Parallels

Parallels Desktop App Store Edition

User's Guide

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Welcome to Parallels Desktop App Store Edition

With Parallels Desktop you no longer have to choose between the Mac and the PC. Parallels Desktop lets you use Windows side-by-side with macOS on your Mac.

Use this guide to quickly set up and start using Parallels Desktop for Mac App Store Edition.

(Throughout this guide, Parallels Desktop App Store Edition will be referred to as Parallels Desktop.)

In This Chapter

What You Can Do

With Parallels Desktop, you can:

* Install various operating systems and use them together
* Copy and paste text and drag and drop objects between Mac and Windows
* Run Windows games and other 3D programs
* Easily share macOS files, devices, and other resources with Windows
* And much more
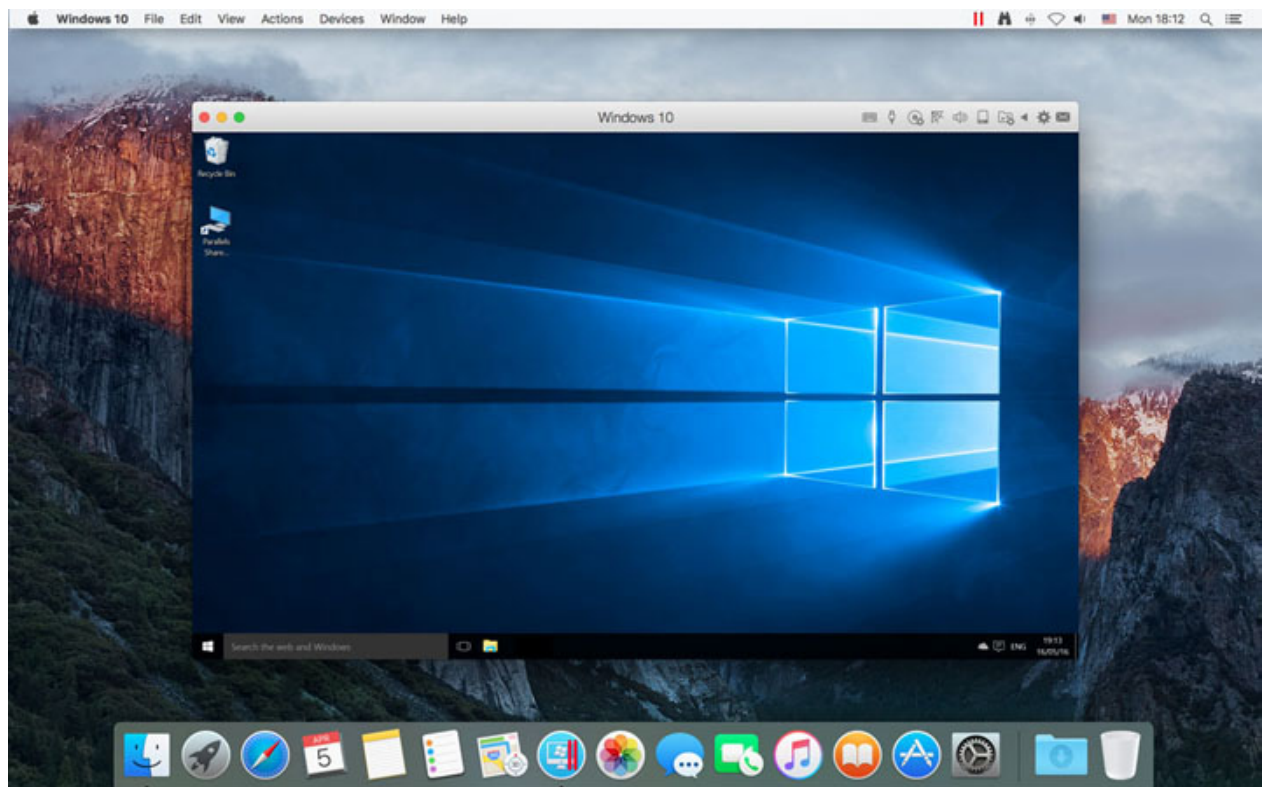
Set Up Your Mac to Use Windows Programs

After just a few steps, you can begin using Windows programs on your Mac. Setting up your Mac to run Windows programs involves the following steps:

Step 1: Install Parallels Desktop (p. 9).

Step 2: Install Windows on your Mac (p. 12).

