared Profile Tool	Windows	Shared Profile Tool enables you to map some of the folders in the physical computer home folder to your user folders in the virtual machine, which allows you to access the physical computer home folders right from your virtual machine.
Parallels Compressor	Windows	The Parallels Compressor utility enables you to reduce the size of your virtual machine's hard disk.

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

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

Parallels Tools can be installed in all Windows and Linux guest operating systems officially supported by Parallels Workstation.

## Installing Parallels Tools in a Windows Guest OS

If you created your virtual machine using [the Express Windows mode](#) (p. 50), Parallels Tools were installed automatically after the installation of the Windows guest operating system.

If your virtual machine was created in the *Typical* (p. 51) or *Custom* mode, do the following to install Parallels Tools in it:

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

**Note:** If the **Install Parallels Tools** option is grayed out, make sure that Parallels Tools can be installed in your guest operating system. To see the list of guest OSs supported by Parallels Tools, refer to [the Parallels Tools Overview section](#) (p. 61) in **Parallels Workstation Help** available through the **Help** menu.

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

If the Parallels Tools installation does not start automatically, you can launch it manually:

- 1 Start the virtual machine and log in to the guest operating system.
- 2 When the guest OS boots up, connect the Parallels Tools ISO image by right-clicking the CD/DVD-ROM icon in the virtual machine's window status bar and choosing **Connect Image**.
- 3 Open the following folder:

- **In 32-bit Windows:** C:\Program Files\Parallels\Parallels Workstation\Tools\
- **In 64-bit Windows:** C:\Program Files (x86)\Parallels\Parallels Workstation\Tools\

Select the `prl-tools-win.iso` file and click **Open** to connect it to the virtual machine.

- 4 In the virtual machine, open **My Computer** and double-click the **Parallels Tools** disc icon to expand its contents.

**Note:** If the installation wizard does not launch automatically, right-click the disc, choose **Open** from the shortcut menu, and double-click `Setup.exe` to launch the installer.

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

To edit the settings of Parallels Tools installed in your virtual machine, use [the Services pane](#) (p. 123) of the **Virtual Machine Configuration** dialog.

### 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, perform the following actions:

- Close all applications in the guest operating system.
- Disable the 3D accelerated window manager if you use any.
- Make sure that you have the `gcc` package and kernel sources installed. If these packages are not installed, the Parallels Tools installer will inform you about this. The kernel sources package name depends on the type of Linux operating system you use: it can be `kernel-devel`, or `kernel-headers`, or something else. For more information about the kernel sources, refer to [the Installing the GCC package and Kernel Sources in Linux section](#) (p. 170).

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

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

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

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

**Note:** If the **Install Parallels Tools** option is grayed out, make sure that Parallels Tools can be installed in your guest operating system. To see the list of guest OSs supported by Parallels Tools, refer to [the Parallels Tools Overview section](#) (p. 61) of *Parallels Workstation User's Guide*.

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

You can connect and mount the Parallels Tools ISO image file manually. Right-click the CD/DVD-ROM icon in the virtual machine's window status bar and choose **Connect Image**. Open the following folder:

- **In 32-bit Windows:** `C:\Program Files\Parallels\Parallels Workstation\Tools\`
- **In 64-bit Windows:** `C:\Program Files (x86)\Parallels\Parallels Workstation\Tools\`
- **In Linux:** `/usr/share/parallels-workstation/tools/`

Select the `prl-tools-lin.iso` file, and click **Open** to connect it to the virtual machine.

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

```
su
```

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

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

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

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

```
./install
```

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

### Installing Parallels Tools in other versions of Linux guest OSs

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

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

**Note:** If the **Install Parallels Tools** option is grayed out, make sure that your operating system complies with the requirements for Parallels Tools installation.

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

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

```
su
```

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

```
mount | grep iso9660
```

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

If this command returns anything like

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

skip the next step and proceed to the following one.

If this command returns anything like

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

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

```
umount /dev/cdrom
```

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

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

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

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

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

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

```
./install
```

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

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

### 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 they are installed in.

### In a Windows guest OS

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

**Note:** Parallels Tools can be updated only for the Windows 2000 and later guest operating systems.

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

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

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

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

### In a Linux guest OS

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

To update Parallels Tools:

- 1 Start the virtual machine.
- 2 Choose **Update Parallels Tools** from the **Virtual Machine** menu and follow the instructions.
- 3 When the update is complete, restart your virtual machine.

## Removing Parallels Tools

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

### Removing from a Windows guest OS

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

### Removing from a Linux guest OS

- 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** (p. 65).
- 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.

## CHAPTER 5

# Work with a Virtual Machine

Read this chapter to learn all about using guest OS programs on your host computer.

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## Get Started

### Start a Virtual Machine

To use guest OS programs on your host computer, the virtual machine with this guest OS installed must be running.

To start a virtual machine, do the following:

- 1 Open Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine you want to start and click **Virtual Machine > Start**.

The virtual machine starts and you can begin using guest OS programs.

## Install Programs in a Virtual Machine

You can install programs in a Parallels virtual machine using the following media:

- CD and DVD discs
- Images of CD or DVD discs made with the help of third-party imaging products

**Note:** Parallels Workstation supports ISO image files.

To install a program using a CD or DVD disc:

- 1 Insert the disc.
- 2 Do one of the following:
  - Click the CD/DVD icon  in the virtual machine [status bar](#) (p. 43) and choose **Real CD/DVD** from the shortcut menu.
  - Choose **CD/DVD 1 > Real CD/DVD** from the **Devices** menu.

To use an image of a disc:

- 3 Do one of the following:
  - Click the CD/DVD icon  in the virtual machine [status bar](#) (p. 43) and choose **Connect Image** from the shortcut menu.
  - Choose **CD/DVD 1 > Connect Image** from the **Devices** menu.
- 4 Specify the image file.

For further installation steps, refer to the documentation of the program you are installing.

## Shut Down or Suspend a Virtual Machine

When you're finished using guest OS programs, you can leave the virtual machine running as you work with your host OS applications. Or you may want to stop the virtual machine from running so more of your computer's resources are available for your host OS applications. There are a few ways to stop the virtual machine.

### Suspend a Virtual Machine

Suspending a virtual machine conveniently freezes all running guest OS programs and settings in their current state.

To suspend a virtual machine:

- 1 Close the Parallels Workstation main window.
- 2 Click **Suspend**.

The next time you start the virtual machine, you resume your progress from exactly where you left off.

You can also suspend the virtual machine without quitting Parallels Workstation by doing one of the following:

- If the virtual machine is working in [Window](#) (p. 76), click **Virtual Machine > Suspend** in the Parallels Workstation main window.
- If the virtual machine is working in [Full Screen](#) (p. 77), press Ctrl + Alt + Enter to switch the virtual machine to the Window view mode and click **Virtual Machine > Suspend**.

### Pause a Virtual Machine

You can temporarily pause from using the guest OS and free your computer's resources, such as RAM and processor cycles, to be used by your host OS programs by doing the following:

- Choose **Virtual Machine > Pause**.

To resume using the virtual machine after pausing it, do the following:

- Choose **Virtual Machine > Resume**.

### Shut Down a Virtual Machine

Shutting down a virtual machine in Parallels Workstation is just like shutting down the guest operating system on a PC. All guest OS programs close, giving you the opportunity to save your progress if necessary, and the guest OS stops running.

To shut down a virtual machine, do the following.

- Choose **Virtual Machine > Shut Down**.

## Stop a Virtual Machine

To stop a virtual machine and all open guest OS programs immediately:

- 1 Do the following:
  - Choose **File > Quit**.
- 2 Click **Stop**.

**Important:** When you stop a virtual machine this way, none of your data or progress is saved.

You can also stop a virtual machine without quitting Parallels Workstation by doing the following:

- Choose **Virtual Machine > Stop**.

## Window Menu

If a virtual machine is set to appear in a separate window, you can also choose any of the above options from the menu at the bottom of the window:



# 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 of the **Preferences** dialog.

If you want to automatically capture and release the keyboard and mouse input, you should install [Parallels Tools](#) (p. 60) 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.

## Use Keyboard Shortcuts in a Virtual Machine

If when working in a virtual machine, you press a special key combination intended for the guest OS (for example, `Ctrl+Alt+Del` for any of the Windows guest operating systems) the primary operating system may intercept such a command. That is why in this version of Parallels Workstation, 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. 43). Just click the icon and select the desired key combination from the drop-down list. The corresponding action will take place in your guest OS and your primary OS will ignore this event.

# Set How the Virtual Machine Works with the Host OS

Parallels Workstation 6 allows you to work seamlessly between your host and guest operating systems. For example, you can cut and paste text, and share files, between the two.

There are a number of ways that you can set the level of integration between the host and guest operating systems. For example, you may want your Windows guest OS programs to behave just like host OS programs, appearing side-by-side with them on the host OS desktop. Or you may wish to keep the guest OS desktop and programs in a separate window.

Read on to learn more about setting how your guest OS works together with the host OS.

## Merge the Guest OS and the Host OS

You can set a Windows virtual machine and the host operating system to work seamlessly together, as if they were part of a single operating system. In this mode, called "Coherence" mode, the Windows guest OS desktop is hidden and Windows guest OS programs appear on the host OS desktop next to your host OS programs.

**Note:** To enable the Coherence view mode, Parallels Tools must be installed.

To switch from Window mode to Coherence mode, do one of the following:

- Choose **View > Coherence**.
- Choose **Coherence** from the View menu available in [the status bar](#) (p. 43).

To switch from Full Screen mode to Coherence mode, move the pointer to the upper-left corner of the screen and click the mouse. The virtual machine switches to [the Window view mode](#) (p. 76). Then choose **View > Coherence**.

**Note:** In Full Screen, the upper-left corner of the screen is configured to switch to [the Window view mode](#) (p. 76). You can change the default settings of the screen active corners in [the Full Screen pane](#) (p. 121) of Virtual Machine Configuration.

For information on adjusting settings related to Coherence mode, see **Coherence** (p. 120).

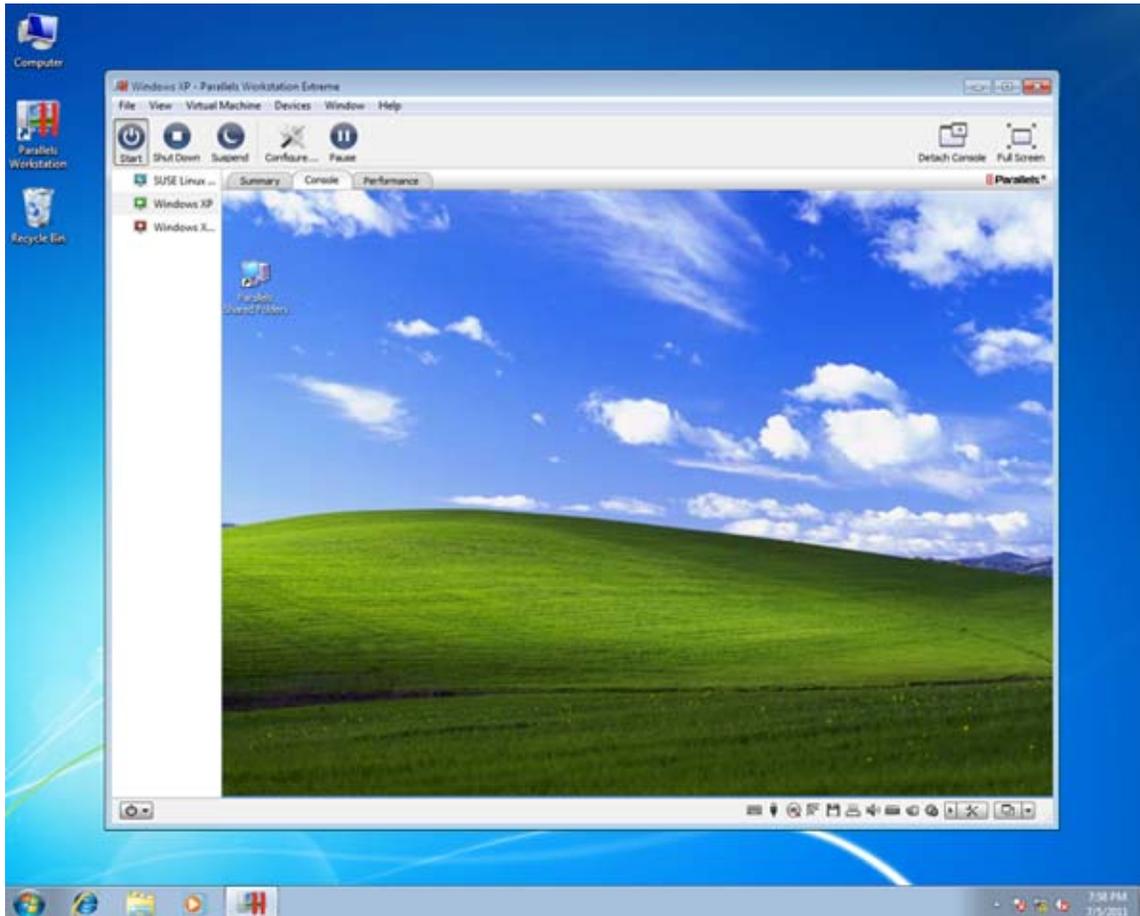
## Windows System Tray

In Parallels Workstation for Windows, when a Windows virtual machine is working in Coherence mode, the Windows guest OS system tray icons are available in the Windows host OS taskbar.

You can use these system tray icons just as you would from the Windows guest OS desktop.

## Set the Guest OS to Appear in a Separate Window

You can set the guest operating system and programs to appear together in a separate window. This is the default view mode for virtual machines.



To switch to Window mode from Coherence mode, click the **View** menu in the Parallels Workstation main window and choose **Window**.

To switch to Window mode from Full Screen mode, press Ctrl + Alt + Enter. This is the default keyboard shortcut to switch to and from Full Screen. You can change it in [the Keyboard pane](#) (p. 18) of Parallels Workstation Preferences.

## Set the Guest OS to Appear Full Screen

You can set the virtual machine to occupy your entire screen, so it looks just like it would if you were using a physical PC.

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

- click the **Full Screen** button  in [the toolbar](#) (p. 40); or
- choose **View > Full Screen**.

To exit Full Screen mode, do one of the following::

- Move the cursor to the left top corner of the screen and click the mouse.  
You can set any of the four corners to activate [Window mode](#) (p. 76), [Coherence mode](#) (p. 75), or to show the taskbar. For information on adjusting these and other settings related to Full Screen mode, see [Full Screen](#) (p. 121).
- Press Ctrl + Alt + Enter. (This is the default keyboard shortcut for switching to and from Full Screen. You can change it in [the Keyboard pane](#) (p. 18) of Parallels Workstation Preferences.)

## Copy and Paste Between the Host and Guest OSs

Parallels Workstation allows you to copy and paste pictures, formatted text (italic, bold, or underlined, of various colors, fonts, and sizes) between the host OS programs and guest OS programs.

If [Parallels Tools are installed](#) (p. 60) in the virtual machine, copying and pasting between the host computer and virtual machine is already enabled.

To enable copying and pasting between the host computer and virtual machine:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine and click **Virtual Machine > Configure > Options > Advanced**.
- 3 Select **Share clipboard**.
- 4 To preserve text formatting when copying and pasting text, select **Preserve text formatting**.

**Note:** To enable copying and pasting between the host computer and virtual machine, [Parallels Tools](#) (p. 60) must be installed. Copying and pasting between the host computer and virtual machine is unavailable if you [isolate the guest OS from the host OS](#) (p. 111).

## Share Items Between the Host Computer and Virtual Machine

Parallels Workstation allows you to easily access your host OS files using guest OS programs.

Read on to learn about all the ways you can share folders, files, and applications between your virtual machine and the host computer.

## Set Internet Links to Always Open in the Host OS or Virtual Machine

By default, clicking a link (such as a web page URL) in your virtual machine opens the default guest OS program for that link type, and clicking a link in the host OS opens the default host OS program.

You can set links of a particular type to always open in the host OS or in your virtual machine. For example, you could set web pages to always open in the guest OS, even if the link is clicked in the host OS.

**Note:** To set Internet links to open in the host OS or in your virtual machine, [Parallels Tools](#) (p. 60) must be installed.

To set Internet links to open in the host OS or in your virtual machine:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine and click **Virtual Machine > Configure > Options > Applications**.
- 3 Click the menu for the type of link you want to set. If you don't see the link type you want, click **More Applications**. The following types of links can be set:
  - **Web pages:** Web pages accessible through the HTTP and HTTPS protocols.
  - **E-mail:** Links in the `mailto` format that open a pre-addressed email.
  - **Newsgroups:** Links in the `news.` format that typically open a newsreader program.
  - **FTP:** File upload and download locations accessible through the FTP protocol.
  - **RSS:** Episodic content, such as blogs and podcasts.
  - **Remote access:** Locations accessible through the Telnet and Secure Shell (SSH) protocols.
- 4 Choose one of the following:
  - **Default:** The link opens in the program set as default in the operating system (host OS or guest OS) where you click the link.
  - **Open in virtual machine:** Links clicked in the host OS or guest OS open in the default guest OS program for that link type.
  - **Open on the host computer:** Links clicked in the host OS or guest OS open in the default host OS program for that link type.

## Share External Storage Devices and Volumes

When you connect an external storage device, such as a USB drive, to the host computer, you can access the contents from the host OS applications.

Using SmartMount, you can set Parallels Workstation to automatically mount storage devices and volumes to your virtual machine. That way, you can access the contents from both the host and guest OSs.

With SmartMount enabled, these items are automatically mounted to the virtual machine:

- **Removable drives:** External storage devices, such as USB hard disks and USB flash drives.
- **CD/DVD drives:** CD and DVD drives or CD/DVD images (files most commonly ending in `.iso`).
- **Network folders:** Folders shared over the network.

To enable SmartMount:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine for which you want to enable SmartMount and click **Virtual Machine > Configure > Options > Sharing**.
- 3 In the **Sharing** pane, select **Map host volumes to virtual machine** and click **OK**.

When you connect a storage device or volume, it is mounted as a network drive. For example, a USB flash drive plugged in to the host computer will be also accessible from the virtual machine.

**Note:** Permissions for accessing the mounted device from the virtual machine are the same as permission settings for the device in the host OS. For example, if you can read from and write to a USB flash drive in the host OS, you can also read from and right to it in the guest OS.

## Connect USB Devices to a Virtual Machine

Parallels Workstation allows you to connect up to eight USB 2.0 and eight USB 1.1 devices to a single virtual machine. This means that you can plug up to eight USB 2.0 devices and eight USB 1.1 devices into the host computer and connect them to your virtual machine. To use this feature, the virtual machine must have a USB controller.

By default, when you plug a USB device into the host computer with one or more virtual machines running, the **New USB device detected** dialog appears:



In this dialog, you need to specify where the detected USB device will be connected:

- Point to **Computer** and click it if you want to use this USB device in the host OS.
- Point to the virtual machine and click it if you want to use this USB device in the virtual machine you are currently working with.

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

If you want Parallels Workstation to remember your choice, press the Alt button on the keyboard and keep holding it when choosing where to connect a USB device. The next time you plug this USB device into the host computer, it will be automatically connected to the destination you specified in this dialog. To change the destination, use **USB** pane in [the Preferences dialog](#) (p. 15).

If you do not want Parallels Workstation to display this dialog each time a USB device is plugged into the host computer, configure **USB Preferences** in [the Preferences dialog](#) (p. 15).

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

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

To disconnect a USB device from your virtual machine, do one of the following:

- Right-click the USB controller icon  in [the status bar](#) (p. 43) and click this USB device listed in the context menu or
- Click the **Devices** menu, point to the **USB** item, and click this USB device in the displayed submenu.

## Print from a Virtual Machine

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

- [Share the host computer printer](#) (p. 82).
- [Set up a network printer](#) (p. 84).
- [Set up a USB printer](#) (p. 88).
- [Set up a printer using the host computer LPT port](#) (p. 88).

## Share the Host Computer Printer

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

To share the host computer printer:

- 1 Launch Parallels Workstation and select a virtual machine.
- 2 Open the **Virtual Machine Configuration** dialog by choosing **Configure** from the **Virtual Machine** menu. Go to the **Hardware** tab and make sure the configuration includes a printer port. If necessary, add it. See **Adding and Removing Devices**.
- 3 In the **Printer Port** pane, select **Connected** if you want the printer to be automatically connected on the virtual machine startup. Click the **Source** field and select the appropriate printer from the list. You can use the **Default printer** option if you want to use the default printer set in the primary OS.
- 4 Click **OK** to close the **Virtual Machine Configuration** dialog.
- 5 Start the virtual machine.
- 6 In a Windows guest OS, if you have Parallels Tools installed, the HP Color LaserJet 8500 PS or Apple Color LW 12/660 PS printer is automatically connected to the virtual machine. You can use it at once. In a Linux guest OS, or if you do not have Parallels Tools installed in your Windows guest OS, no matter what type of printer you have, install either the HP Color LaserJet 8500 PS or Apple Color LW 12/660 PS printer driver. Then follow the procedure of adding a printer in a guest OS described below.

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

### Adding a printer in a Windows guest operating system

To add a printer in a Windows 7 or Windows Vista guest operating system:

- 1 Start the Windows virtual machine and log in as administrator.
- 2 Open the Windows **Start** menu and select **Control Panel**.
- 3 In the **Control Panel** window, select **Hardware and Sound** and click **Add a printer** in the **Devices and Printers** section (**Printers** in Windows Vista). The Add Printer wizard opens.
- 4 In the first wizard window, click **Add a local printer**.
- 5 In the **Choose a printer port** window, choose **LPT1: (Printer Port)** (or another port to which the printer is connected) from the **Use an existing port** menu. When ready, click **Next**.
- 6 In the **Install the printer driver** window, specify the printer manufacturer and model. No matter what printer you have, choose either HP Color LaserJet 8500 PS or Apple Color LW 12/660 PS. When ready, click **Next**.

- 7 Continue with the printer configuration procedure. When the printer is added to the guest operating system, you can use it to print documents from your Windows 7 or Windows Vista virtual machine.

To add a printer in a Windows XP guest operating system:

- 1 Start the Windows virtual machine and log in as administrator.
- 2 Open the Windows **Start** menu and select **Control Panel**.
- 3 In the **Control Panel** window, double-click the **Printers and Faxes** item.
- 4 Click the **Add a printer** link to open the Add Printer wizard.
- 5 In the **Welcome to the Add Printer Wizard** window, click **Next**.
- 6 In the **Local or Network Printer** window, select **Local printer attached to this computer** and clear the **Automatically detect and install my Plug and Play printer** option if it is also selected. When ready, click **Next**.
- 7 In the **Select a Printer Port** window, choose **LPT1: (Recommended Printer Port)** (or another port to which the printer is connected) from the **Use the following port** menu. When ready, click **Next**.
- 8 In the **Install Printer Software** window, specify the printer manufacturer and model. No matter what printer you have, choose either HP Color LaserJet 8500 PS or Apple Color LW 12/660 PS. When ready, click **Next**.
- 9 Continue with the printer configuration procedure. When the printer is added to the guest operating system, you can use it to print documents from your Windows XP virtual machine.

## Adding a printer in a Linux guest operating system

The procedure of adding a printer in a Linux guest operating system depends on the Linux distribution. In this example, we describe how to add a printer to a virtual machine running RHEL 5.4 Server. However, you can use these guidelines as general instructions on how to add a printer to a Linux virtual machine:

- 1 Start the Linux virtual machine and log in when the guest operating system boots up.

**Note:** You must log in as root or acquire root privileges after successful login. If you don't do that, you will be required to enter the root password when starting the `system-config-printer` administration tool in the next step.

- 2 Start the `system-config-printer` administration tool by doing one of the following:
  - Click **System > Administration > Printing**; or
  - Start the Terminal and enter the following command:

```
system-config-printer
```

- 3 In the displayed window, click **New Printer**.
- 4 In the next window, you must type a printer name. Under this name the printer will be displayed in your Linux guest operating system. You can also enter the printer description and location. When ready, click **Forward**.

- 5 Now you have to specify how the host computer printer will be shared with the virtual machine. As the printer is connected to the virtual machine printer port, select **LPT #1** (or another port to which the printer is connected) and click **Forward**.
- 6 Then specify the printer manufacturer and model. No matter what printer you have, choose either HP Color LaserJet 8500 PS or Apple Color LW 12/660 PS. When ready, click **Forward**.
- 7 Click **Apply** to finish setting up the printer.

Now the printer is properly configured and you can use it to print documents from your Linux virtual machine.

## Set Up a Network Printer

You can install a network printer directly into a guest operating system.

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

- The host computer can access the Internet.
- The virtual machine can access the Internet too.
- The user account in the guest OS from which you are going to set up the printer has permission to access the network printer.
- You know the printer IP address.

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

### In a Windows Guest Operating System

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

To add a network printer in a Windows 7 or Windows Vista guest operating system:

- 1 Open the Windows **Start** menu and select **Control Panel**.
- 2 In the **Control Panel** window, select **Hardware and Sound** and click **Add a printer** in the **Devices and Printers** section (**Printers** in Windows Vista). The Add Printer wizard opens.
- 3 In the first window, click **Add a network, wireless or Bluetooth printer**.
- 4 In the next window, click **The printer that I want isn't listed**.
- 5 In the **Find a printer by name or TCP/IP address** window, select **Add a printer using a TCP/IP address or hostname** and click **Next**.
- 6 In the **Type a printer hostname or IP address** window, do the following:
  1. Select **TCP/IP Device** from the **Device type** menu.
  2. Specify the printer IP address in the **Hostname or IP address** field.

3. Clear the **Query the printer and automatically select the driver to use** option if it is selected.
4. When ready, click **Next**.

- 7 If prompted to specify additional port information, choose **Standard**, select **Generic Network Card** from the list, and click **Next**.
- 8 In the **Install Printer Software** window, specify the manufacturer and model of the network printer.  
If the required printer model is not listed, click **Have Disk** button and specify the path to the `.inf` file located in the folder where you installed the printer driver.  
When ready, click **Next**.
- 9 Continue with the printer configuration procedure. When the printer is added to the guest operating system, you can use it to print documents from your virtual machine.

To add a network printer in a Windows XP guest operating system:

- 1 Open the Windows **Start** menu and select **Control Panel**.
- 2 In the **Control Panel** window, double-click the **Printers and Faxes** item.
- 3 Click the **Add a printer** link to open the Add Printer wizard.
- 4 In the **Welcome to the Add Printer Wizard** window, click **Next**.
- 5 In the **Local or Network Printer** window, select **Local printer attached to this computer** and clear the **Automatically detect and install my Plug and Play printer** option if it is also selected. When ready, click **Next**.
- 6 In the **Select a Printer Port** window, select **Create a new port** and specify **Standard TCP/IP Port** as the port type. When ready, click **Next**.
- 7 In the **Welcome to the Add Standard TCP/IP Printer Port Wizard** window, click **Next**.
- 8 In the **Add Port** window, specify the network printer IP address and click **Next**.
- 9 If prompted to specify additional port information, choose **Standard**, select **Generic Network Card** from the list, and click **Next**.
- 10 In the **Completing the Add Standard TCP/IP Printer Port Wizard** window, click **Finish**.
- 11 In the **Install Printer Software** window, specify the manufacturer and model of the network printer.  
If the required printer model is not listed, click **Have Disk** button and specify the path to the `.inf` file located in the folder where you installed the printer driver.  
When ready, click **Next**.
- 12 Continue with the printer configuration procedure. When the printer is added to the guest operating system, you can use it to print documents from your Windows XP virtual machine.

## In a Linux or FreeBSD Guest Operating System

The procedure of setting up a network printer in a Linux or FreeBSD guest operating system depends on the Linux or FreeBSD distribution and printer. In this example, we describe how to set up a network printer in a virtual machine running RHEL 5.4 Server. However, you can use these guidelines as general instructions on how to set up a network printer in a Linux or FreeBSD virtual machine.

**Note:** For more detailed information, refer to the CUPS documentation.

To set up a network printer:

- 1 Start the virtual machine.
- 2 Make sure the following components are installed in the guest operating system:
  - Common UNIX Printing System (CUPS). Installation instructions can be found at CUPS site;
  - Samba service. Installation instructions can be found at Samba site; and
  - A Web browser, since we consider controlling CUPS via web interface.

**Note:** To set up a network printer, you must have `root` privileges.

- 3 Download and install an appropriate printer driver. For detailed information on installing the printer driver, refer to the printer manufacturer's documentation.
- 4 Start Common UNIX Printing System. In the Terminal, type the command:  

```
/etc/init.d/cups start
```
- 5 Start a web browser and type either the IP address of your virtual machine or `http://127.0.0.1:631`.
- 6 Click the **Add Printer** button.
- 7 In the **Add New Printer** window, specify a printer name. Under this name the printer will be displayed in the guest operating system. You can also enter the printer description and location. When ready, click **Forward**.
- 8 In the **Device for <Printer Name>** window, select **AppSocket/HP JetDirect** and click **Continue**.
- 9 In the **Device URI for <Printer Name>** window, specify the printer IP address in the following format:  

```
socket://<printer IP address>
```

When ready, click **Continue**.
- 10 In the **Make/Manufacturer for <Printer Name>** window, select the manufacturer of your printer and click **Continue**.
- 11 In the **Model/Driver for <Printer Name>** window, select the model of your printer and click **Add Printer**.
- 12 Enter the `root` password when prompted.

CUPS performs the installation. If the installation is successful, the "Printer <name> has been configured successfully" message is displayed. Now you can use this printer to print documents from the virtual machine.

### Set Up a USB Printer

To set up a USB printer:

- 1 Launch Parallels Workstation and choose the virtual machine.
- 2 Open the **Virtual Machine Configuration** dialog by choosing **Configure** from the **Virtual Machine** menu. Make sure that the configuration includes a USB controller. If necessary, add it.
- 3 Click **OK**.
- 4 Start the virtual machine.
- 5 Plug in the USB printer as a USB device. See **Connect USB Devices to a Virtual Machine** (p. 80).
- 6 Install the native driver for the printer in the guest OS.

### Set Up a Printer Using the Host Computer LPT Port

To set up printing through a printer port of the host computer:

- 1 Make sure that a printer is connected to the LPT port of the host computer.
- 2 Open the virtual machine configuration, make sure it includes a printer port. If necessary, add it.
- 3 Choose the necessary parallel port of the host computer from the drop-down menu.
- 4 Click **OK** and start the guest operating system.
- 5 Install the native driver for your printer in the guest OS.

## Protect Your Data

### Protect a Virtual Machine From Viruses

To protect your virtual machine from viruses, you can install any antivirus software you like in the guest operating system.

## Isolate a Virtual Machine from the Host Computer

You can isolate your virtual machine from the host computer, so that they no longer share folders, profiles, and applications, connected external devices are no longer automatically accessible by the guest OS, and you can no longer copy or move objects between the host and guest OSs.

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine you want to isolate and click **Virtual Machine > Configure > Options > Permissions**.
- 3 Select **Isolate host from guest** and click **OK**.

## Work with a Virtual Machine Without Saving Changes

If you don't want your virtual machine to store the changes you make to it during the working session (for example, when testing some guest OS programs that may damage the guest OS), you can start the virtual machine in Safe Mode:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine that you want to start in Safe Mode and click **Virtual Machine > Safe Mode**.

### Set a Virtual Machine to Always Start in Safe Mode

If you want your virtual machine to always start in Safe Mode:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine and click **Virtual Machine > Configure > Options > Permissions**.
- 3 In the **Permissions** pane, choose **Ask me what to do** from the **Undo Disks** menu and click **OK**.

**Note:** If you have the automatic compression of virtual disks enabled in [the Optimization pane](#) (p. 109), it will become disabled after you enable **Undo Disks**.

## Encrypt a Virtual Machine to Protect It from Unauthorized Use

If you store any important data using guest OS programs, it is highly recommended that you encrypt the virtual machine to protect your data from any unauthorized use.

### Encrypt a Virtual Machine

To encrypt a virtual machine (it must be shut down):

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine you want to encrypt and click **Virtual Machine > Configure > Options > Permissions**.
- 3 In the **Permissions** pane, click **Turn On**, specify a password, and click **OK**.

**Warning!** The specified password is very important. You must record it. Without this password, you can't start the virtual machine.

### Change Your Password

To change the password for an encrypted virtual machine (it must be shut down):

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine which password you want to change and click **Virtual Machine > Configure > Options > Permissions**.
- 3 In the **Permissions** pane, click **Change Password**, specify a new password, and click **OK**.

### Remove Encryption from the Virtual Machine

To remove encryption from the virtual machine (it must be shut down):

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine which encryption you want to remove and click **Virtual Machine > Configure > Options > Permissions**.
- 3 In the **Permissions** pane, click **Turn Off**, specify the encryption password, and click **OK**.

## Connect to the Internet or a Network

Parallels Workstation allows you to use the following types of networking with virtual machines:

- **Shared Networking** (p. 92): guest OS programs share a network connection with the host OS. This is the default setting.
- **Bridged Ethernet** (p. 93): guest OS can use one of the host computer network adapters. This makes the virtual machine appear as a separate computer on the network.
- **Host-only networking** (p. 94): the virtual machine can access only the host computer and other virtual machines residing on it.
- **Networking using a PCIe network adapter** (p. 95). This type of networking allows the virtual machine to access the local network and Internet through an Intel VT-d PCIe network adapter.

In most cases, you don't need to adjust network settings. If the host computer is set to connect to a network or to the Internet, guest OS programs have access to the same network and the Internet.

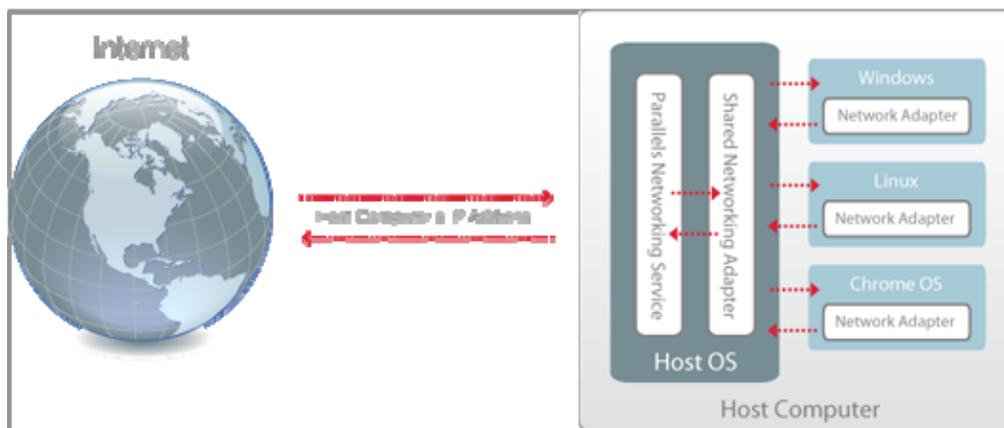
The Bridged Ethernet networking mode is more complex and you may need to contact your system administrator to set it up properly.

Read on for detailed information on these types of networking and how to configure them.

## Share Network Settings Between the Host Computer and Virtual Machine

By default, a guest OS is set to share network settings with the host OS. Guest OS programs can access other computers on your local network and the Internet by using the host computer IP address. Guest OS does not have its own IP address on the network.

In most cases, you don't need to adjust network settings. If the host computer is set to connect to a network or to the Internet, guest OS programs have access to the same network and the Internet.



You may wish to use Shared Network mode in the following cases:

- The host computer accesses the Internet via a modem or another non-Ethernet device.
- You need to access the Internet from inside the guest OS but are concerned about security.
- You have problems with working in [the Bridged Ethernet mode](#) (p. 93).

To configure the guest OS to use Shared Networking:

- 1 In Parallels Workstation, choose **Virtual Machine > Configure**.
- 2 Select **Network** in the **Hardware** list.
- 3 In the **Network** pane, make sure that the **Connected** and **Shared Network** options are selected.

**Note:** In the MAC address field, you can change the MAC address currently assigned to the virtual machine. MAC addresses are automatically generated when you first set up the guest OS on the host computer. However, you can modify the default MAC address by typing another value in the MAC address field or clicking the **Generate** button. When entering a new MAC address, make sure that it is unique within your network.

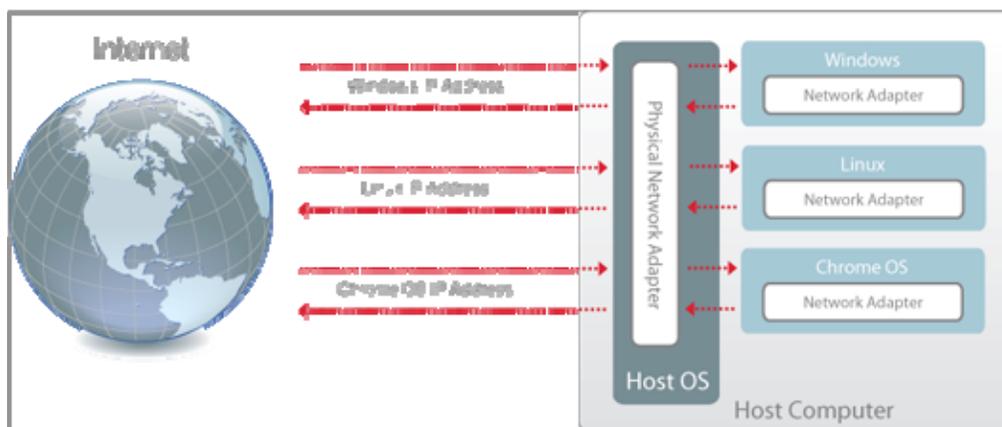
- 4 Click **OK**.

For the information about troubleshooting networking problems, refer to the [Parallels knowledge base](http://kb.parallels.com/) <http://kb.parallels.com/> available at the Parallels website.

## Apply Separate Network Settings to the Virtual Machine

When operating in the Bridged Ethernet mode, the virtual machine appears on the network as a stand-alone computer with its own IP address and network name.

**Note:** The Bridged Ethernet networking mode is more complex than [the Shared Networking mode](#) (p. 92) and you may need to contact your system administrator to configure it properly.



To configure a virtual machine to work in the Bridged Ethernet mode:

- 1 In Parallels Workstation, choose **Virtual Machine > Configure**.
- 2 Select **Network** in the **Hardware** list.
- 3 In the **Network** pane, make sure that the **Connected** option is selected.
- 4 Select the appropriate network adapter from the list. To connect the virtual machine's adapter to the active network adapter of the host computer, choose **Default Adapter**.

**Note:** In the MAC address field, you can change the MAC address currently assigned to the virtual machine. MAC addresses are automatically generated when you first set up the guest OS on the host computer. However, you can modify the default MAC address by typing another value in the MAC address field or clicking the **Generate** button. When entering a new MAC address, make sure that it is unique within your network.