Step 3: Install your Windows programs (p. 16).

You only need to follow these steps once. Then you can open and use your Windows programs on your Mac anytime you like, just as you do with your Mac applications.

Other Operating Systems

Important: This guide is focused on using Parallels Desktop with Windows.

Using Parallels Desktop you can run several other kinds of operating systems (p. 106) on your Mac, such as several flavors of Linux and Unix, Windows 10, older versions of Windows, and more.

Finding Information On Running Other Operating Systems

You can find much more information and details on using Parallels Desktop to run other operating systems on your Mac by checking the resources listed in **Get Support** (p. 139).

Additionally, though not explicitly stated, many of the instructions presented in this guide also apply to supported operating systems other than Windows. And some important instructions relating to other operating systems are in the **Advanced Topics** (p. 106) section.

C H A P T E R   2

Install Parallels Desktop

Follow the instructions in this chapter to install Parallels Desktop.

In This Chapter

What You Need

To use Parallels Desktop for Mac App Store Edition, you need a Mac with the following configuration:

	Minimum **To run most applications such as Microsoft Office, accounting, trading, SAP, MATLAB, and more.**	**Best Performance** **For graphics-intensive applications, high loads and running multiple virtual machines.**
Processor	Intel Core 2 Duo, Core i3, Core i5, Core i7, Core i9, Intel Core M or Xeon processor	Intel Core i5, Core i7, Core i9 or Xeon processor
Memory	4GB of RAM	16GB of RAM or more
Storage	500 MB for Parallels Desktop application installation Additional disk space for the guest operating system (at least 16GB is required for Windows 10)	SSD drive
Graphics	Intel, AMD Radeon, or NVIDIA	AMD Radeon Pro graphics card
Operating System	• macOS Catalina 10.15 • macOS Mojave 10.14.6 or newer	• macOS Catalina 10.15 DirectX 11 requires at least macOS Mojave 10.14.6, but works best on macOS 10.15 Catalina.

Internet connection is required for product activation, updates, and select features.

For a list of operating systems that Parallels Desktop supports for use with your Mac, see **Supported Guest Operating Systems** (p. 106).

Install Parallels Desktop

You can be up and running with Parallels Desktop in a few easy steps:

1 On your Mac, open App Store.

2 Search for `Parallels Desktop`.

3 Click **Get** and follow the onscreen instructions.

Activate Parallels Desktop

Once Parallels Desktop is installed, you need to activate it. Please do the following:

1 Sign in to Parallels. You can do this either using a Parallels or your social account. If you don't have an account, select **I am a new user** and follow the onscreen instructions.

2 Once you're signed in, do one of the following:

*   If you don't have a subscription to Parallels Desktop, you can try it free for 14 days. Then you will need to buy a subscription. To purchase it, click **Subscribe**.

*   If you already have a subscription, click **I Have Subscription**. In the next screen, do one of the following:

    *   If you have a subscription key but it is not registered in your Parallels account yet, click **Enter Subscription Key** to enter it.

    *   If you already have an available subscription which can be used to activate Parallels Desktop, select it and click **Activate**. Please note that if you choose a subscription which is already used on another Mac and activate Parallels Desktop on this Mac, the copy of Parallels Desktop on the other Mac will be automatically deactivated.

    *   If you have a subscription but it is already used to activate Parallels Desktop on another Mac, click **Buy** to purchase a new subscription.

Set the Language

The Parallels Desktop interface supports the following languages:

*   English;
*   German;
*   French;
*   Italian;
*   Spanish;

- Czech;

- Polish;

- Russian;

- Brazilian Portuguese;

- Japanese;

- Korean;

- Chinese Simplified;

- Chinese Traditional Taiwan.

Parallels Desktop uses the same language which is chosen for macOS. If macOS uses some other language which is not listed above, the Parallels Desktop interface will use English.

Install or Import Windows

There are a couple ways to get Windows up and running on your Mac:

- Install Windows (p. 12)

- Import Windows from Parallels Desktop for Mac or other virtualization software (p. 13)

  In This Chapter

Install Windows

If you have a Windows installation source (a DVD disc, an image file, or a USB storage device) and a valid Windows product key, you can install Windows on your Mac and use it with Parallels Desktop.

To install Windows:

1   Open Parallels Desktop (in the Applications folder) and choose **File** > **New**.

2   Prepare your installation media:

- If you're using a Windows installation ISO image file, be sure you have downloaded the file.

- If you have a Windows installation disc, insert it into the DVD drive.

- If you have a USB storage with Windows, connect the storage to the Mac.

3   Click **Install Windows or another OS from a DVD or image file**.

4   Parallels Desktop scans for and lists installable operating systems. If you see the version of Windows you want to install, select it, click **Continue** and go to step 5.

If the Windows installation source doesn't show up automatically, click **Choose Manually** to browse for it manually. You can browse from the following sources:

- **Image File:** If you have a Windows image file, click **Image File** and drag the image to the Parallels Wizard window. Once Windows is detected, click **Continue**.

- **DVD:** If you have a Windows DVD, insert it into the DVD drive. Once Windows is detected, click **Continue**. If your Mac doesn't have a DVD drive, you can use an Apple SuperDrive, another Mac's DVD drive via Remote Disc, or make an image from the disc.

- **USB Drive:** If you have a bootable USB installer with Windows, click **USB Drive** and connect the drive to the Mac. You'll be prompted to grant access to the drive. Then, once Windows is detected, click **Continue**.

> **Note:** Parallels Desktop may fail to detect some operating systems (for example, the latest Linux distributions). If this happens but you're sure that the operating system can be installed, click **Continue**, specify the OS type manually (if it's not listed, choose **Other**), and follow the onscreen instructions.

5 Be sure to leave **Express installation** selected.

> **Note:** If you deselect **Express installation**, be sure to stay near your computer to follow onscreen instructions during the installation. Also, you'll need to install Parallels Tools (p. 133) after the installation to allow the most seamless operation between Windows and macOS.

6 Choose what you're going to primarily use Windows for. Parallels Desktop settings will be tuned to best fit your needs.

7 Choose where you want to store Windows from the **Location** menu.

8 If you want to pre-set things like how much memory Windows uses or whether it starts automatically when you open Parallels Desktop, select **Customize settings before installation**. You can also adjust these settings after the operating system is installed.

9 Click **Continue**.

The assistant installs Windows.

Once Windows is installed, you can start it up by clicking the power button in **Control Center**.
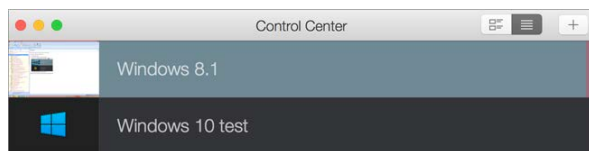
> **Important:** The first time you start Windows, Parallels Tools are installed to allow seamless operation between Windows and macOS. Once Parallels Tools are installed, you're prompted to restart Windows.
>
> If you didn't select **Express installation** in step 5 above, you must install Parallels Tools manually (p. 133).

When you install Windows, Parallels Desktop creates an administrator account with a blank password. Once the installation is complete, it is recommended that you change the password.

Import from Parallels Desktop for Mac or Other Virtualization Application

With Parallels Desktop you can use Windows that you set up using Parallels Desktop for Mac, as well as VMware Fusion, Microsoft Virtual PC, and VirtualBox:

1   Open Parallels Desktop (in the Applications folder) and choose **File** > **Open**.

2   Select the Windows data file you want to import, then click **Open** and follow the onscreen instructions.

- Parallels Desktop for Mac data files end with `.pvm`.

- VMware files end with `.vmx`.

- Virtual PC files end with `.vmc`.

- VirtualBox files end with `.xml or .vbox`.

You can also simply drag a Parallels `.pvm` file to **Control Center** to add it to Parallels Desktop.

3   Start Windows (p. 15).

4   Choose **Actions** > **Install Parallels Tools** and follow the onscreen instructions.

Feature Changes When Importing From Parallels Desktop for Mac

1   When you import Windows set up using Parallels Desktop for Mac to Parallels Desktop, not all of the same features are available.

2   In Parallels Desktop:

- Coherence is unavailable.

- Windows icons and Windows application icons in the Dock are not available.

- Bridged networking is unavailable. Instead you'll be prompted to use shared networking.

1   If you go back to using an instance of Windows with Parallels Desktop for Mac, all features will again be fully functional.

C H A P T E R   4

Use Windows on Your Mac

Read this chapter to find out all about using Windows applications on your Mac. Learn how to get started using Windows applications, set how Windows applications work with macOS, share applications, files, and folders between macOS and Windows, connect devices, print, customize your keyboard, and more.