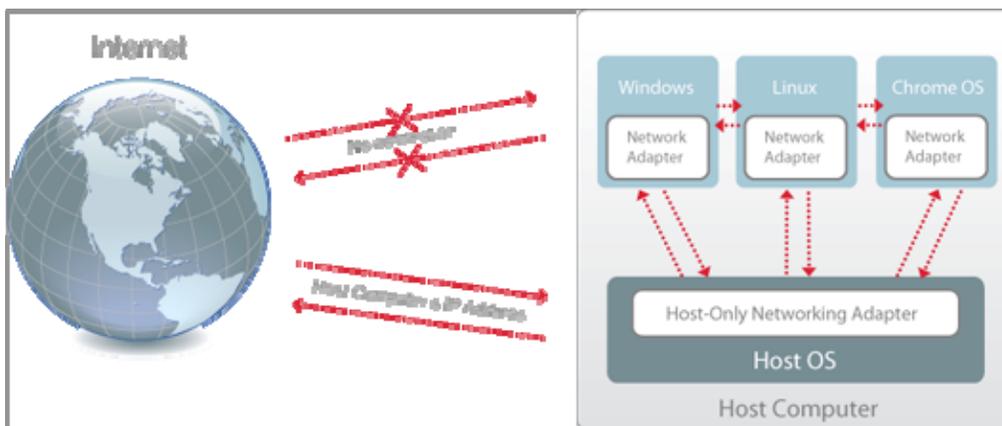
- 5 Click **OK**.

If you can't configure the virtual machine to function in the Bridged Ethernet mode, consider using [Shared Networking](#) (p. 92) or [Host-Only Networking](#) (p. 94).

For the information about troubleshooting networking problems, refer to the [Parallels knowledge base](http://kb.parallels.com/) <http://kb.parallels.com/> available at the Parallels website.

## Use Host-Only Network Settings

Parallels Workstation provides a closed network that is accessible only to the host OS and virtual machines running on the host computer. The host OS is connected to this network via the Parallels Host-Only Networking adapter automatically created on the host computer during the Parallels Workstation installation. The addresses for virtual machines are provided by the Parallels DHCP server.



To configure the virtual machine to use Host-Only Networking:

- 1 In Parallels Workstation, choose **Virtual Machine > Configure**.
- 2 Select **Network** in the **Hardware** list.
- 3 In the **Network** pane, make sure that the **Connected** and **Host-Only Network** options are selected.

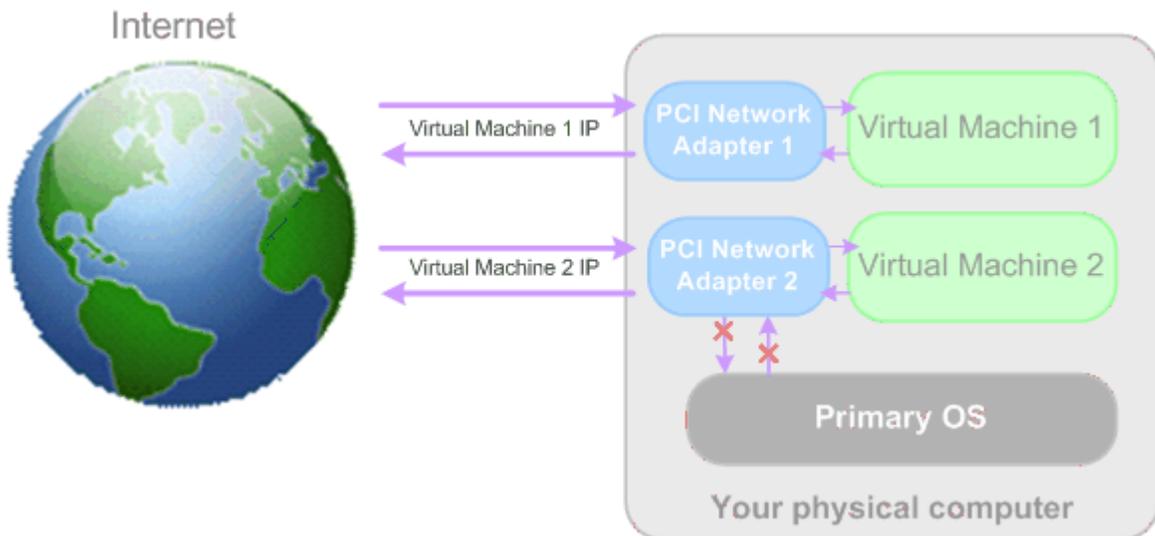
**Note:** In the MAC address field, you can change the MAC address currently assigned to the virtual machine. MAC addresses are automatically generated when you first set up the guest OS on the host computer. However, you can modify the default MAC address by typing another value in the MAC address field or clicking the **Generate** button. When entering a new MAC address, make sure that it is unique within your network.

- 4 Click **OK**.

For the information about troubleshooting networking problems, refer to the [Parallels knowledge base](http://kb.parallels.com/) <http://kb.parallels.com/> available at the Parallels website.

## Connect Using a PCIe Network Adapter

If the host computer has an Intel VT-d chipset and you're using Parallels Workstation 6 Extreme, you can use a PCIe network adapter to connect your virtual machine to the local network and Internet. The virtual machine will directly access the PCIe network adapter without using the host OS resources. Before adding a PCIe network adapter to the virtual machine, assign it to your virtual machines in [the Intel VT-d pane](#) (p. 20) of Parallels Workstation Preferences.



To configure your virtual machine to use the PCIe network adapter:

- 1 In Parallels Workstation, choose **Virtual Machine > Configure**.
- 2 Select **Network** in the **Hardware** list.
- 3 In the **Network** pane, make sure that the **Connected** and **Direct Assignment (using Intel VT-d)** options are selected.
- 4 Select the appropriate PCIe network adapter from the list. Click **OK**.
- 5 Start the virtual machine and install the manufacturer's driver for this PCIe device inside the virtual machine. The driver should support the Intel VT-d technology.

After performing these steps you will be able to use the PCIe network adapter directly from the guest OS.

**Note:** You can assign one PCIe network adapter to several virtual machines but only one virtual machine can use one PCIe network adapter at a time.

## Troubleshooting

In the Windows host OS, you may have problems with the automatic PCI device pass-through driver installation. In this case, you should install it manually.

### To install the Parallels network adapter pass-through driver in the Windows host OS

1. Go to **Start > Control Panel > System > Hardware** and open Device Manager.
2. In Device Manager, locate the appropriate network adapter, right-click it, and choose **Update Driver** from the context menu.
3. In the **Hardware Update** wizard, choose to install the driver from the specific location.
4. Choose to specify the driver yourself.
5. In the next window, select the **Have Disk** option and specify the following path as the driver's location: `C:\Program Files\Parallels\Parallels Workstation\Drivers\prl_vtdnet.inf` and click **Open**.
6. Follow the wizard's instructions to complete the installation of the driver.
7. Restart the host computer.

## Using Multiple Displays

This version of Parallels Workstation enables you to use separate displays for your host computer and your virtual machines and freely move the mouse pointer between them. To be able to use this feature, your host computer and virtual machines should comply with the following requirements:

- The host computer should support the Intel VT-d technology and the Intel VT-d support should be enabled in BIOS.
- The host computer configuration should have at least one free [PCIe video adapter](#) (p. 10) (in addition to the PCIe video adapter used by the host computer) with a display connected to it.
- At least one PCIe video adapter should be allocated to virtual machines in [Parallels Workstation Preferences](#) (p. 20) and included in the configuration of one of your virtual machines.

**Note:** To ensure this PCIe video adapter proper functioning, you should install the latest driver into the guest OS. The latest drivers are available on the manufacturer's website.

- An up-to-date version of [Parallels Tools](#) (p. 60) should be installed in the virtual machine that uses this PCIe video adapter.
- If you use two monitors with your Linux host computer, enable either the Xinerama or TwinView mode in the operating system to ensure the proper multi-monitor support. If you use two monitors with your Linux virtual machine, enable either of the two modes in the guest operating system.

You can easily [arrange the displays](#) (p. 98) allocated to your host computer and virtual machines using Display Manager. To launch Display Manager:

- 1** Start the virtual machine that has the directly assigned PCIe video adapter with a separate display connected.
- 2** Choose **Display Manager** from the **File** menu.

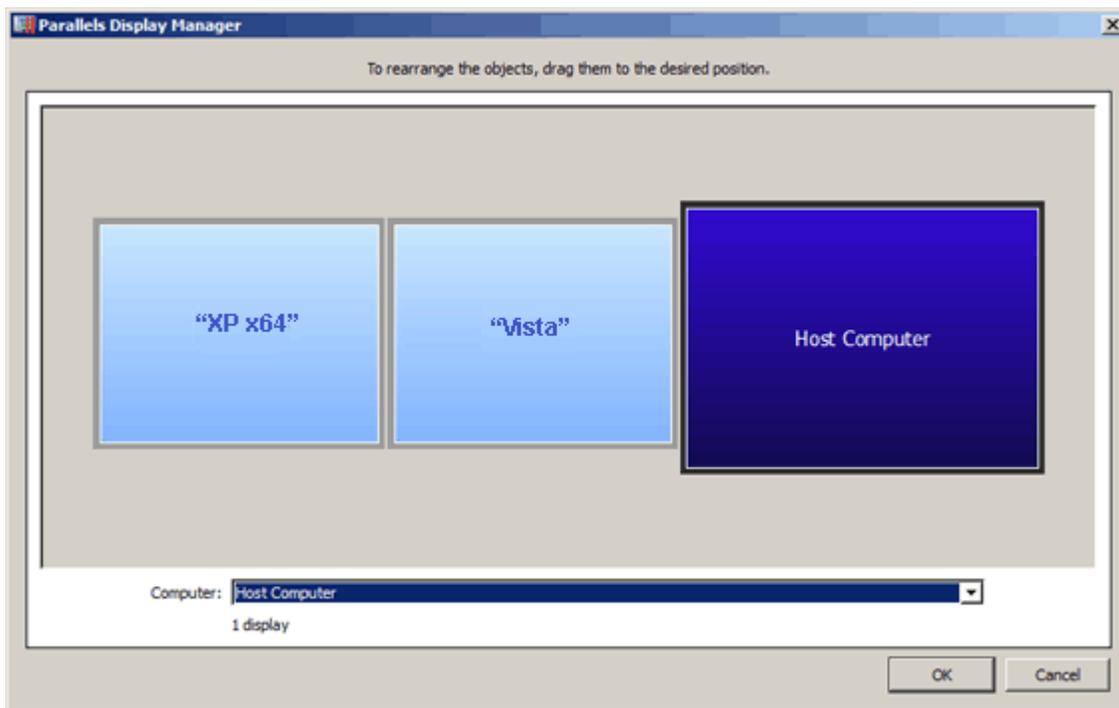
## Display Manager

If you use separate displays for the host computer and virtual machines, Display Manager allows you to specify the order according to which the mouse pointer will flow from one display to another.

To launch Display Manager, start the virtual machine that has the directly assigned PCIe video adapter with a separate display connected and choose **Display Manager** from the **File** menu.

The **Parallels Display Manager** window shows the displays used by the host computer and virtual machines. If you have two displays connected to one PCIe video card, they are joined into one display group.

To make the explanation more vivid, let us assume that you have the "XP x64" and "Vista" virtual machines running on the host computer and three displays: one for the host computer, the second for "XP x64", the third for "Vista". If you launch Display Manager, its window may look like as follows:



The displayed arrangement of monitors means the following order of mouse pointer movements:

- If you are working with the host computer and move the mouse pointer to the right, it will set against the border.
- If you are working with the host computer and move the mouse pointer to the left, it will appear on the display used for the "Vista" virtual machine.
- If you are working with the "Vista" virtual machine and move the mouse pointer to the right, it will appear on the display used for the host computer.
- If you are working with the "Vista" virtual machine and move the mouse pointer to the left, it will appear on the display used for the "XP x64" virtual machine.

This order of mouse pointer movements is inconvenient if, for example, in reality the display used for the host computer is between the displays used for the virtual machines. In this case, in the **Parallels Display Manager** window, you should rearrange the order of displays to place them in accordance with the reality.

To rearrange the displays or display groups:

- 1** Click on the display or display group you want to move or select it in the **Computer** drop-down list.
- 2** Drag this display or display group to the desired position.
- 3** To apply the changes, click **OK**. Otherwise, click **Cancel**.

The positions of displays in a display group cannot be rearranged in Display Manager. You can change the layout and of each display or display group by editing the display settings in the operating system of your host computer or the respective virtual machine.

Before managing your virtual machines via Display Manager, make sure they meet the following requirements:

- They should be running or paused.
- They should have a PCIe video adapter with a separate display connected.
- They should have the latest version of Parallels Tools installed. See **Updating Parallels Tools** (p. 68).

# Using Intel VT-d PCI Devices in Parallels Virtual Machines

If your computer has an Intel VT-d chipset, you can set the physical PCI Express (PCIe) devices connected to the physical computer to be directly assigned to your virtual machine. The virtual machine will directly access the PCIe devices without using the resources of the primary OS.

You can connect up to eight PCIe devices of any of the supported types to a single virtual machine.

## To connect a PCIe device to a virtual machine

- 1 Assign the device to your virtual machines in [the Intel VT-d pane](#) (p. 20) of Parallels Workstation Preferences.

**Note:** You are recommended to have at least two adapters of the same type (video or network adapters): if you reassign one adapter to your virtual machines, the other adapter will be left to the physical computer. Keep in mind that if you assign your video or network adapter to a virtual machine, this adapter will be invisible to your primary OS.

- 2 Add the device to the virtual machine configuration.

## Troubleshooting

In Windows-based virtual machines, if the pass-through driver cannot be installed automatically after a PCIe device has been assigned to virtual machines in Preferences, install it manually by doing the following:

- 1 Go to Start > Control Panel > System > Hardware and open the Device Manager.
- 2 In the Device Manager, locate the appropriate PCIe device, right-click it and choose Update Driver from the context menu.
- 3 In the Hardware Update wizard, choose to install the driver from the specific location.
- 4 Choose to specify the driver yourself.
- 5 In the next window, select the Have Disk option and specify the following path to the driver's location: `C:\Program Files\Parallels\Parallels Workstation\Drivers\prl_vtdvideo.inf` or `C:\Program Files\Parallels\Parallels Workstation\Drivers\prl_vtdnet.inf` and click Open.
- 6 Follow the wizard's instructions to complete the installation of the driver.
- 7 Restart the host computer.

In rare cases you cannot boot the primary Linux operating system after a PCIe device is added to the configuration of a virtual machine. To work around the issue, do the following:

**1** In the grub loader splash screen, with your primary operating system selected in the list, press `e` on the keyboard to display the boot parameters.

**2** Select the line starting with "`kernel`" by pressing the down arrow on the keyboard.

**3** Press `e` to launch an editor for the selected line.

**4** At the end of the line, add

```
init=/bin/sh
```

**5** Press Enter to return to the boot parameters screen.

**6** Press `b` to boot the kernel.

**7** In the command line window, mount the root partition in read-write mode by entering

```
mount /dev/root / -oremount,rw
```

**Note:** If you want your `root` partition to be mounted to a different location, replace `root` with this location in the command above.

**8** Type the following command and press Enter:

```
echo -n "" > /etc/parallels/vtd.hook
```

**9** Type the following command and press Enter:

```
mount /dev/root / -oremount,ro
```

**10** Type the following command and press Enter:

```
reboot
```

This procedure will make your primary Linux operating system boot normally.

## Work with Your Virtual Machines on an iPad, iPhone, or iPod touch

You can use the free Parallels Mobile app to access and control your virtual machines remotely from your iPad, iPhone, or iPod touch.

Parallels Mobile lets you:

- Use any of your virtual machine programs on your iPad, iPhone, or iPod touch
- Remotely start, stop, and reset a virtual machine
- Connect over Wi-Fi or 3G
- Access your virtual machines from anywhere over the Internet

### Get Started

Before you can use Parallels Mobile, you must do the following:

- 1 Be sure you have [registered to use Parallels Workstation](#) (p. 15).
- 2 On your iPad, iPhone, or iPod touch, download and install Parallels Mobile from the App Store.
- 3 Be sure you have created at least one virtual machine on the host computer.
- 4 In Parallels Workstation, click **File > Preferences**.
- 5 In the left pane, click **iPhone**.
- 6 Log in to your Parallels account using the email and password you used to register Parallels Workstation.

You only have to do these steps once.

### Access Your Virtual Machines from Your iPad, iPhone, or iPod touch

- 1 Turn on the host computer.  
It must be on for Parallels Mobile to access and use your virtual machines.
- 2 Open Parallels Mobile on your iPad, iPhone, or iPod touch and log in to your account using the same email and password you used to register Parallels Workstation.
- 3 Tap your host computer in the list of available host computers.

When you access your virtual machines for the first time, you see tips about gestures you can use to control them. Tap **Close** to go to the virtual machine's desktop.

### Connect Directly to the Host Computer for a Faster Experience

If the host computer and your iOS device are on the same Wi-Fi network, you can bypass the Internet and connect your device directly to the host computer for a faster experience.

- 1** In Parallels Workstation on the host computer, choose **File > Preferences**.
- 2** In the left pane, click **iPhone**.
- 3** Make sure **Connect Parallels Mobile directly to the host computer** is selected, and then write down the IP Address listed under the checkbox.
- 4** On your iOS device, open the **Settings** app, and then scroll down and tap **Parallels**.
- 5** Be sure **Direct Connection** is turned on.
- 6** Press the Home button and then open Parallels Mobile on your iOS device.
- 7** Tap **Direct** and tap the plus (+) icon.
- 8** Enter a name for the host computer and enter the IP address from the **iPhone** preferences pane.
- 9** Enter the user name and password you use for the host computer (your login password).
- 10** Tap **Connect**.

For more information about using Parallels Mobile, see the *Parallels Mobile Quick Start* guide, available on the Parallels website.

## Save a Picture of the Screen

To save a picture of the guest OS in [the Window view mode](#) (p. 76), choose **View > Make Screenshot**.

A file named `Parallels Picture.png` is saved on the host OS desktop.

By default, pictures are saved to the host OS desktop.

# Configure a Virtual Machine

## In This Chapter

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Add and Remove Devices .....	145

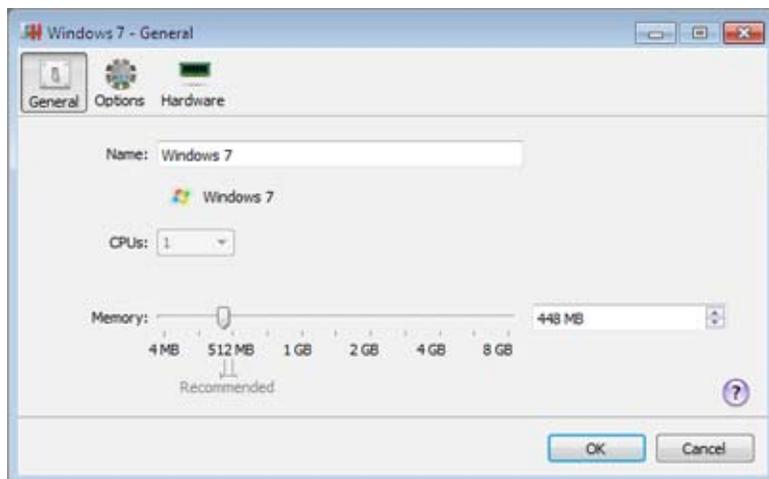
## General Settings

In the General pane, you can view and configure the virtual machine general settings.

To edit these settings, do the following:

- 1 Open the **Virtual Machine** menu and click **Configure**.
- 2 In the **Virtual Machine Configuration** window, click **General**.

**Note:** Some of these settings can be changed only when the virtual machine is not running.



General Settings include the following:

- The virtual machine name. The **Name** field displays the name assigned to the virtual machine. The length of this name is limited to 50 characters. The name of the virtual machine is displayed in its guest OS window.
- The guest OS type and version. This field displays the type of the operating system installed in the virtual machine or declared to be installed in the future. The OS type and version field should reflect the real operating system type and version installed in the virtual machine.
- The number of processors. The **CPUs** field allows you to change the number of virtual CPUs that will be used to handle the processes running in the virtual machine. The maximum allowable number of virtual CPUs is automatically calculated by Parallels Workstation. The calculation is based on the number of physical CPUs available to the host computer.

**Note:** It is reasonable to use more than one CPU in your guest OS if you are going to use applications that perform better under multi-core processors.

- The memory amount. In the **Memory** field, you can set the amount of RAM that will be available to the virtual machine. To configure the main memory limit, drag the slider or type the value directly into the **Memory** field.