In This Chapter

Get Started

In this section, learn how to start Windows, open a Windows application, install more Windows applications, and shut down or suspend Windows.

Start Windows

To use Windows programs on your Mac, Windows must be running.

You can start Windows by doing the following:

1   Open Parallels Desktop.

2   In **Control Center**, move the mouse pointer to the Windows icon.
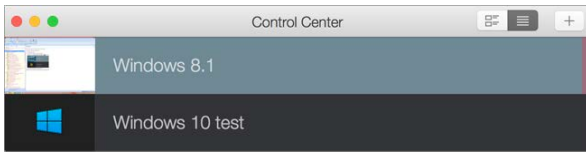
3   Once the icon turns to the Power button, click it.

Windows starts and you can begin using Windows programs.

Open a Windows Application

You can open a Windows application in a Windows virtual machine the same way as on a physical computer with Windows installed. Click the Start button and click the application you need.

Open a File in Windows

To open a file in Windows, just drag and drop it to the Parallels Desktop icon in the Dock. The file will be opened in the application configured as default for this type of files.

Install Windows Programs

You install Windows programs on your Mac just as you would on a Windows PC. The two most common ways of installing programs are:

* Downloading an image file or program from the Internet or a network

* Using a CD or DVD installation disc

Install a Program from the Internet or a Network

* Download the image file or program and follow the instructions from the program's source.

In most cases, you can either run the installation file and follow the onscreen instructions, or simply open the downloaded program.

For more information about connecting to the Internet and networks, see Connect to the Internet or a Network (p. 46).

Install a Program from a CD or DVD Installation Disc

1   Start Windows (p. 15).

2   Insert the installation disc.

3   In most cases, an AutoPlay dialog opens. Click the option to run a setup or install file, then follow the onscreen instructions.

For more information about using CD and DVD discs with Parallels Desktop, see **CD/DVD-ROM**.

Shut Down or Suspend Windows

When you're finished using Windows programs, you can leave Windows running in the background as you work with your Mac applications. Or you may want to stop Windows from running so more of your computer's resources are available for your Mac applications. There are a few ways to stop Windows. You can:

* Suspend Windows

* Pause Windows

* Shut down Windows

* Stop Windows

Suspend Windows

Suspending Windows conveniently freezes all running Windows programs and settings in their current state.

Do one of the following:

* Click the Parallels icon ❚❚ in the menu bar and choose **Actions** > **Suspend**.

* Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Suspend**.

The next time you start Windows, you resume your progress from exactly where you left off.

When Windows is suspended, you can safely quit Parallels Desktop and resume your progress later.

Pause Windows

You can temporarily pause from using Windows and free your computer's resources, such as RAM and processor cycles, to be used by your Mac applications by doing one of the following:

* Click the Parallels icon ❚❚ in the menu bar and choose **Actions** > **Pause**.

* Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Pause**.

To resume using Windows after pausing it, do one of the following:

* Click the Parallels icon ❚❚ in the menu bar and choose **Actions** > **Resume**.

* Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Resume**.

Shut Down Windows

Shutting down Windows in Parallels Desktop is just like shutting down Windows on a PC. All Windows programs close, giving you the opportunity to save your progress if necessary, and Windows stops running.

To shut down Windows, do one of the following.

* Click the Parallels icon ❙❙ in the menu bar and choose **Actions** > **Shut Down**.
* Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Shut Down**.

Stop Windows

To stop Windows and all open Windows programs immediately, do one of the following:

* Click the Parallels icon ❙❙ in the menu bar and choose **Actions** > **Stop**.
* Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Stop**.

> **Important:** When you stop Windows this way, none of your data or progress is saved.

Startup and Shutdown Settings

Using **Startup and Shutdown** settings, you can choose how to start and shut down the virtual machine.

To access **Startup and Shutdown** settings:

1   Do one of the following:

* Click the Parallels icon ❙❙ in the menu bar and choose **Configure.**
* Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2   Click **Options** and select **Startup and Shutdown**.

Set to Start and Shut Down the Virtual Machine Manually

If you want to always start and shut down the virtual machine manually, select **Start up and shut down manually**.