**Note:** If the host computer has 1 GB of RAM, it is strongly recommended to assign not more than 512 MB to a single virtual machine.

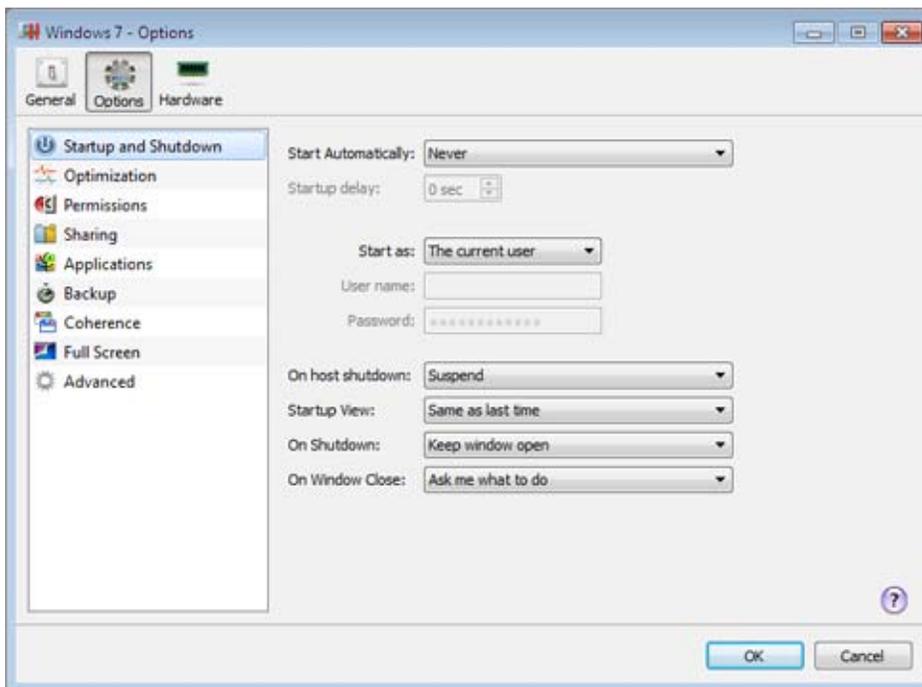
# Options

## Startup and Shutdown

In the **Startup and Shutdown** pane, you can define a number of parameters related to the procedures of starting and shutting down your virtual machine.

To edit these settings, do the following:

- 1 Open the **Virtual Machine** menu and click **Configure**.
- 2 In the **Virtual Machine Configuration** window, click **Options** and select **Startup and Shutdown** in the sidebar.



## Start Virtual Machine Automatically

The **Start Automatically** option defines the cases in which the virtual machine can be started automatically.

- Select **Never** if you do not want your virtual machine to be started automatically in any case.
- Select **When Parallels Workstation starts** if you want your virtual machine to start automatically when you start Parallels Workstation.
- Select **When host starts** if you want your virtual machine to start automatically every time you start the host computer.

In the **Startup delay** field, you can set the delay time interval.

## Choose 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:

- **The current user.** The virtual machine will run under the user account used to start the virtual machine.
- **System.** The virtual machine will run under the administrator user account.
- **A specific user.** The virtual machine will run under the specified user account.

## Action on Host Computer Shutdown

The **On host shutdown** option defines the operation to be performed when you shut down the host computer:

- Select **Stop** if you want to stop the virtual machine when you shut down the host computer.
- Select **Shutdown** if you want to shut down the virtual machine when you switch off the host computer.
- Select **Suspend** if you want to suspend the virtual machine when you shut down the host computer.

## Startup View

The **Startup View** option defines the mode in which the virtual machine will work after you select it and start. If the **Attached Console**, **Window**, **Coherence**, or **Full screen** option is selected, the virtual machine will automatically switch to the specified view mode. If the **Same as last time** option is selected, the virtual machine will start in the same mode that was applied to it before it was turned off.

## Action on the Virtual Machine Shutdown

The **On Shutdown** option defines the operation to be performed when you stop the virtual machine.

- Select **Keep window open** if you want the virtual machine window to stay open after the virtual machine is stopped.
- Select **Close window** if you want the virtual machine window to automatically close after the virtual machine is stopped.
- Select **Quit Parallels Workstation** if you want Parallels Workstation to quit after the virtual machine is stopped. If there are any other running virtual machines, Parallels Workstation will ask what to do with them before closing.

### Action on Closing the Virtual Machine Window

The **On Window Close** option defines the operation to be performed when you close the virtual machine window.

- Select **Suspend** if you want the virtual machine to be suspended when you close its window.
- Select **Force to stop** if you want the virtual machine to be shut down when you close its window.
- Select **Keep running** if you want the virtual machine to continue running after you close its window.

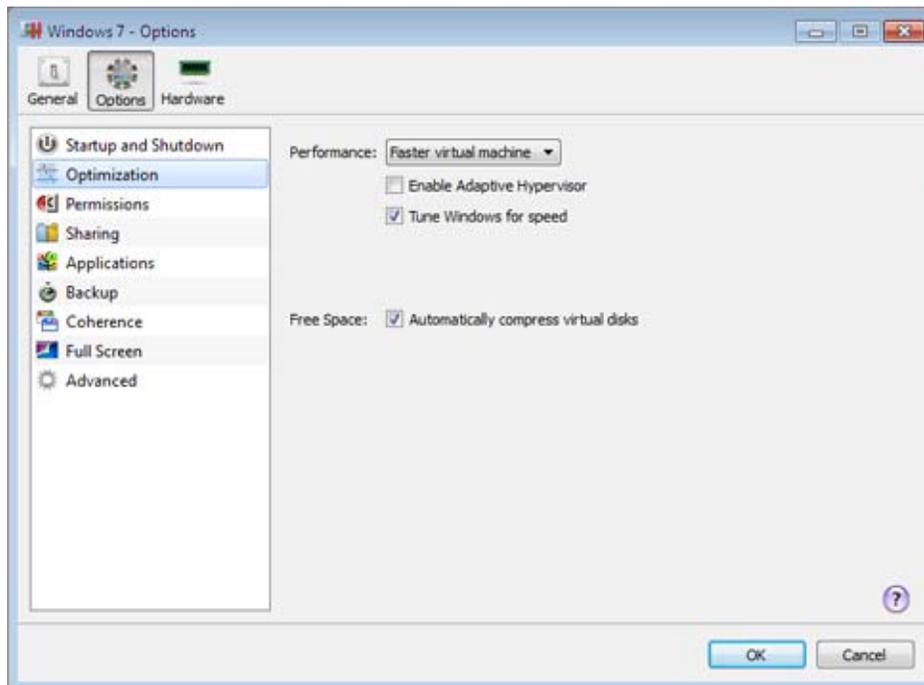
If you select **Ask me what to do**, you will be prompted to choose the operation to perform with the virtual machine each time you close its window.

## Optimization

In the **Optimization** pane, you can optimize your virtual machine performance.

To edit these settings:

- 1 Open the **Virtual Machine** menu and click **Configure**.
- 2 In the **Virtual Machine Configuration** window, click **Options** and select **Optimization** in the sidebar.



### Optimize Performance

The **Performance** option defines the priority of distributing the host computer memory resources:

- Select **Faster virtual machine** to allocate more host computer memory resources to the virtual machine and its applications. Selecting this option may significantly increase the virtual machine performance; however, this may slow down the productivity of your host OS applications.
- Select **Faster Host computer** to allocate more memory resources to the physical computer and its applications. In this case, the memory resources usage will be optimized to provide better performance of your host OS applications.

### Use Adaptive Hypervisor

Select **Enable Adaptive Hypervisor** to automatically allocate the host computer CPU resources between the virtual machine and host OS applications depending on what application you are working with at the moment. If your virtual machine window is in focus, the priority of this virtual machine processes will be set higher than the priority of the host computer processes. As a result, more CPU resources will be allocated to the virtual machine. If you switch to the host OS window - the priority of its working applications will be set higher and the CPU resources will be relocated to the host OS.

### Tune Windows for Speed

You can make your Windows virtual machine work even faster by selecting **Tune Windows for speed**. This option disables some of the additional Windows features that tend to slow down the Windows performance.

### Compress the Disk Automatically

If you use an [expanding](#) (p. 134, p. 148) virtual hard disk, its size increases on the physical hard disk as you add new data to it. When you delete some data from this virtual hard disk, free unused space appears on it. However, the amount of space the virtual hard disk occupies on the host computer's hard disk doesn't reduce. To regularly free the unused space back to the host computer, use the **Automatically compress virtual disks** option. The virtual hard disk in an expanding format will be reviewed twice a day and, if the unused space occupies more than 50 percent of the hard disk image size, it will be compressed and the hard disk image file size will be decreased. As a result, there will be more free space on the host computer hard disk.

**Note:** Compressing can be performed for virtual machines without snapshots and with the **Undo disks** option disabled.

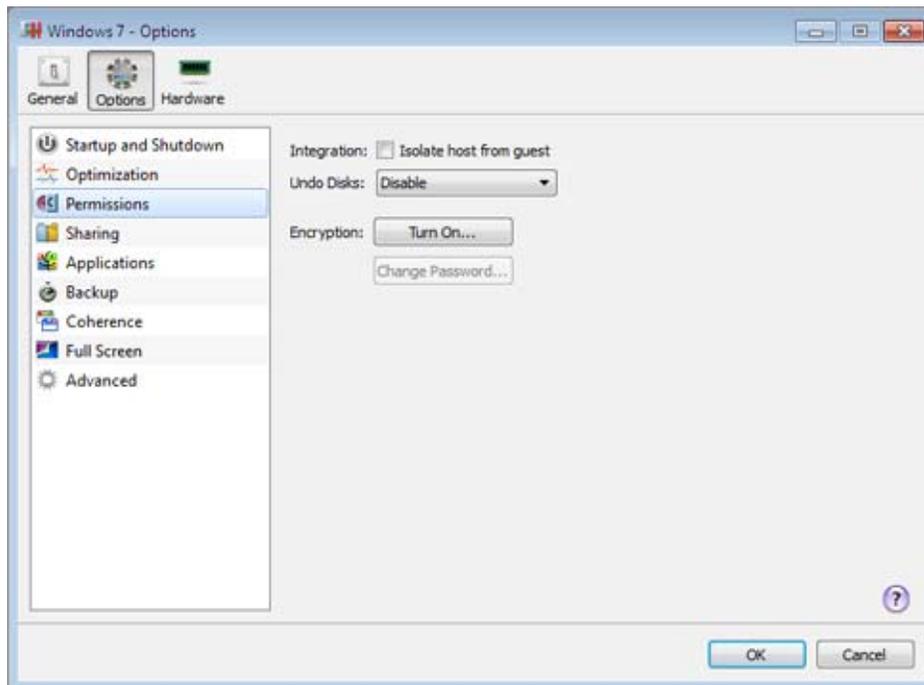
In the **Hard Disk pane** (p. 131), you can compress the disk manually whenever you want.

## Permissions

In the **Permissions** pane, you can set restrictions for performing some actions and make your virtual machine isolated from the host OS.

To edit these settings:

- 1 Open the **Virtual Machine** menu and click **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Options** and select **Permissions** in the sidebar.



### Isolate Virtual Machine from Host OS

If you want to isolate your virtual machine from the host OS, select **Isolate host from guest**. This option disables all integration features, including [Shared Folders](#) (p. 113), [Shared Profile](#) (p. 113), Shared Applications, [SmartMount](#) (p. 113), etc. You will also not be able to copy or move objects between the virtual machine and host OS.

### Work in Virtual Machine Without Saving Changes

The **Undo Disks** option allows you to discard or apply the changes you make while working with the virtual machine. If you choose to discard them, the changes will be discarded when you shut down the virtual machine. When you start this virtual machine again, its virtual hard disk will have the same data it contained before you started the previous working session. If you choose to apply the changes on the virtual machine shutdown, the next time you start this virtual machine, its virtual hard disk will store the changes you made during the previous working session.

**Note:** When enabled, the **Undo Disks** feature is applied to all virtual hard disks this virtual machine uses.

Choose the action to perform:

- **Discard changes.** Select this option if you want to discard the changes when you shut down the virtual machine.
- **Ask me what to do.** If this option is selected, you will be prompted to choose the action to perform with the changes (discard or apply them) each time you shut down the virtual machine.

**Note:** You can't create snapshots of virtual machines that have the **Undo Disks** option enabled.

### Encrypt Virtual Machine

Encryption allows you to protect your virtual machine from being accessed by unauthorized users. To encrypt the virtual machine, click **Turn On** and specify a password. To access the encrypted virtual machine, you have to enter this password every time you open it.

**Warning!** The specified password is very important. You must record it. Without this password, you will not be able to launch the virtual machine.

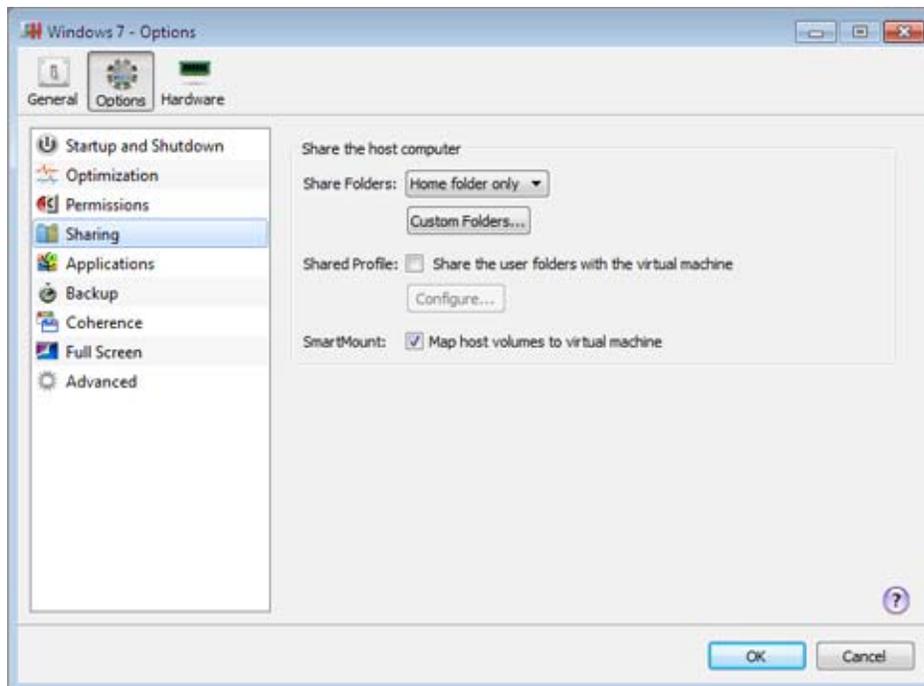
## Sharing

In the **Sharing** pane, you can configure a number of integration settings.

To edit these settings:

- 1 Open the **Virtual Machine** menu and click **Configure**.
- 2 In the **Virtual Machine Configuration** window, click **Options** and select **Sharing** in the sidebar.

**Note:** To be able to edit the **Sharing** settings, you must have [Parallels Tools](#) (p. 60) installed in the virtual machine and the **Isolate host from guest** option disabled in the **Permissions** pane.



### Share Host OS Folders With Virtual Machine

To configure access to the disks and folders on the host computer from inside the virtual machine, click the **Share Folders** menu and select one of the following:

- Select **All disks** to provide the virtual machine with access to all disks and folders of the host computer.
- Select **Home folder only** to provide the virtual machine with access to the Home folder of the host computer.
- Select **None** to disable the host OS folders sharing.

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

### Define Host Computer Folder to Be Shared

To specify one or more host computer folders to be shared with the virtual machine, click **Custom Folders** and choose the folder to share with the virtual machine.

### Share Profile

The Shared Profile functionality allows you to make host OS desktop and some of the Home folder items directly accessible from the Desktop and the corresponding folders in the Windows guest OS.

**Note:** The Shared Profile functionality is available for Windows guest operating systems only. [?]

To enable Shared Profile, select **Share the user folders with the virtual machine**, click **Configure**, and specify the following settings:

- Select **Desktop** to use the host OS desktop as the desktop in your Windows guest OS.
- Select **Documents** to use the Documents folder on the host computer as the My Documents folder in your Windows guest OS.
- Select **Pictures** to use the Pictures folder on the host computer as the My Pictures folder in your Windows guest OS.
- Select **Music** to use the Music folder on the host computer as the My Music folder in your Windows guest OS.
- Select **Movies** to use the Movies folder on the host computer as the My Videos folder in your Windows guest OS (available for Windows XP/Vista/7 only).
- Select **Downloads** to use the Downloads folder on the host computer as the Downloads folder in your Windows guest OS (available for Windows Vista/7 only).

**Warning:** If you delete any host OS file from the Windows desktop when the host OS desktop sharing is enabled, you will not be able to find it in the host OS. The file will be permanently deleted from your computer.

For more information about the Shared Profile functionality, see [Using Shared Profile](#). [?]

## Map Host OS Volumes to Guest OS

The SmartMount feature allows you to automate the detection and mounting of removable devices in your virtual machines. You can automate the detection and mounting of:

- **Removable drives.** External storage devices such as USB hard disks and USB flash drives will be mounted to your guest OS.
- **CD/DVD drives.** CD and DVD drives or CD/DVD images will be mounted to your guest OS.
- **Network folders.** Network shares connected to the host OS will be mounted to your guest OS.

If the SmartMount functionality is enabled and you connect any of these devices to the host OS, this device is also automatically mounted to your guest operating system as a network drive. For example, a USB flash drive plugged in to the host OS will be accessible in both the host and guest OSs.

The permissions you will have for managing the mounted device from inside the virtual machine will coincide with those you have for this device in the host OS. So, if you can read from and write to a USB flash drive in the host OS, you will have the same permissions for this drive from inside the virtual machine.

To enable the SmartMount feature, select **Map host volumes to virtual machine**.

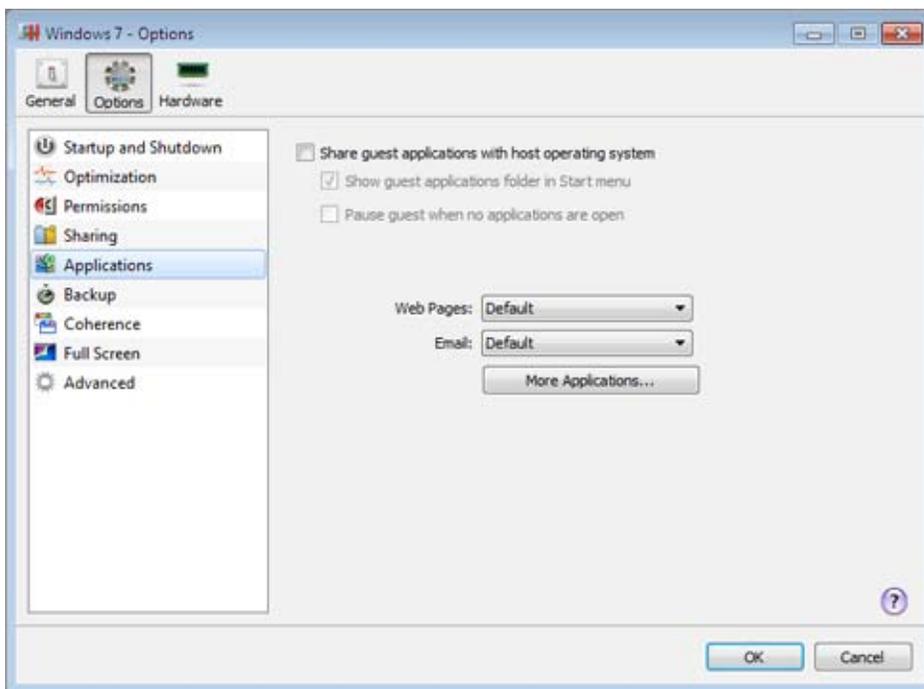
## Applications

In the **Applications** pane, you can configure the applications sharing between the guest and host operating systems.