Specify More Details How to Start and Shut Down the Virtual Machine

If you want to specify how the virtual machine starts and shuts down, the view mode and what happens on closing the virtual machine window, select **Custom** and do the following:

Set Whether Windows Starts Automatically

Choose one of the following from the **Start Automatically** menu:

- **Never**: Windows never starts automatically.
- **When window opens**: Windows starts automatically when you open it from **Control Center**.
- **When Parallels Desktop starts**: Windows starts automatically when you start Parallels Desktop.

Set the Startup View

Choose one of the following from the **Startup View** menu:

- **Same as last time**
- **Window**
- **Full Screen**
- **Picture in Picture**

Set What Happens When You Shut Down Windows

Choose one of the following from the **On VM Shutdown** menu:

- **Keep window open**: If Windows is set to appear in a separate window, the window stays open when you stop or shut down Windows.
- **Close window**: If Windows is set to appear in a separate window, the window closes when you stop or shut down Windows.
- **Quit Parallels Desktop**: Parallels Desktop quits when you stop or shut down Windows.

Set What Happens When You Close the Parallels Desktop Window

Choose one of the following from the **On Window Close** menu:

- **Suspend**
- **Shut Down**
- **Force to stop**
- **Ask me what to do**

Set How Windows Works with macOS

Read this section to learn more about setting how Windows works together with macOS.

Set Windows to Appear in a Single Window

You can set the Windows and programs to appear together in their own window.

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

* Press Command-Control-F.

* Move the pointer to the top of the screen until the macOS menu bar appears and click **View** > **Exit Full Screen**.

Monitoring Windows in a Scalable Window

You can set Windows to appear in a window that can be resized to any size so that the content scales in size with the window. This is called **Picture in Picture** mode. This mode can be useful if you want to monitor applications and other tasks running in Windows as you work in macOS.

To switch to Picture in Picture mode:

* From Window mode, choose **View** > **Enter Picture in Picture**.

For more information on Picture in Picture mode, see the Picture in Picture mode settings topic (p. 126).

Set Windows to Take Up the Whole Screen

You can set Windows to occupy your entire screen, so it looks just like it would if you were using a Windows PC. In Full Screen mode, macOS and all of the Parallels Desktop controls are hidden.

To switch to Full Screen mode, do the following:

* From Window mode, choose **View** > **Enter Full Screen** or click the Full Screen icon in the top left corner of the virtual machine window.

To exit Full Screen mode, press Command-Control-F.

Adjust Full Screen Settings

You can customize how Windows appears and behaves when in Full Screen mode.

To access **Full Screen** settings:

1 Do one of the following:

* Click the Parallels icon in the menu bar and choose **Configure** > **Options**.

* Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure** > **Options**.