To edit these settings:

- 1 Open the **Virtual Machine** menu and click **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Options** and select **Applications** in the sidebar.

**Note:** These settings are available only when Parallels Tools [link] are installed in the virtual machine and the **Isolate Mac from Windows** option is disabled in the **Permissions** pane.



Select **Share guest applications with host operating system** to allow using guest OS applications for opening the files in the host OS. Before using a guest application in the host OS for the first time, you should open it once in the guest OS. If you enabled this option, you can also configure the following options:

- If you select **Show guest applications folder in Start menu**, the folder with all applications installed in the virtual machine will always be displayed in the Start menu.
- Select **Pause guest when no applications are open** to save your host OS resources. Pausing a virtual machine releases the resources, such as RAM and CPU, currently used by this virtual machine. The released resources can then be used by the host computer and its applications or by other virtual machines running on the host computer.

If you select this option, the virtual machine will be automatically paused provided that:

- the virtual machine is running but the virtual machine window is not active over 30 seconds
- there are no applications running in the guest operating system

### Internet Applications

In the **Applications** pane, you can also specify where you want to open different types of hyperlinks - in the guest or host operating system.

You can specify where you want to open the following types of hyperlinks:

- **Web pages.** Web pages accessible through the HTTP and HTTPS protocols.
- **Email.** Links in the `mailto` format.

If you click **More Applications**, you will also be able to specify where you want to open:

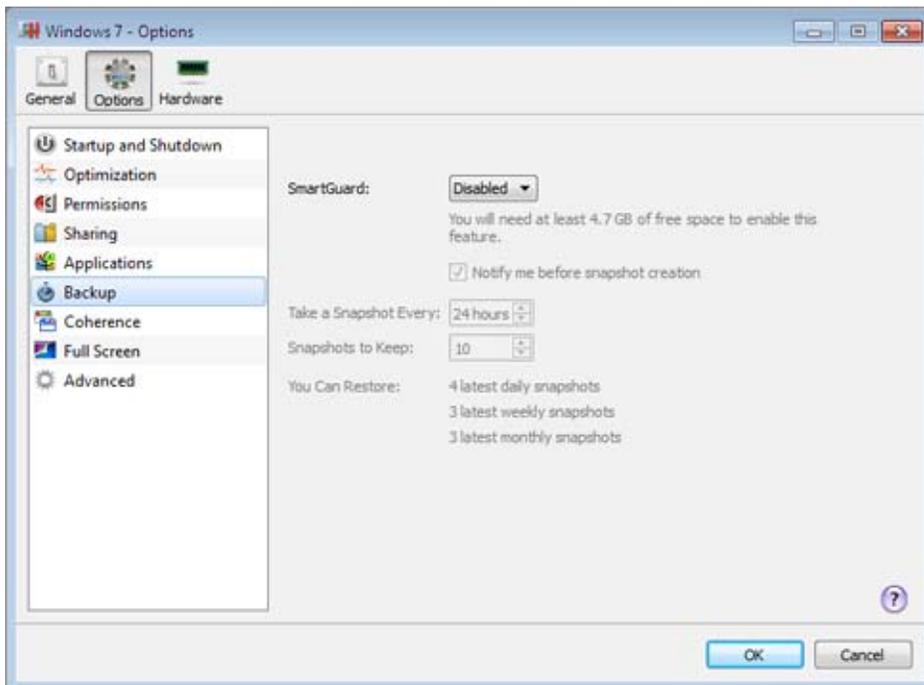
- **Newsgroups.** Links in the `news .` format.
- **FTP.** Locations accessible through the FTP protocol.
- **RSS.** RSS feeds.
- **Remote access.** Locations accessible through the Telnet and Secure Shell (SSH) protocols.

## Backup

In the **Backup** pane, you can automate snapshots creation. You can find detailed information on snapshots and how to work with them in **Working With Snapshots**.

To edit these settings:

- 1 Open the **Virtual Machine** menu and click **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Options** and select **Backup** in the sidebar.



To enable automatic snapshots creation, choose **Custom** from the **SmartGuard** menu.

**Note:** The SmartGuard feature is available only when the **Undo Disks** feature is disabled and the virtual machine is not running in **Safe Mode**.

If you want to know when it is time to make the next snapshot and to be able to reject the snapshot creation, select **Notify me before snapshot creation**.

### Set the Time Interval

Set how often snapshots should be taken in the **Take a Snapshot Every** field. You can set from one hour to 48 hours.

If the time interval is less than 24 hours, SmartGuard allows you to restore the latest hourly, daily and weekly snapshot. If the time interval is more than 24 hours, you will be able to restore the latest daily, weekly and monthly snapshot.

To manage the snapshots and restore any of them, use Snapshot Manager.

### Restrict the Snapshots Number

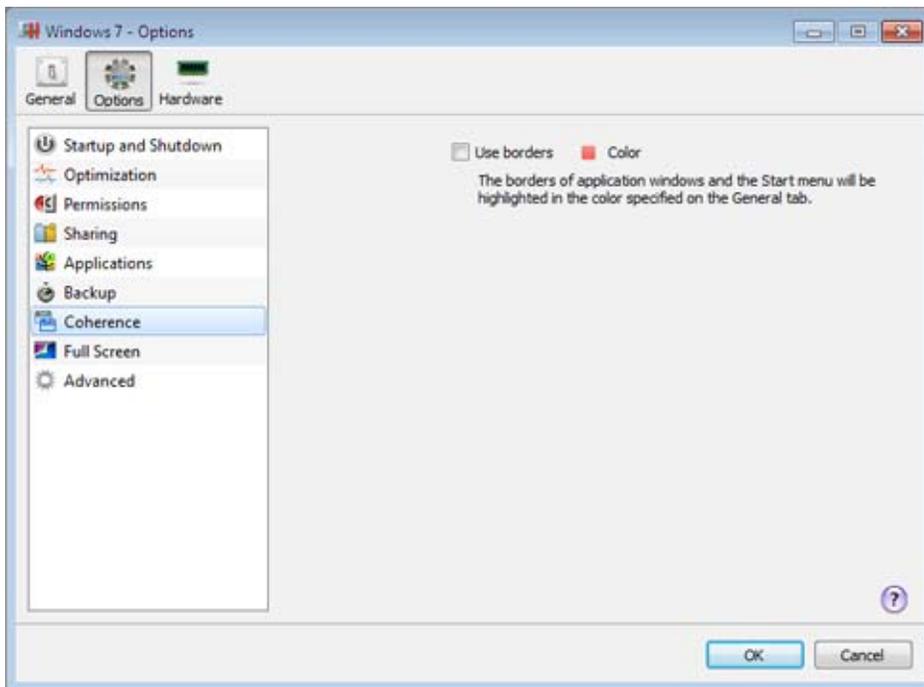
Use the **Snapshots to Keep** field to set the maximum number of snapshots that can be stored on the host computer. The maximum available value is 100 snapshots. As soon as Snapshot Manager reaches the limit for snapshots and needs to make a new one over limit, it deletes the oldest snapshot.

## Coherence

When your virtual machine is working in the Coherence view mode, you can see only windows of running guest OS applications and the guest OS desktop is hidden. In the **Coherence** pane, you can choose the color in which the borders of these windows will be highlighted. This helps to distinguish a guest OS application from a host OS application and one virtual machine's application from another virtual machine's application.

To edit these settings, do the following:

- 1 Open the **Virtual Machine** menu and click **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Options** and select **Coherence** in the sidebar.



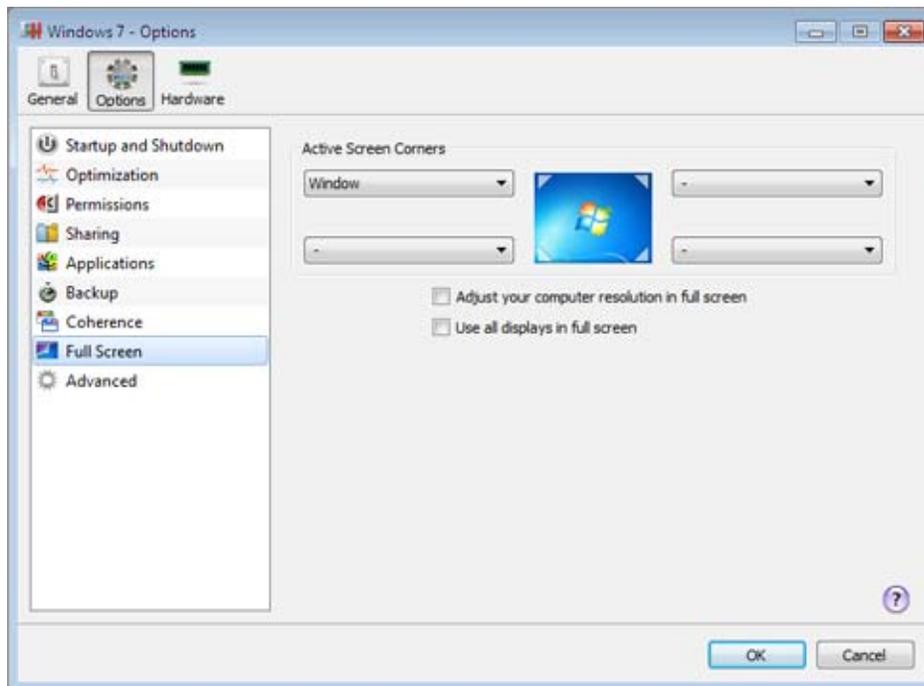
## Full Screen

In the **Full Screen** pane, you can configure the virtual machine appearance and behavior when it is running in the Full Screen view mode. In this mode, the guest operating system occupies the whole screen and all the host operating system and Parallels Workstation controls are hidden.

To edit these settings, do the following:

- 1 Open the **Virtual Machine** menu and click **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Options** and select **Full Screen** in the sidebar.

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



### Active Screen Corners

You can set actions for screen corners in the Full Screen view mode. Once you've set an active corner, move the mouse to the corresponding corner of your screen in the Full Screen mode to see the result.

To set an action for a screen corner, click the field near this corner and select the desired action from the menu:

- **Window.** On clicking the corresponding active corner, the virtual machine will switch to the Window view mode.
- **Coherence.** On clicking the corresponding active corner, the virtual machine will switch to the Coherence view mode.
- **Show taskbar.** On clicking the corresponding active corner, the host operating system taskbar will appear.

### Adjust the Host Computer Screen Resolution to the Virtual Machine Resolution in Full Screen

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

- changes to the physical computer screen resolution if you have Parallels Tools installed, or
- remains the same.

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

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

### Use All Displays in Full Screen

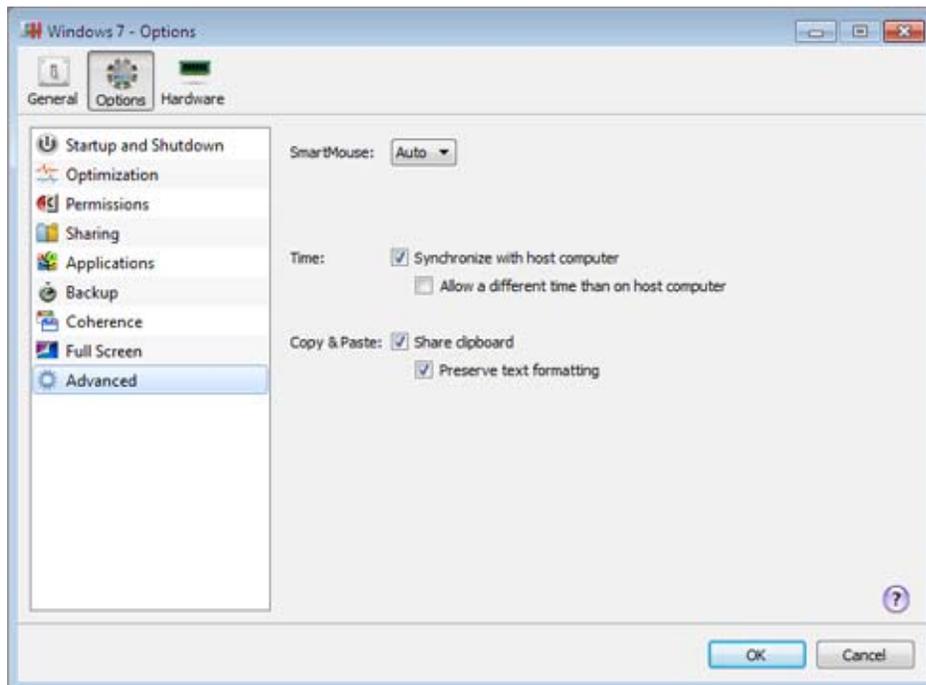
If you have multiple displays connected to the host computer, the guest operating system can use all these displays in the Full Screen mode. To enable this feature for the virtual machine, select **Use all displays in full screen**. Now if you change the view mode to Full Screen, your guest operating system will occupy all available displays.

## Advanced

In the **Advanced** pane, you can configure the Parallels Workstation additional settings.

To edit these settings, do the following:

- 1 Open the **Virtual Machine** menu and click **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Options** and select **Advanced** in the sidebar.



### SmartMouse

The **SmartMouse** option allows the mouse to move smoothly between the virtual machine and the host operating system. With this option enabled, Parallels Workstation automatically grabs the mouse input when you move the pointer to the virtual machine, and releases it when you move it back to the host OS.

- If you select **On**, the mouse input will be automatically captured in the virtual machine window when the mouse pointer hovers over it and then released when it moves back to the host OS, which will make the mouse move seamlessly between the host OS and the virtual machine.
- If you select **Off**, you will need to click inside the virtual machine window to capture the mouse input, and press Ctrl+Alt to release it back to the host operating system.

**Note:** Ctrl+Alt is the default key combination. You can define another key combination for releasing the mouse in the **Keyboard** pane of Parallels Workstation Preferences.

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

### Time Synchronization

Select **Synchronize with host computer** to synchronize the time settings of your virtual machine with those of the host computer.

If the time zone set in your virtual machine differs from that of the host computer, you can maintain this time difference by selecting **Allow a different time than on host computer**.

### Copy & Paste

If you want to copy and paste data between the host and guest operating systems, select **Share clipboard**. If the data you copy and paste between the host OS and your virtual machine is text and you want to preserve text formatting, select **Preserve text formatting**.

**Note:** This functionality is available only for virtual machines with [Parallels Tools installed](#) (p. 60).

# Hardware

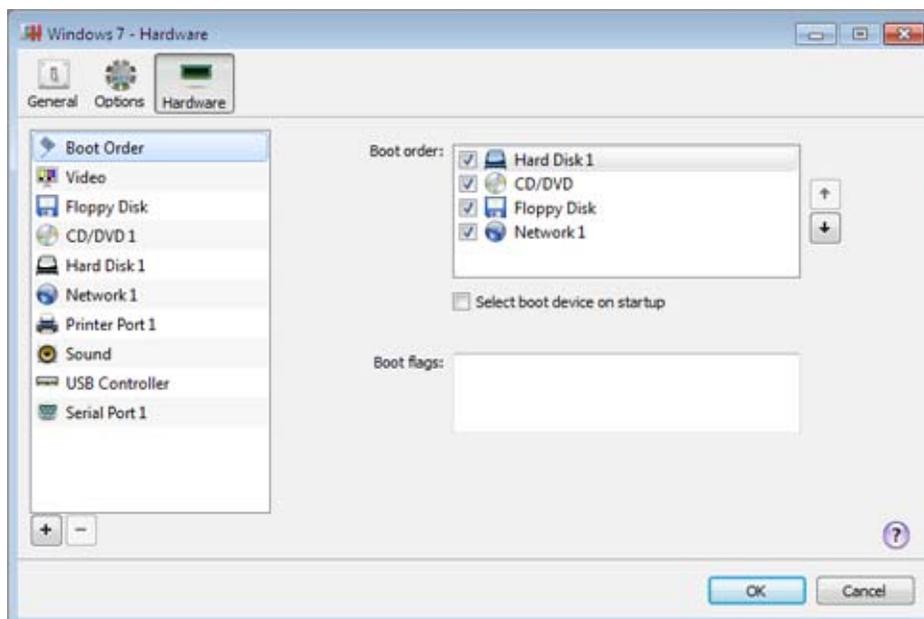
## Boot Order

In the **Boot Order** pane, you can configure the virtual machine boot sequence, that is, the order in which the virtual machine tries to load the operating system from different boot devices.

**Note:** These settings cannot be changed when the virtual machine is running.

To edit the **Boot Order** settings, do the following:

- 1 Open the **Virtual Machine** menu and choose **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Hardware** and select **Boot Order** in the sidebar.



### Boot Order

By default, the virtual machine tries to boot from the device specified as the first one in the **Boot order** list. If the virtual machine cannot boot from the first device, it proceeds to the second and so on. The following boot devices are available:

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

**Note:** The virtual machine uses the CD/DVD-ROM drive specified as **CD/DVD 1** in its configuration.

- **Floppy Disk.** Select this device if you want the virtual machine to boot up from a floppy disk image connected to its virtual floppy disk drive.
- **Network Adapter.** Select this device if you want your virtual machine to boot from a network adapter using PXE (Pre-Execution Environment).

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

To change the default boot sequence, select the device you want the virtual machine to boot from and move it up or down using the arrows to the right of the list.

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

### Select Boot Device on Startup

If you want to select the boot device when your virtual machine starts up, choose **Select boot device on startup**. With this option selected, 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 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 properly configured. 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, stop the virtual machine and configure at least one boot device for it.

### Boot Flags

The **Boot flags** field is intended for specifying the flags that can change the virtual machine system behavior. The system flags can be used by the Parallels customer support team in cases when something goes wrong in your virtual machine. It is not recommended to type anything into this field without being instructed to do so by the customer support staff.

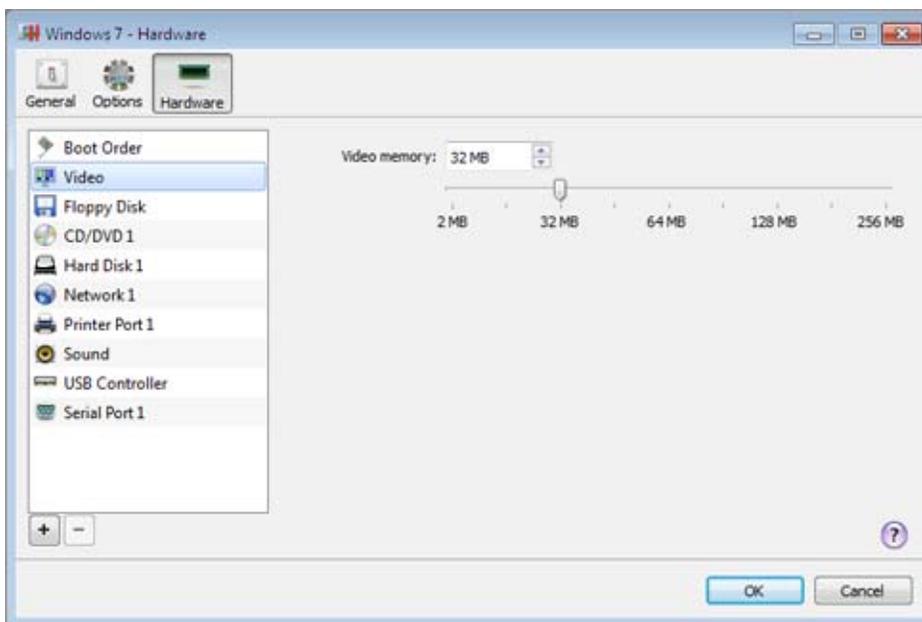
## Video

In the Video pane, you can view and configure the amount of video memory available to the virtual machine's video card.

To edit these settings, do the following:

- 1 Open the **Virtual Machine** menu and choose **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Hardware** and select **Video** in the sidebar.