2 Click **Full Screen**.
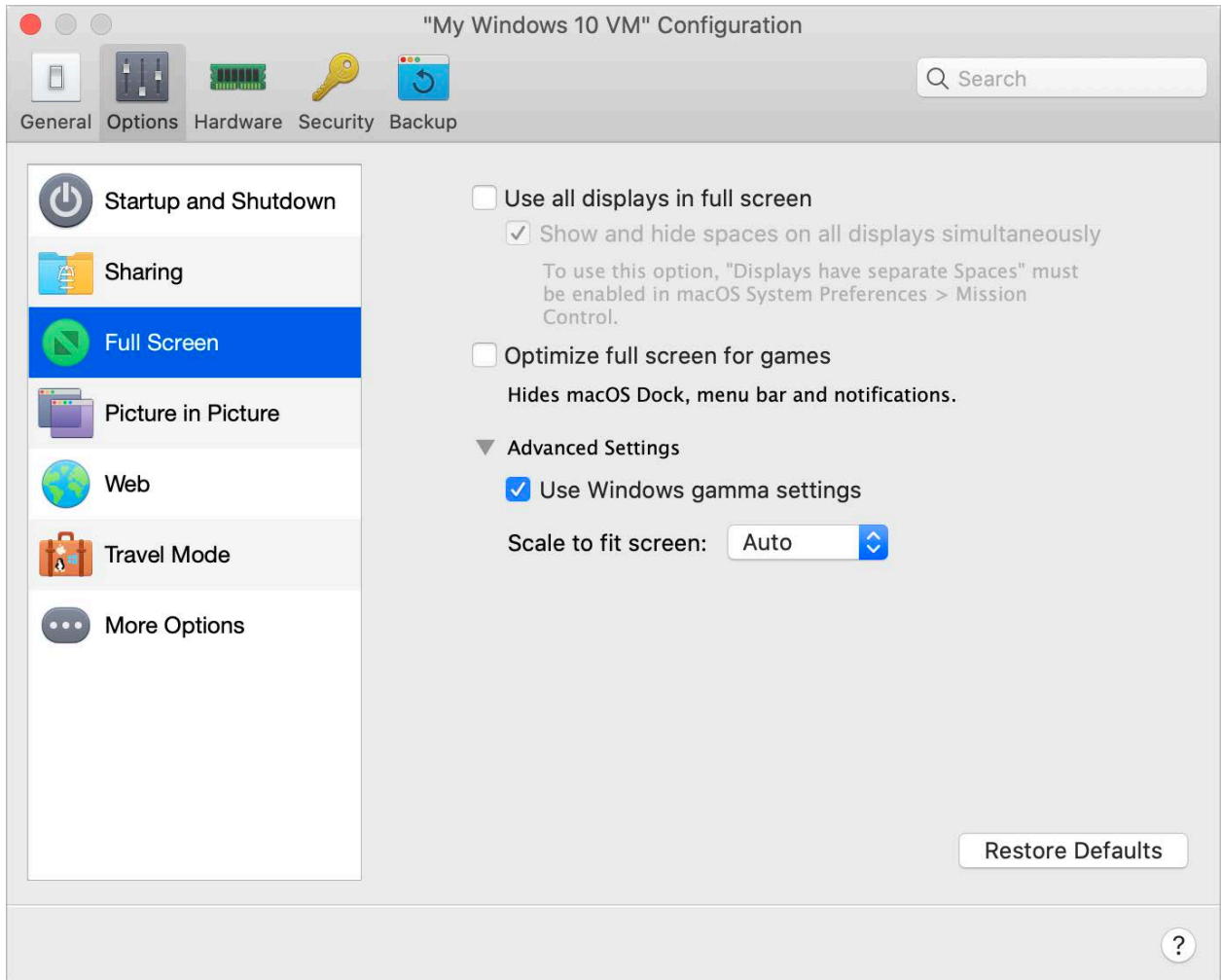
3 In this **Full Screen** pane, you can adjust any of the settings listed below.

Set What Shows on Displays Connected to Your Mac

If you have a second display connected to your Mac, by default when you switch to Full Screen mode, Windows is displayed on the primary display and macOS on the secondary.

You can choose which display Windows is shown on by dragging its window to that display and then clicking the Full Screen icon 🚫.

To extend Windows across all your displays, select **Use all displays in full screen**.

If you selected to show your virtual machine on all displays when it switches to Full Screen, you can also choose **Show and hide spaces on all displays simultaneously**.

With this option selected, when you click the virtual machine on one of your displays, it appears on all other displays. And when you switch focus to something else on one of your displays, virtual machine spaces hide on all other monitors.

Optimize Full Screen for Games

If you use a virtual machine to play video games in Full Screen view mode, select **Optimize full screen for games**. With this option selected, macOS Dock, menu bar and notifications will not be displayed when you move the mouse pointer to the top and bottom of the screen.

Allow Windows to set display gamma

If you're using Windows to play video games, Windows may need to temporarily change your Mac's display gamma setting to properly display different visual effects. To allow Windows to change gamma settings, select **Allow Windows to set display gamma**.

Scale to fit screen

Using the **Scale to fit screen** menu, you can configure how Windows is displayed when working in Full Screen:

* **Off.** If Parallels Tools (p. 118) are installed, Windows resolution matches that of the Mac. If Parallels Tools (p. 118) aren't installed, Windows resolution remains unchanged. If it is lower than that of the Mac, Windows is displayed on the black background. If higher, Windows has scroll bars.
* **Auto.** If Parallels Tools (p. 118) are installed, Windows resolution matches that of the Mac. If Parallels Tools (p. 118) aren't installed, Windows resolution remains unchanged. If it is lower than that of the Mac, Windows is displayed on the black background. If higher, Windows is entirely displayed on the screen without any scroll bars.

- **Keep ratio**: No matter whether Parallels Tools (p. 118) are installed or not, Windows resolution remains unchanged. If it is lower than that of the Mac, Windows is displayed on the black background. If higher, Windows is entirely displayed on the screen without any scroll bars.

- **Stretch**: No matter whether Parallels Tools (p. 118) are installed or not, Windows resolution remains unchanged but Windows is stretched to occupy the whole screen.

Share Items Between macOS and Windows

Please read on to learn what you can share between your Mac and Windows.

Copy and Paste Between macOS and Windows

Parallels Desktop allows you to copy and paste images and formatted text (italic, bold, underlined, and of various colors, fonts, and sizes) between macOS and Windows applications.

To enable copying and pasting between macOS and Windows:

1   Do one of the following:

- Click the Parallels icon ‖ in the menu bar and choose **Configure.**

- Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2   Click **Options** > **More Options**.

3   Select **Share Mac clipboard**.

4   To preserve text formatting when copying and pasting text, select **Preserve text formatting**.

> **Note:** To enable copying and pasting between macOS and Windows, Parallels Tools (p. 133) must be installed. In most cases, Parallels Tools are installed by default. Copying and pasting between macOS and Windows is unavailable if you isolate macOS from Windows.

Copy and Paste Files

You can easily copy and paste files between Windows and macOS by doing the following:

1   Select a file (or multiple files) and press Command+C on your keyboard to copy it.

2   Open a folder or click the desktop in the other operating system and press Command-V to paste the file.

> **Notes:**
>
> **1.** To enable copying and pasting files between macOS and Windows, in Sharing settings (p. 25) **All disks** or **Home folder** must be chosen from the **Share Folders** menu.
>
> **2.** If **Home folder only** is selected in the **Share Folders** menu (p. 25), you will be able to copy and paste files from the Mac to Windows only from the Mac home folder.

Share Files and Folders

Parallels Desktop allows you to share folders between the macOS and Windows file systems, so you can easily open macOS files from Windows applications.

> **Note:** These instructions apply to sharing folders between macOS and Linux as well.

Access a macOS Folder or File from a Windows Program

With folder sharing enabled, you can navigate to any shared macOS folder from within a Windows program. When you open a file (for example, by choosing **File** > **Open** in many programs), your shared macOS folders appear as network shared directories labeled "psf."

To enable macOS folders for sharing with Windows programs:

1   Start Windows. (p. 15)

2   Do one of the following:

- Click the Parallels icon ▊▊ in the menu bar and choose **Configure.**

- Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

3   Click **Options** and select **Sharing**.

4   Do one of the following:

- To share just the folders in your Home folder, choose **Home folder** from the **Shared Folders** menu.

- To share all your macOS folders, choose **All disks** from the **Shared Folders** menu.

- To share any folder you want, click **Custom Folders** and click the add (+) button, then choose the folder you want to share. You can add more folders by clicking the add (+) button again.
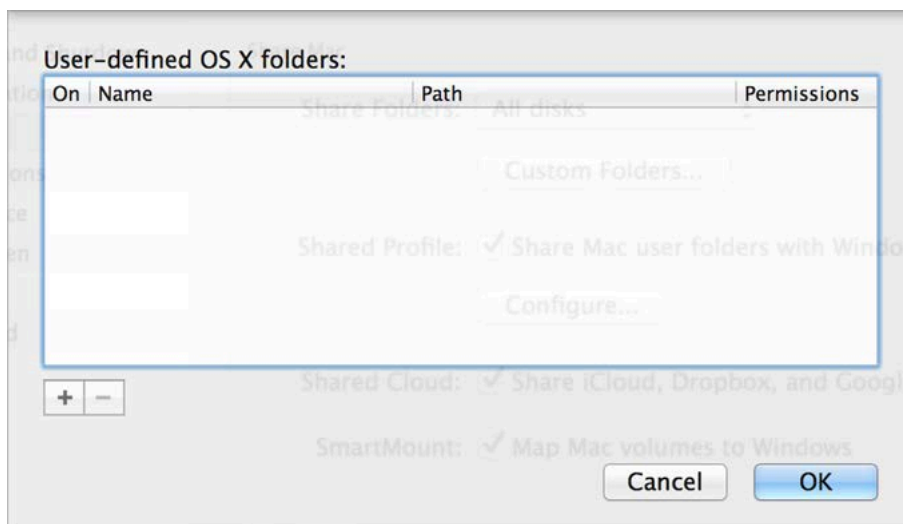
Once you share a macOS folder with Windows you can:

- Disable the folder sharing by deselecting **On**.