**Note:** These settings cannot be changed when the virtual machine is running.



To change the amount of video memory available to the virtual machine's video card, drag the slider or type the value directly into the **Video memory** field.

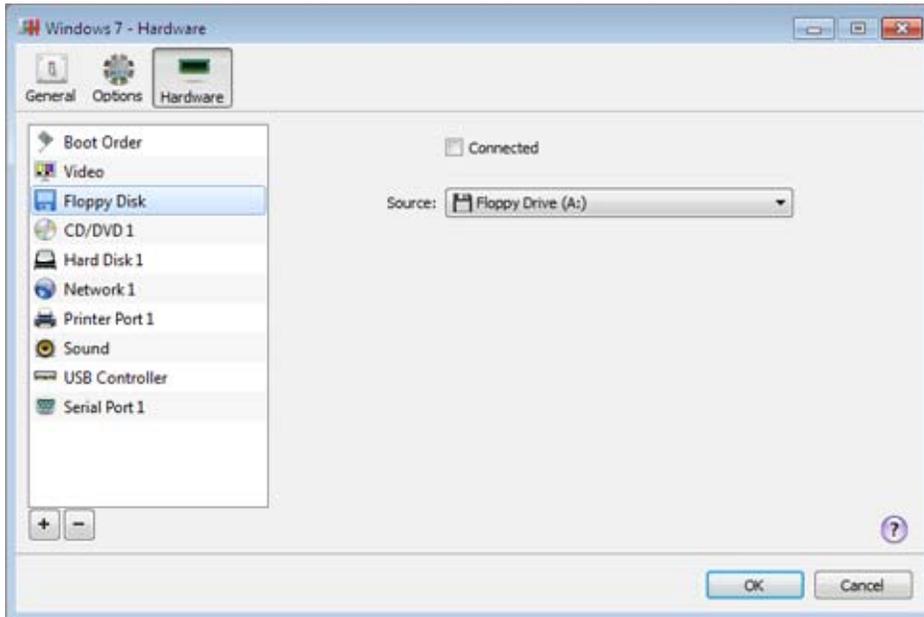
## Floppy Disk

In the **Floppy Disk** pane, you can view and configure the virtual machine's floppy disk settings. As the virtual machine's floppy disk, you can use either a real floppy disk drive connected to the host computer or a floppy disk image.

To edit these settings:

- 1 Open the **Virtual Machine** menu and choose **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Hardware** and select **Floppy Disk** in the sidebar.

**Note:** If this device is absent, you can add it to the virtual machine's configuration. For detailed information on how to do this, refer to **Adding and Removing Devices**.



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

In the **Source** field, specify the source device or image file that will emulate the virtual machine's floppy disk:

- If you want to use a real floppy disk drive, click the **Source** field and select the real device name from the list.
- If you want to use a floppy disk image, click the **Source** field, select **Choose an image file**, and specify the path to the desired floppy disk image file.

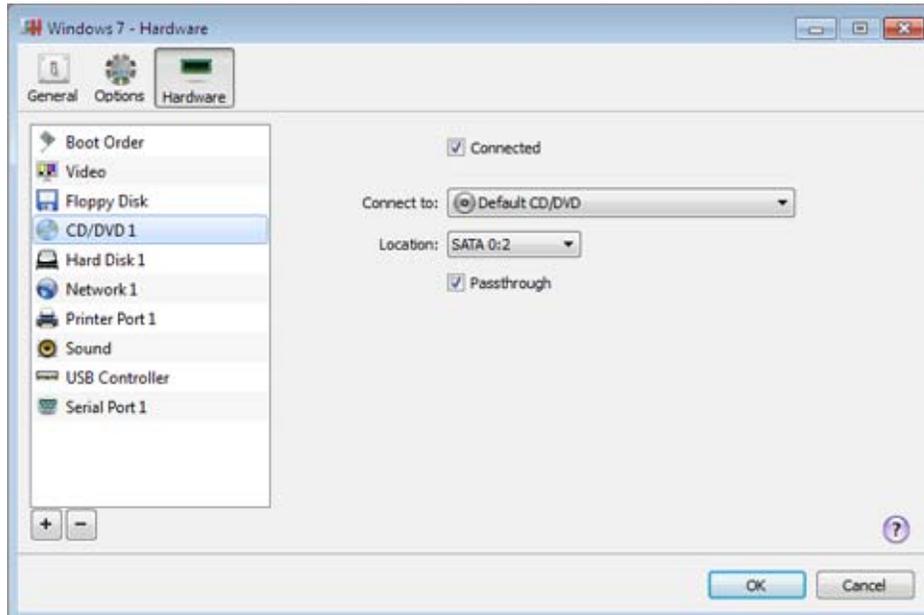
## CD-ROM options

In the **CD/DVD** pane, you can configure the virtual machine's CD/DVD drive settings. As the virtual machine's CD/DVD drive, you can use either a real CD/DVD drive connected to the host computer or a CD/DVD image file.

To edit these settings:

- 1 Open the **Virtual Machine** menu and choose **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Hardware** and select **CD/DVD** in the sidebar.

**Note:** If this device is absent, you can add it to the virtual machine's configuration. For detailed information on how to do this, refer to **Adding and Removing Devices**.



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

In the **Connect to** field, specify the source device or image file that emulates the virtual machine's CD/DVD drive:

- To use a real CD/DVD drive, click the **Connect to** field and select the real device from the list.
- To use a CD/DVD image file, click the **Connect to** field and choose it from the list, or click **Choose an image file** and choose the necessary image file on the host computer.

In the Location field, specify the type of interface for connecting the device:

- **IDE**. Using this interface type, you can connect up to 4 virtual devices.
- **SATA**. Using this interface type, you can connect up to 6 virtual devices.
- **SCSI**. Using this interface type, you can connect up to 15 virtual devices.

**Note 1:** In the latest Linux distributions (e.g. RHEL 5.3), the SCSI driver may be not installed. In this case, you should install this driver in your Linux guest OS to be able to use the SCSI controller.

**Note 2:** The SCSI 7:0 location is not available for selecting, since it is occupied by the SCSI controller itself.

## Hard Disk

In the **Hard Disk** pane, you can view and configure the virtual machine's hard disk settings. As the virtual machine's hard disk, you can use either a real hard disk drive connected to the host computer or a hard disk image file.

To emulate the virtual machine's hard disk you can use either a real hard disk drive connected to the host computer or a virtual hard disk file.

To edit the device settings, do the following:

- 1 Open the **Virtual Machine** menu and choose **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Hardware** and select **Hard Disk** in the sidebar.

**Note:** If this device is absent, you can add it to the virtual machine's configuration. For detailed information on how to do this, refer to **Adding and Removing Devices**.



## Configure a Virtual Machine

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Select **Connected** if you want the hard disk to be automatically connected to the virtual machine on its startup.

In the **Source** field, specify the source device or hard disk image file that emulates the virtual machine's hard disk:

- To use a real hard disk, click the **Source** field and select it from the list.
- To use a virtual hard disk file, click the **Source** field and choose it from the list, or click **Choose an image file** and choose the necessary hard disk image file (.hdd) on the host computer.

In the **Location** field, specify the type of interface for connecting the device:

- **IDE**. Using this interface type, you can connect up to 4 virtual devices.
- **SATA**. Using this interface type, you can connect up to 6 virtual devices.
- **SCSI**. Using this interface type, you can connect up to 15 virtual devices.

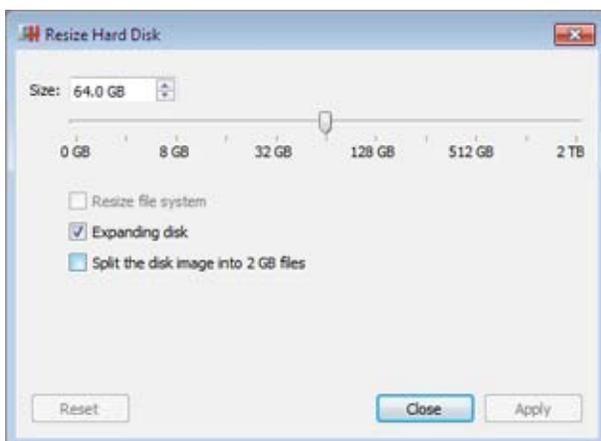
**Note 1:** In the latest Linux distributions (e.g. RHEL 5.3), the SCSI driver may be not installed. In this case, you should install this driver in your Linux guest OS to be able to use the SCSI controller.

**Note 2:** The SCSI 7:0 location is not available for selecting, since it is occupied by the SCSI controller itself.

## Edit the Disk

If the capacity of your virtual machine's hard disk does not fit your needs anymore, you can change its size. Click the **Edit** button and the dialog for changing the disk size appears.

**Note:** If your virtual machine is running or has snapshots, you cannot resize its hard disk.



To change the disk size, drag the slider or type the new size in the **Size** field. Select **Resize file system** if you want to change the file system size:

- If you select **Resize file system** when increasing the disk size, the additional disk space will be added to the last volume. If you clear **Resize file system**, the added space will appear as unallocated space and will be invisible to the guest operating system. To allocate this space, you will have to either create a new partition or expand an existing partition. For instructions on allocating the added space, see **Initializing the Newly Added Space** (p. 149).
- If you select **Resize file system** when decreasing the disk size, the disk will be decreased via removing the unallocated space and decreasing the size of the disk partitions. If you clear **Resize file system** when decreasing the disk size, you will be able to remove the unallocated space of the disk only and the disk partitions will remain untouched.

If the format of the virtual hard disk is *expanding*, you can convert it to *plain* by clearing **Expanding disk**.

If you want the virtual hard disk to be split, select **Split the disk image into 2 GB files option**.

**Note:** For more information about virtual hard disk types, please refer to **Support for Virtual and Real Disks** (p. 134, p. 148).

## Compress the Disk

If you use an [expanding](#) (p. 134, p. 148) virtual hard disk, its size increases on the physical hard disk as you add new data to it. When you delete some data from this virtual hard disk, free unused space appears on it. However, the amount of space the virtual hard disk occupies on the host computer's hard disk doesn't reduce. To free the unused space back to the host computer, click the **Compress** button. The virtual hard disk will be compressed and its size decreased. As a result, there will be more free space on the host computer's hard disk.

**Note:** Compressing can be performed for virtual machines without snapshots and with **Undo disks** disabled.

In the **Optimization** pane of the virtual machine's configuration, you can enable regular automatic disk compression.

## Support for Virtual and Real Disks

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

### Supported Types of Hard Disks

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

#### Virtual Hard Disks

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

Virtual hard disks can be of either *plain* or *expanding* format. When you create a virtual machine in **Express Windows** or **Typical** mode (in [the New Virtual Machine 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. Plain disks can be created with the help of New Virtual Machine wizard (the **Custom** mode.)

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

#### Split disks

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

### CD/DVD Discs and Their Images

Parallels Workstation can access real CD/DVD discs and images of CD/DVD discs.

Parallels Workstation has no limitations on using multisession CD/DVD discs. Virtual machine can play back audio CDs without any limitations on copy-protected discs.

If your host computer has a recordable optical drive, you can use it to burn CD or DVD discs in a virtual machine.

**Note:** To burn CD or DVD discs in a virtual machine, the recordable optical drive should be connected to the virtual machine in the [passthrough mode](#) (p. 129).

Parallels Workstation supports CD/DVD disc images in the ISO format. Parallels Workstation may also support CD/DVD disc images in the CUE and CCD formats.

### Floppy Disks and Floppy Disk Images

Parallels Workstation 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.

Parallels Workstation treats floppy disk images like real diskettes. Parallels Workstation supports floppy disk image files that have `.fdd` extension and 1.44 MB size.

With Parallels Workstation, you can also create an image of a blank floppy using [Floppy Disk pane](#) (p. 128) of the **Virtual Machine Configuration** dialog.

**Note:** Parallels Workstation cannot create images of real diskettes.

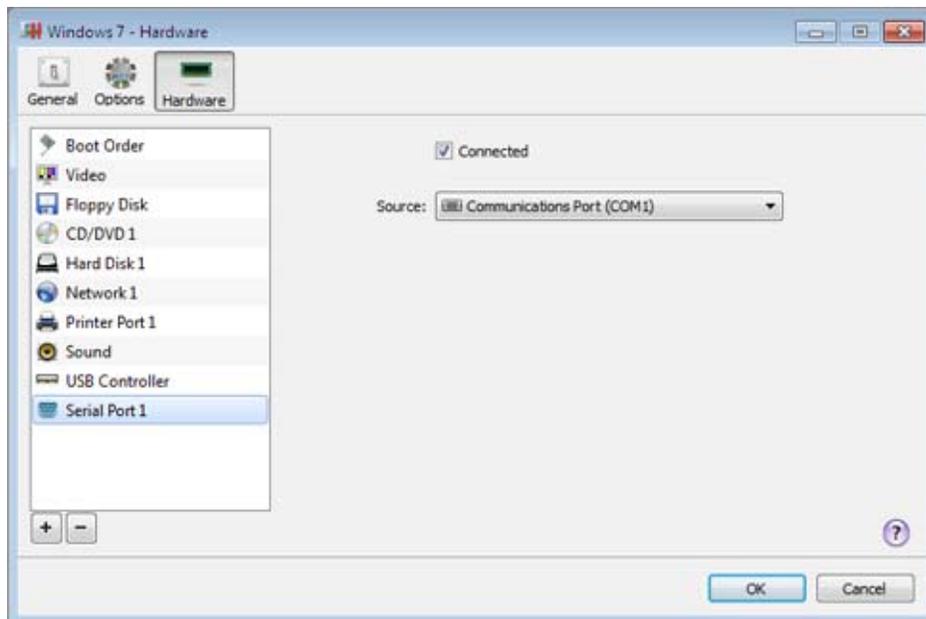
## Serial Port

In the **Serial Port** pane, you can view and configure the virtual machine's serial port settings. You can connect the virtual machine's serial port to any of the host computer's serial ports, to a socket, or to an output file.

To edit these settings:

- 1 Open the **Virtual Machine** menu and choose **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Hardware** and select **Serial Port** in the sidebar.

**Note:** If this device is absent, you can add it to the virtual machine's configuration. For detailed information on how to do this, refer to **Adding and Removing Devices**.



Select **Connected** if you want the serial port to be automatically connected to the virtual machine on its startup.

In the **Source** list, choose where you want to connect the virtual machine's serial port:

- **Real Port.** You can connect it to any of the host computer's serial ports. Any device connected to this host computer's serial port will be used only by the virtual machine. To return it to the host, you need to disconnect it from the virtual machine. To do this, use the virtual machine's [status bar](#) (p. 43).
- **Socket.** If you want to connect two virtual machines with each other, you need to connect their serial ports to the same socket. If there are no sockets available, click **New socket** and specify its name.

If you choose to connect the virtual machine's serial port to a socket, you need to configure the virtual machine's role in the connection. If you want to use this virtual machine to direct the other one, choose **Server** in the **Mode** list. If you want to direct this virtual machine from the other one, choose **Client** from the **Mode** list.

**Note:** If you change the socket mode for one virtual machine, you must also change the socket mode for the other.

- **Output File.** If you want to log the virtual machine's performance activity or record the data from it and use this information later on, you can connect the virtual machine's serial port to an output file. Click **Choose an output file** and select the necessary output file on the host computer. You will be able to view and analyze the virtual machine's activity history any time you need by exploring this file.

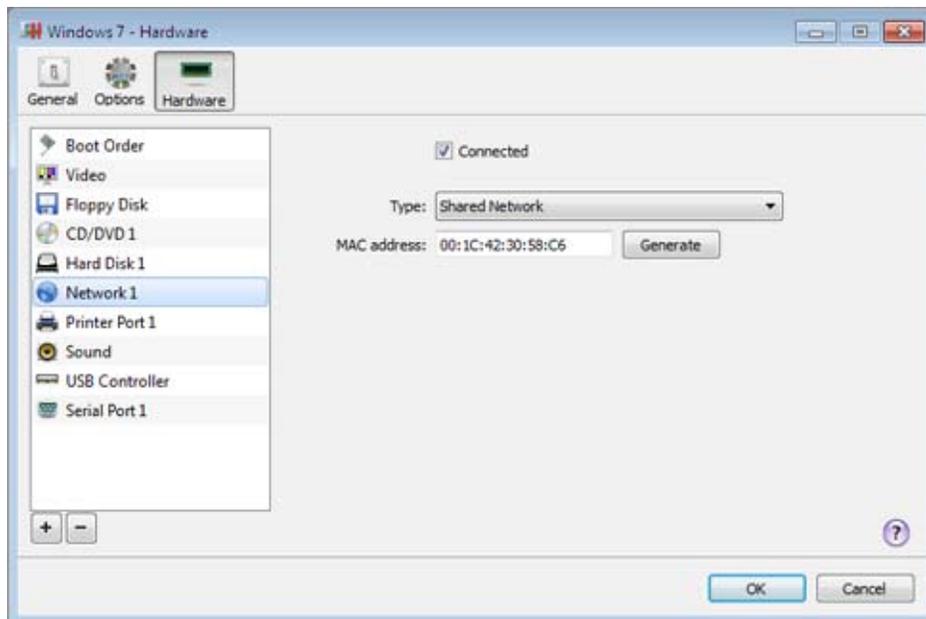
## Network

In the **Network** pane, you can view and change the network type used by the virtual machine.

To edit these settings, do the following:

- 1 Open the **Virtual Machine** menu and choose **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Hardware** and select **Network** in the sidebar.

**Note:** If this device is absent, you can add it to the virtual machine's configuration. For detailed information on how to do this, refer to **Adding and Removing Devices**.



Select **Connected** if you want the virtual machine to start up with the network adapter connected.

In the **Type** list, choose the necessary network type for the virtual machine's network adapter:

- **Shared Network.** Select this network type to enable the Network Address Translation (NAT) feature for the virtual machine. In this case, your virtual machine shares whatever network connection is currently used by the host computer.

See **Shared Network** (p. 92) to learn more about this network type.

- **Bridged Network.** If you want the virtual machine to access the local network and Internet through one of the network adapters available on the host computer, choose this adapter from the list below the **Bridged Network** type. In this case, the virtual machine's network adapter is bridged to the selected host computer's network adapter. And the virtual machine is treated as a stand-alone computer on the network.

See **Bridged Ethernet Network** (p. 93) to learn more about this network type.

- **Host-Only Network.** Select this network type if you want the virtual machine to connect only to the host computer and the virtual machines residing on it. The virtual machine using this network type becomes invisible outside the host computer.

See **Host-Only Network** (p. 94) to learn more about this network type.

In the **MAC address** field, you can change the MAC address currently assigned to the virtual machine. MAC addresses are automatically generated during the virtual machine creation. However, you can modify the default MAC address by typing another value in the **MAC address** field or clicking the **Generate** button. When entering a new MAC address, make sure that it is unique within your network.

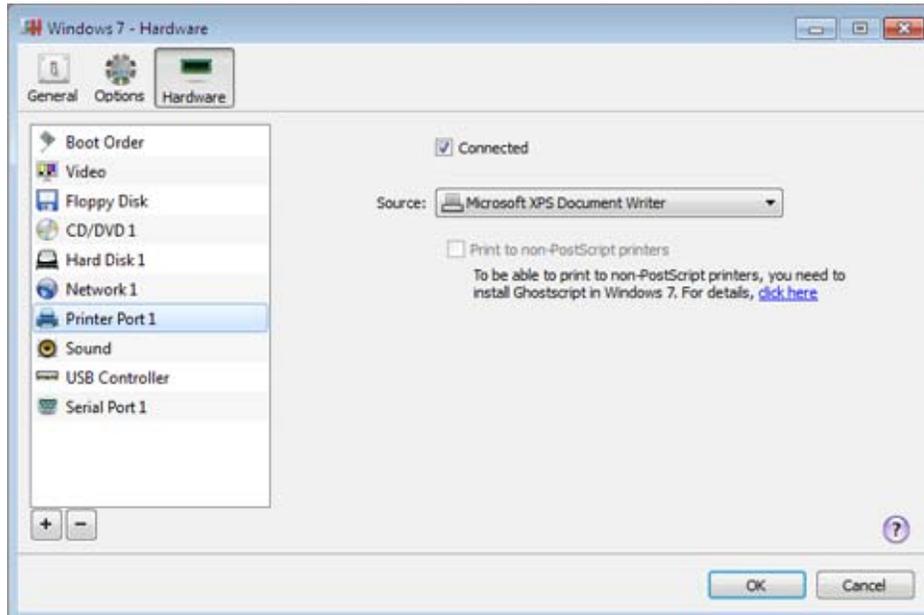
## Printer Port

In the **Printer Port** pane, you can view and configure the virtual machine's printer port settings. You can connect the virtual machine's printer port to any of the host computer's printers, to the host computer's printer port, or to an output file.

To edit these settings:

- 1 Open the **Virtual Machine** menu and choose **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Hardware** and select **Printer Port** in the sidebar.

**Note:** If this device is absent, you can add it to the virtual machine's configuration. For detailed information on how to do this, refer to **Adding and Removing Devices**.



Select **Connected** if you want the printer port to be automatically connected to the virtual machine on its startup.

In the **Source** list, choose where you want to connect the virtual machine's printer port:

- **Printers.** You can connect it to any of the host computer's printers.  
For the detailed information on how to set up a printer in a virtual machine, refer to [section\_name].
- **Real printer ports.** You can connect it to the host computer's printer port. Any device connected to this host computer's printer port will be used only by the virtual machine. To return it to the host, you need to disconnect it from the virtual machine. To do this, use the virtual machine's [status bar](#) (p. 43).
- **Output File.** You can connect it to an output file. Click **Choose an output file** and select the necessary output file on the host computer.

### Print to Non-PostScript Printers

If you connect a printer that does not support PostScript to the virtual machine, select **Print to non-PostScript printers** to be able to print to this printer. However, you also need to install Ghostscript in Windows 7. For details, please follow the link in the **Printer Port** pane.

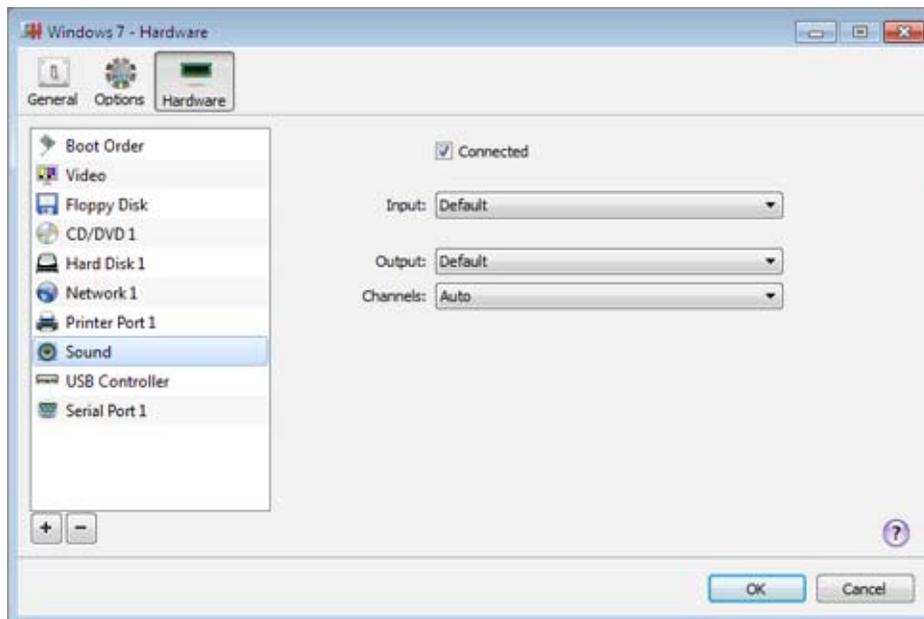
## Sound

In the **Sound** pane, you can view and configure the virtual machine's sound settings.

To edit these settings, do the following:

- 1 Open the **Virtual Machine** menu and choose **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Hardware** and select **Sound** in the sidebar.

**Note:** If this device is absent, you can add it to the virtual machine's configuration. For detailed information on how to do this, refer to **Adding and Removing Devices**.



Select **Connected** if you want the sound device to be automatically connected to the virtual machine on its startup.

Use the **Input** list to choose the necessary device:

- **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.

Use the **Output** list to choose the necessary device:

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

Use the **Channels** list to choose the type of sound reproduction:

- **Auto.** If you select this option, Parallels Workstation checks the sound card connected to the host computer and to the virtual machine. If this sound card is 5.1 surround-capable, the virtual machine's output device will reproduce 5.1 surround sound. If the sound card does not support 5.1 surround sound, the virtual machine's output device will reproduce stereo 2.0 sound.
- **Stereo Sound.** Select this option if you want the output device to reproduce stereo 2.0 sound.
- **Sound Surround 5.1.** Select this option if you have a 5.1 surround-capable sound card connected to the host computer and you want to use it in the virtual machine.

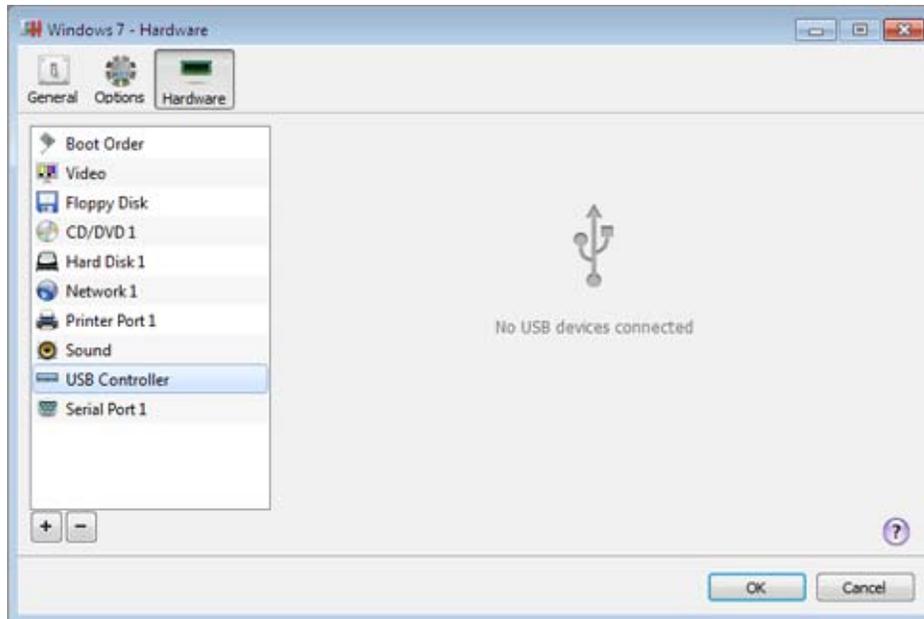
**Note 1:** If you want to use a 5.1 surround-capable sound card in your virtual machine, make sure it is selected in the **Output** list.

**Note 2:** If you choose to use a 5.1 surround-capable sound card in your virtual machine, you may need to set up this sound card in the guest operating system. For the detailed information on how to do this, please refer to the operating system documentation.

## USB Controller

In the **USB Controller** pane, you can see the USB devices currently connected to the virtual machine.

**Note:** If this device is absent, you can add it to the virtual machine's configuration. For detailed information on how to do this, refer to **Adding and Removing Devices**.



## Video Adapter

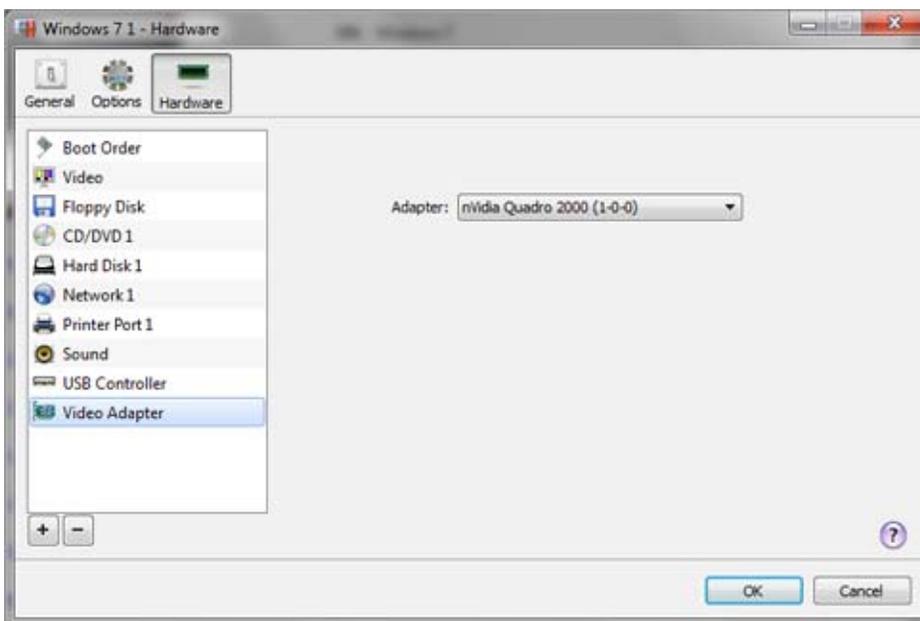
In the **Video Adapter** pane, you can view and change the physical video adapter used by the virtual machine.

To edit these settings:

- 1 Open the **Virtual Machine** menu and choose **Configure**.
- 2 In the **Virtual Machine Configuration** dialog, click **Hardware** and select **Video Adapter** in the sidebar.

**Note 1:** If this device is absent, you can add it to the virtual machine's configuration. For detailed information on how to do this, refer to **Adding and Removing Devices**.

**Note 2:** Before adding a PCIe video adapter to the virtual machine, you must first assign it to your virtual machines in [the Intel VT-d pane](#) (p. 20) of Parallels Workstation Preferences.



## Add and Remove Devices

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

- virtual hard disk drive
- CD/DVD drive
- floppy disk drive
- network adapter
- serial port
- printer port
- sound device
- USB controller
- PCI video adapter (for Parallels Workstation Extreme only)

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.

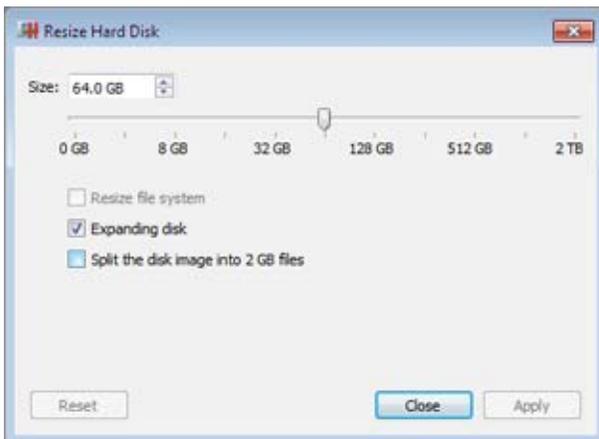
**Note:** The **Add** button is disabled when the virtual machine is running. You need to stop the virtual machine before you can use this button.



- 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.
- The hard disk location. Provide the path on the host computer to the existing image file or the path and name for the new image file. By default, Parallels Workstation offers to save the new image file in the virtual machine PVM bundle.
- 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. 134, p. 148).



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. 150).

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

### Removing Devices From the Virtual Machine Configuration

- 1 Choose **Configure** from the **Virtual Machine** menu to open Virtual Machine Configuration.
- 2 Click the **Hardware** button at the top of the **Virtual Machine Configuration** dialog to open the 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.

## Support for Virtual and Real Disks

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

### Supported Types of Hard Disks

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

#### Virtual Hard Disks

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

Virtual hard disks can be of either *plain* or *expanding* format. When you create a virtual machine in **Express Windows** or **Typical** mode (in [the New Virtual Machine 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. Plain disks can be created with the help of New Virtual Machine wizard (the **Custom** mode.)

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

#### Split disks

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

### CD/DVD Discs and Their Images

Parallels Workstation can access real CD/DVD discs and images of CD/DVD discs.

Parallels Workstation has no limitations on using multi-session CD/DVD discs. A virtual machine can play back audio CDs without any limitations on copy-protected discs.

If your host computer has a recordable optical drive, you can use it to burn CD or DVD discs in a virtual machine.

Parallels Workstation supports CD/DVD disc images in ISO, CUE, and CCD formats.

### Floppy Disks and Floppy Disk Images

Parallels Workstation can use two types of floppy disks:

- Real diskettes inserted into a real floppy disk drive that is connected to the virtual machine.

- Floppy disk image files having the .`fd` extension and connected to the virtual machine.

Parallels Workstation treats floppy disk images like real diskettes. Parallels Workstation supports floppy disk image files that have the .`fd` extension and 1.44 MB size.

## Initializing the Newly Added Space

This section provides some general guidelines on initializing new virtual hard disks or new space added to your existing virtual hard disks.

## Initializing the Newly Added Disk

After you added a new 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.

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

```
fdisk /dev/hdc
```

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

- 4** To get detailed information about the disk, enter:

```
p
```

- 5** To create a new partition, enter:

```
n
```

- 6** To create the primary partition, enter:

```
p
```

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

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

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

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

```
w
```

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

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

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

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

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

```
mkdir /mnt/hdc1
```

**Note:** You can specify a different mount point.

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

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

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

## Creating a New Partition in Windows

To create a new partition from the unallocated space on your virtual hard disk, you can use Disk Management, a Windows built-in utility for partitioning hard disks. The steps below provide instructions for creating a new partition in Windows XP. For other Windows operating systems, the procedure is very similar. For more details, see the documentation for the respective Windows operating system.

To create a new partition in Windows XP:

- 1** Start the virtual machine that uses the virtual disk with unallocated space.
- 2** To start the Disk Management utility:
  - a** Choose Control Panel from the **Start** menu.
  - b** Double-click **Administrative Tools**, and then double-click **Computer Management**.
  - c** In the **Storage** section, select **Disk Management**.
- 3** In the **Disk Management** window, right-click **Unallocated Capacity**, and choose **New Partition**.
- 4** In the New Partition wizard **Introduction** window, click **Next**.
- 5** In the **Select Partition Type** window, select **Primary partition**, and click **Next**.
- 6** Specify the partition size, and click **Next**.
- 7** Assign a drive letter to the new partition, and click **Next**.
- 8** In the **Format partition** window, select **Format partition with the following settings**. Set **File system** to **NTFS** and **Allocation unit size** to **Default**. Type the volume name in the **Volume label** field, and click **Next**.
- 9** Carefully review the settings, and click **Finish** to start formatting.

Once the operation is complete, the new volume appears in the **Computer Management** window and in My Computer.

## Creating a New Partition in Linux

In most Linux systems, you can use the `fdisk` utility to create a new partition and perform other disk management operations.

**Note:** To perform disk management operations using `fdisk`, you must have the `root` privileges.

As a tool with a text interface, `fdisk` requires typing the commands in the `fdisk` command line. The main `fdisk` commands are listed below:

Options	Description
m	Displays all available commands for <code>fdisk</code> .
p	Displays the list of existing partitions on your <code>hda</code> drive. Unpartitioned space is not listed.
n	Creates a new partition.
q	Exits <code>fdisk</code> without saving your changes.
l	Lists partition types.
w	Writes changes to the partition table.

To create a new partition:

**1** Start a terminal.

**2** Start `fdisk`:

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

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

**3** In `fdisk`, to create a new partition, type the following command:

```
n
```

- When prompted to specify the **Partition type**, type `p` to create a primary partition or `e` to create an extended one. There may be up to four primary partitions. If you want to create more than four partitions, extend the last partition, and it will become a container for other logical partitions.
- When prompted for the **Number**, in most cases, type `3` because a *typical* Linux virtual machine has two partitions by default.
- When prompted for the **Start cylinder**, type a starting cylinder number or press **Return** to use the first cylinder available.
- When prompted for the **Last cylinder**, press **Return** to allocate all the available space or specify the size of a new partition in cylinders if you do not want to use all the available space.

By default, `fdisk` creates a partition with a **System ID** of `83`. If you are unsure of the partition's **System ID**, use the

```
l
```

command to check it.

**4** Use the

```
w
```

command to write the changes to the partition table.

**5** Restart the virtual machine:

```
reboot
```

**6** When restarted, create a file system on the new partition. We recommend that you use the same file system as on your other partitions. In most cases it will be either the `ext3` or `ReiserFS` file system. For example, to create the `ext3` file system, run the following command:

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

**7** Create a directory that will be a mount point for the new partition. For example, to create a new directory and assign the name `data` to it, enter:

```
mkdir /data
```

**8** Mount the new partition to the directory you have just created:

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

**9** Edit the `/etc/fstab` file to specify the information on the new partition. For example, you can add the following string to this file:

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

In this string, `/dev/hda3` is the partition you have just created, `/data` is a mount point for the new partition, `ext3` is the file type of the new partition. For the exact meaning of other items in this string, consult the Linux documentation for the `mount` and `fstab` commands.

## CHAPTER 7

# Advanced Topics

This chapter is intended to give you additional information on how to work with Parallels Workstation and virtual machines.

### In This Chapter

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## Manage a Virtual Machine

Read this section to learn how you can manage your virtual machines.

### Clone a Virtual Machine

If you need an exact copy of a virtual machine, you can clone it. A clone is a separate virtual machine fully identical to the original one. To make a clone:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine you want to clone (it must be shut down) and choose **File > Clone**.
- 3 Choose where you want to store the clone.  
By default, Parallels Workstation stores clones in your `Documents > My Parallels` folder.
- 4 Click **Clone** to start cloning the virtual machine.

## Back Up a Virtual Machine

Most people don't seriously consider regular backups as a necessity until they have experienced a significant data loss. You should create your own backup strategy to protect yourself from data loss. Virtual machines are as vulnerable to crashes as physical computers.

You can back up your virtual machine using one or several of the following methods:

- Configure the regular backup settings in [the Backup pane](#) (p. 118) of the **Virtual Machine Configuration** dialog.
- Clone the virtual machine with the help of [Clone Virtual Machine Assistant](#) (p. 155). Give a descriptive name to the clone and save it in a location specially designated for backups.
- Copy the virtual machine files manually.

### Configure Regular Backups

In [the Backup pane](#) (p. 118) of the **Virtual Machine Configuration** dialog, you can choose how to back up your virtual machine regularly. You can configure how the virtual machine snapshots will be created.

### Clone the Virtual Machine

You can create a complete clone of the virtual machine using Clone Virtual Machine Assistant. For details, see [Clone a Virtual Machine](#) (p. 155).

### Copying the Virtual Machine Files

You can locate your virtual machine on the host computer and create a backup copy of the virtual machine file (PVM).

- 1 In [the sidebar](#) (p. 37), right-click the virtual machine name and select **Open location** from the context menu. Go to the folder where your virtual machine is stored.
- 2 Locate the required virtual machine PVM file.

**Note:** PVM file is a bundle that contains the virtual machine configuration file (PVS), virtual hard disk file (HDD), and other files.

- 3 Copy the virtual machine's PVM file to a safe location.

## Create and Use Virtual Machine Templates

On the basis of your virtual machines you can create templates. Later you can use them to create multiple identical virtual machines. To create a virtual machine template, you can:

- convert a virtual machine to a template; or
- clone a virtual machine to a template.

The difference between these two ways is that when you convert a virtual machine to a template, you can't run it until you convert the template back to the virtual machine. And when you clone a virtual machine to a template, the template appears separately from the virtual machine and you can work with both.

A template, in its turn, can be converted or deployed back to the virtual machine. When you convert a template, it turns back to the virtual machine, And when you deploy it, the resulting virtual machine appears separately from the template and you can work with both.

### Convert a Virtual Machine to a Template

To convert a virtual machine to a template:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), right-click the virtual machine you want to convert (it must be shut down) and choose **Convert to Template**.

### Convert a Template to the Virtual Machine

To convert a template back to the virtual machine:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), right-click the template you want to convert and choose **Convert to Virtual Machine**.

### Clone a Virtual Machine to a Template

To clone a virtual machine to a template:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), right-click the virtual machine you want to clone (it must be shut down) and choose **Clone to Template**.
- 3 Choose where you want to store the resulting template.  
By default, Parallels Workstation stores templates in your `Documents > My Parallels` folder.
- 4 Click **Clone** to start cloning the virtual machine to the template.

## Deploy a Template to the Virtual Machine

To deploy a template back to the virtual machine:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), right-click the template you want to deploy and choose **Deploy to Virtual Machine**.
- 3 Choose where you want to store the resulting virtual machine.  
By default, Parallels Workstation stores virtual machines in your `Documents > My Parallels` folder.
- 4 Click **Deploy** to start deploying the template to the virtual machine.

## Save Snapshots of a Virtual Machine

A snapshot is a saved state of a virtual machine. It's useful to create snapshots, for example, before:

- you're going to run some programs that may damage the guest operating system;
- you're going to configure some guest OS software that requires a lot of settings; or
- you want to mark milestones in the development process.

**Note:** If your virtual machine has one or more snapshots, you can neither compress nor resize its virtual hard disk.

If something goes wrong, you can revert the changes back to any of your snapshots and continue working with the virtual machine.

### Create a Snapshot

To create a snapshot:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine for which you want to create a snapshot and click **Virtual Machine > Take Snapshot**.
- 3 Specify the snapshot name and click **OK**.

### Revert to a Snapshot

To revert to a snapshot:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine that you want to revert and click **Virtual Machine > Manage Snapshots**.
- 3 Select the snapshot to which you want to revert and click **Go To**.

### Delete a Snapshot

To delete a snapshot:

- 1 Start Parallels Workstation.
- 2 In [the sidebar](#) (p. 37), select the virtual machine which snapshot you want to delete and click **Virtual Machine > Manage Snapshots**.
- 3 Select the snapshot you want to delete and click **Delete**.

When you delete an intermediate snapshot, the information it contains is merged into the next snapshot.

## Change Virtual Machine Configuration at Runtime

Parallels Workstation 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:

- 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. 43) 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.

### 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 host computer. If you have several network adapters used by the virtual machine, on the [status bar](#) (p. 43) 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. 43) 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. 43) 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 Workstation automatically detects all USB devices plugged into the host computer. The devices that are currently connected to the virtual machine appear in the list from the **Device** menu. You cannot use a USB device in the host 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. 104).

You can

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

## Manage Virtual Machines from the Tray

When working with Parallels Workstation, you can use the [Parallels Workstation tray icon](#) (p. 45) to easily manage your running and paused virtual machines. This may be very useful when the Parallels Workstation window is minimized or when you use a separate display for your virtual machines.

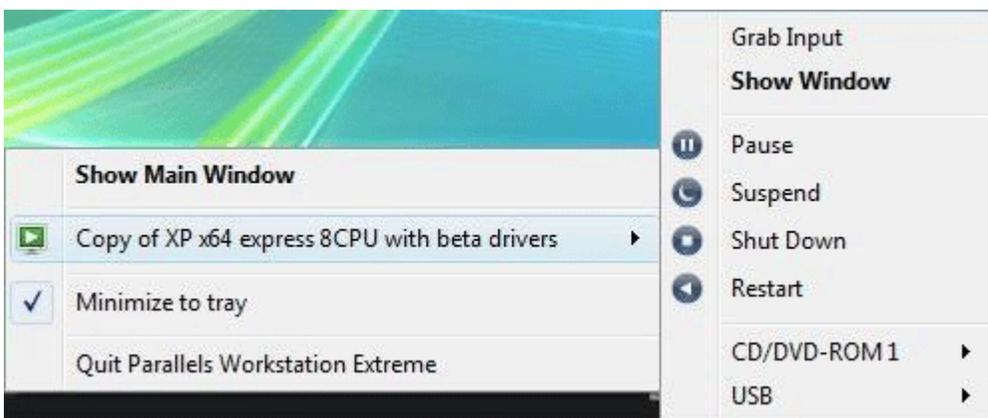
You can manage your virtual machines by doing one of the following:

- Double-click the tray icon to bring the [Parallels Workstation window](#) (p. 37) to focus. However, it does not bring [the detached virtual machine window](#) (p. 37) 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.



- If the virtual machine has a PCIe video adapter assigned, you can manage its CD/DVD-ROM drive or USB Controller. Point to the corresponding item and choose the necessary command.
- If the virtual machine has a PCIe video adapter assigned, choose **Grab Input** to grab the mouse and keyboard input to the virtual machine. It may be very useful to switch over to the virtual machine when you work with two displays: one display for the host computer, the other for the virtual machine.

## Remove a Virtual Machine

When you launch Parallels Workstation, you can see the currently registered virtual machines in the Parallels Workstation sidebar.

If a virtual machine is not used, you can completely delete it or temporarily remove from the list. If you remove a virtual machine from the list, you can add it back later whenever you need.

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

- 4 Launch Parallels Workstation, right-click the virtual machine and choose **Remove** from the context menu.

**Note:** The virtual machine must be stopped or the **Remove** option will be disabled.

- 5 In the second step, do one of the following:

- If you want to remove the virtual machine from the list, select **Remove from list** and click **Remove**.
- If you want to delete the virtual machine from the host computer, select **Delete** and click **Next**. In the **Files Selection** dialog you can see all the files related to this virtual machine. In this dialog, you can deselect any of the virtual machine files you don't want to delete. When ready, click **Delete**.

**Note:** Make sure you are not going to delete the virtual hard disk that is also used by other virtual machines.



- 6 When the operation is completed, click **Done** to close the wizard.

## Remove Parallels Workstation

### From Windows

To remove Parallels Workstation, remove it like any other Windows program.

### From Linux

To uninstall Parallels Workstation in Linux:

- 1 Launch the Terminal.
- 2 To gain the `root` privileges, enter the following command:  

```
su
```

Enter the password for the `root` account when prompted.
- 3 Locate and launch the installation file that you used to install Parallels Workstation.
- 4 Follow the installation wizard instructions. In the **Upgrade Components** screen, click the **Remove** button.
- 5 When the uninstallation is completed, the **Parallels Workstation Uninstalation completed** screen appears. Click the **Exit** button to close the wizard.

## CHAPTER 8

# Troubleshooting and Limitations

This chapter describes how to troubleshoot known issues.

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## Getting Technical Support

Our friendly technical support team is ready to help. Describe your problem and submit a FREE request to [Parallels Support Team \(http://www.parallels.com/support/\)](http://www.parallels.com/support/).

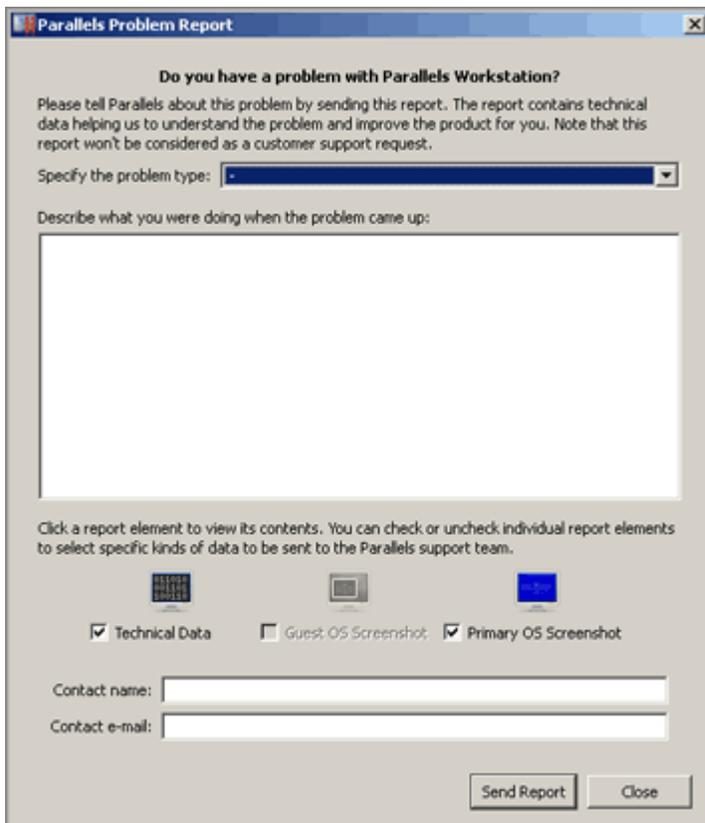
To find solutions to common problems, explore [Parallels Knowledge Base \(http://kb.parallels.com/\)](http://kb.parallels.com/). This online resource includes valuable articles about using Parallels Workstation.

Telephone support is available on a per incident fee basis. Please visit the support team's page of the Parallels web site for details.

## Reporting a Problem to Parallels Team

To help improve the quality of Parallels Workstation, you can send problem reports to the Parallels support team. If a fatal error occurs in a virtual machine, Parallels Workstation 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 Workstation 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 image shows a screenshot of the "Parallels Problem Report" dialog box. The window title is "Parallels Problem Report". The main text asks, "Do you have a problem with Parallels Workstation?" and provides instructions: "Please tell Parallels about this problem by sending this report. The report contains technical data helping us to understand the problem and improve the product for you. Note that this report won't be considered as a customer support request." Below this is a dropdown menu labeled "Specify the problem type:". A large text area follows with the prompt "Describe what you were doing when the problem came up:". At the bottom, there are three report elements with checkboxes: "Technical Data" (checked), "Guest OS Screenshot" (unchecked), and "Primary OS Screenshot" (checked). Below these are input fields for "Contact name:" and "Contact e-mail:". At the bottom right are "Send Report" and "Close" buttons.

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.

## Configuring Network in Linux

When setting up network in Linux, you may need to configure the DHCP client to send the virtual machine's ID in DHCP requests. For information on how to configure your DHCP client, refer to the DHCP client documentation.

For example, in Red Hat Linux guest OSs, you need to edit the DHCP client configuration file.

- 1 Open the `dhclient.conf` file and make sure that the following lines are present.

```
interface "eth0" {
    send dhcp-client-identifier 1:<MAC address>;
}
```

- 2 If there are no such lines, add them manually to the file and save it.

When the `dhclient.conf` file contains these lines, DHCP client sends the virtual machine's ID to the DHCP server. The DHCP server sends an IP address in response.

### Tip

To locate the `dhclient.conf` file, in a terminal, enter:

```
strings /sbin/dhclient | grep etc | grep dhclient.conf
```

or:

```
rpm -ql dhclient
```

## Switching Into the Hibernate Mode

If your running virtual machine with a Windows guest OS has an Intel PCIe network card in its configuration, you may experience problems with putting your primary OS into the Hibernate mode (the Sleep mode). To fix these problems, perform the following actions:

- 1 In the guest OS, go to **Start > Control Panel > Network Connections** and open **Local Area Connections**.
- 2 In the **Local Area Connections** window, click **Properties**.
- 3 In the **General** tab of the **Local Area Connections Properties** window, click **Configure** next to the network card name.
- 4 In the network card properties window, open the **Power Management** tab and disable the **Wake on Direct Packet** option in the **Wake on LAN** settings.

**Note:** These actions will help you to put your primary OS into the Hibernate mode only if [Parallels Tools](#) (p. 60) are installed in the Windows guest OS.

## Increasing the Virtual Machine Screen Resolution

In virtual machines with Linux guest operating systems installed, dynamic resolution may not work when increasing the size of the guest OS window or switching to Full Screen mode. It happens because, by default, only 3 MB of video memory are allocated to such virtual machines' video cards. If you need the virtual machine screen resolution more than 1024x768, go to the **Video pane** (p. 127) of Virtual Machine Configuration and increase the amount of video memory available to the virtual machine's video card up to 16 MB.

## 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. 127) 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 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 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 host operating system, some actions performed by the Parallels Workstation processes may be detected as malicious by the antivirus software installed on the host computer.

However, such actions are necessary to ensure the proper functioning of Parallels Workstation. 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 this, refer to your antivirus software Help.

**Note:** The names of Parallels Workstation processes usually start with `prl` or `parallels`.

## Installing the GCC Package and Kernel Sources in Linux

When installing or upgrading Parallels Tools in a Linux virtual machine, you may need to install the gcc package and kernel sources in your Linux guest OS. Kernel sources can be either downloaded from the Internet or installed from Linux distribution disks.

To install the gcc package and kernel sources in the RHEL/Fedora/CentOS Linux distribution, enter the following command in a terminal:

```
yum install gcc kernel-devel  
make
```

To install the gcc package and kernel sources in the Debian/Ubuntu Linux distribution, enter the following command in a terminal:

```
apt-get install gcc make linux-headers-$(uname -r)
```

For information 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 Workstation documentation. References to terms defined elsewhere in the glossary appear in *italics*.

**Administrator.** A user with administrative privileges.

**Activation key.** A unique set of symbols that activates the Parallels Workstation application on the host computer and lets you use the Parallels Workstation functionality to its full extent.

**Active operating system.** The operating system where Parallels Transporter Agent is launched.

**Active volume:** The volume of the physical source computer that is used as a *boot volume* for the active operating system.

**Bootable hard disk.** A disk used by the operating system to boot from, usually a disk that has an operating system installed.

**Boot Volume.** A hard disk partition from which the operating system boots.

**Boot Camp partition.** A partition on the hard disk of the host computer that can be used for installing a Windows operating system on it (for Mac host computers only).

**Bridged networking.** Virtual machine network connection mode that enables the virtual machine to appear as any other computer on the network, with its own IP address and network name.

**Configuration file.** A file specifies the virtual machine's hardware configuration, the devices it uses, and other settings. It is created automatically when you create a new virtual machine. See also *PVS file*.

**CPU.** Stands for central processing unit. It is an internal part of the computer. See also *Processor*.

**Disks in the old format.** Disks of virtual machines that were created in Parallels Desktop 2.5 and earlier or Parallels Workstation 2.2.

**Disks in the new format.** Disks of virtual machines that were created or used in Parallels hardware virtualization products starting from version 3.0.

**Expanding format.** A virtual hard disk format. An expanding virtual hard disk image file resides on your host computer and is small initially. Its size grows as you add applications and data to the *virtual machine*.

**FireWire connection.** A wired connection that enables a high-speed data transmission between computers.

**Guest operating system (guest OS).** An operating system installed inside your virtual machine.

**Host computer:** The computer that is used to run virtual machines. In case of Parallels Workstation for Mac, it is your Mac. In case of Parallels Workstation for Windows or Parallels Workstation for Linux, it is the Windows- or Linux-based physical computer where Parallels Workstation is installed. In the Parallels Transporter documentation, this term may define the computer that hosts the result of *migration*.

**Hot key.** A user-defined key or combination of keys that provides quick access to applications and commands. See also *Shortcut*.

**HDD file.** During the creation, the *virtual machine* acquires a virtual hard disk file with the `.hdd` extension. See also *virtual hard disk file*.

**Host-only networking.** Virtual machine network connection mode that creates a private network between the host computer and its virtual machines, which makes the virtual machines available from the host computer only.

**ISO image.** A special file that contains the entire contents of a CD or DVD disc commonly used to install an operating system.

**Image file.** A single file containing the complete contents and structure of a data storage medium or device, such as a hard disk drive, CD, or DVD.

**IP address.** A unique address that is assigned to a physical computer or a virtual machine that participates in computer networking.

**Linux computer.** A physical computer that has a Linux operating system installed.

**Merged disk.** A *split* disk whose parts were merged into a single disk.

**Migration.** The process of transferring data from a physical computer or a third-party virtual machine into a Parallels virtual machine or virtual disk.

**OS.** An operating system.

**Parallels Desktop for Mac.** An application that enables you to create, manage, and use *virtual machines* on your Mac.

**Parallels Desktop for Windows.** An application that enables you to create, manage, and use *virtual machines* on a Windows-based physical computer.

**Parallels Desktop for Linux.** An application that enables you to create, manage, and use *virtual machines* on a Linux-based physical computer.

**Parallels Explorer.** An application that enables you to browse and manage the contents of your *virtual machines* without starting them.

**Parallels Image Tool.** An application that enables you to manage the capacity and properties of your *virtual machine's* hard disk.

**Parallels Mounter.** An application that enables you to browse the contents of your *virtual machines* and *virtual hard disks* directly in Mac OS X Finder.

**Parallels Tools.** A set of Parallels utilities that ensures a high level of integration between the *primary* and the *guest* operating systems.

**Parallels Transporter.** An application that uses data of a physical or virtual computer for creating a Parallels virtual clone of this physical or virtual computer. The resulting virtual machines can be used with Parallels Workstation.

**Parallels Transporter Agent.** An application that collects data on a physical computer and transfers it to Parallels Transporter installed on the host computer.

**Parallels Workstation.** An application that enables you to create, manage, and use *virtual machines* on a Windows or Linux computer.

**PCIe device.** A video or network adapter corresponding to the PCI Express computer expansion card standard introduced by Intel in 2004.

**Plain format.** A virtual hard disk format. A plain virtual hard disk image file resides on the *host computer* and has a fixed size that cannot be changed.

**Preboot Execution Environment (PXE).** An environment to boot computers using a network interface independently of available data storage devices (like hard disks) or installed operating systems.

**Primary operating system (primary OS).** Operating system that controls the I/O devices of the computer and that is loaded when the physical computer is turned on. It is the operating system of the physical computer where the Parallels Workstation application is installed.

**Processor.** The central processing unit, or *CPU*. It is an internal part of the computer.

**PVS file.** A virtual machine *configuration file* that contains information about the virtual machine resources, devices and other settings.

**Shared networking.** Virtual machine network connection mode that allows the *virtual machine* to use the *host computer* network connections. In this mode, the virtual machine is invisible to other computers on the network the host computer belongs to.

**Shortcut.** A user-defined key or combination of keys that provides quick access to applications and commands. See also *Hot key*.

**Snapshot.** A copy of the virtual machine state at a particular point of time. The files related to snapshots are stored in a special subfolder in the virtual machine's folder.

**Source computer or source operating system:** The computer that you are going to migrate data from. On physical source computers, Parallels Transporter Agent should be installed.

**System disk.** A floppy disk that allows your computer to load the operating system.

**Split disk.** A split disk is cut into 2 GB pieces, but is stored as a single *HDD file*. Split disks allow you to transfer the data stored on a split disk piece by piece using a USB drive or other media that have limited space and cannot store a large virtual hard disk image file.

**Terminal.** In Mac OS and GNU/Linux operating systems, a utility that enables you to access the command line.

**Virtual hard disk (virtual disk).** A file or group of files that emulates the virtual machine's hard disk.

**Virtual machine.** The computer emulated using Parallels Workstation. A virtual machine has its own virtual hardware and requires an operating system to control its hardware. The installed operating system and its applications are isolated inside the virtual machine and share physical hardware resources of the *host computer*.

**Third-party virtual machine.** A virtual machine created in a third-party virtualization product, that can be converted to Parallels virtual machines with the help of Parallels Transporter.

**Virtual Machine Configuration.** Like any physical computer, a *virtual machine* has its own configuration which is set during the creation and can be later modified. The virtual machine configuration settings are stored in a *PVS file*.

**Virtual machine files.** Files stored in a *virtual machine* folder. A virtual machine has at least two files: *configuration file* and *virtual hard disk file*.

**Virtual hard disk file.** During the creation, the *virtual machine* acquires a virtual hard disk file with the `.hdd` extension. This file performs the functions of a real hard disk. See also *HDD file*.

**Virtual machine template.** A virtual machine that can be cloned to multiple virtual machines that will have the same configuration and data that the virtual machine template had.

**VM.** See *Virtual Machine*.

**Windows computer.** A physical computer that has a Windows operating system installed.

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