- Change the folder name that will be displayed in Windows by double-clicking the folder name in the **Name** column and typing another name.

- Restrict writing to this folder by clicking **Read & Write** in the **Permissions** folder and choosing **Read only**. You will not be able to add items to the folder.

5 Click **OK**.

> **Note:** 1. To enable folder sharing, the **Isolate Windows from Mac** option must be disabled on the **Security** tab of the **Configuration** dialog.
>
> 2. If you're running Linux, shared folders are mounted to the `/media/psf` or `/mnt/psf` directory.

Set macOS and Windows to Use the Same Folders

You can set macOS and Windows to use the same folders for things like music, documents, pictures, your desktop, and deleted files. So for example, if you save a file to the Documents folder, it will be in the Documents folder whether you're using a macOS application or a Windows program.

1 Start Windows. (p. 15)

2 Do one of the following:

- Click the Parallels icon ▌▌ in the menu bar and choose **Configure.**

- Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

3 Click **Options** and select **Sharing**.

4 Select **Share Mac user folders with Windows**.

Your macOS `Desktop, Documents, Pictures, Music, Movies,` and `Downloads` folders are merged with the corresponding Windows folders, and the macOS Trash is merged with the Windows Recycle Bin.

5 If you only want to map some of the folders, click **Configure** and select the folders you want. To map the macOS Trash to the Windows Recycle Bin, select **Merge Recycle Bin with Trash**.

Show an Item from Windows in the Finder

If Windows is set to appear in a separate window or in full screen mode (p. 20), you can show an item from Windows in the macOS Finder.

- In Windows, right-click (or Control-click) a file or folder and choose **Show in Finder** from the shortcut menu.

From the Finder you could, for example, apply a color label to an item, or easily drag it to another location in the Finder.

> **Note:** You can only perform these actions with files stored in shared folders (p. 25).

Set macOS Files to Open in the Windows Application of Your Choice

You can set files of a particular type that you open from the macOS Finder to open in the Windows program of your choice. For example, you could set files ending in `.txt` to always open in Windows Notepad.

Set macOS Files of a Particular Type to Open in a Windows Program

To open a macOS file once with a Windows program:

1 Right-click (or Control-click) the file in the Finder and choose **Open With** from the shortcut menu.

2 Select a Windows program.

   If you don't see the program you want, click **Other** and choose a Windows program from `/username/Applications (Parallels)/Windows Applications`.

To set files of a particular type to always open in a Windows program:

1 Right-click (or Control-click) a file and choose **Get Info** from the shortcut menu.

2 Click the triangle next to "Open with" to expand the section.

3 Choose a Windows program from the pop-up menu.

   If you don't see the program you want, choose **Other** and choose a Windows program from `/username/Applications (Parallels)/Windows Applications`.

4 Click **Change All**.

Open the Current Safari Page in Internet Explorer

Some webpages work best when viewed in Windows Internet Explorer. If you are browsing in macOS using Safari, you can quickly open the current page in Internet Explorer by doing the following:

1 First you need to enable the "Open in Internet Explorer" plugin. Do one of the following:

   - Click the Parallels icon ▋▋ in the menu bar and choose **Configure.**

   - Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2 Click **Options** and select **Web**.

3 Click **Enable Plugin**.

4 Once the plugin is enabled, click the **Open in IE** button [⊞] in the Safari toolbar.

If Windows isn't already open, it starts up and the page opens in Internet Explorer.

Use a Disk Image with the Virtual DVD Drive

While working in Windows, you can select a disk image file to be used with the virtual Windows DVD drive, as if it was a DVD inside a real drive. To do so:

1   In Windows Explorer, open **Computer** or **This PC**, right-click the DVD drive icon, and choose **Select disk image**.

2   Locate the disk image you want to use and click **Open**.

> **Note**: This functionality is available only for Windows with Parallels Tools installed (p. 133).

Apply macOS Parental Controls to Windows

If you have administrator rights in macOS, you can use parental controls to prevent others with accounts on your Mac from using certain Windows programs or accessing certain web sites.

To apply parental control settings:

1   In macOS, choose **Apple menu** > **System Preferences** and click **Parental Controls**.

2   Click the lock if it's not unlocked, and then enter an administrator name and password.

3   Select the account that you want to restrict, click **Enable Parental Controls**, and set up the controls. If you want the user to be able to use some Windows programs, be sure to select Parallels Desktop in the list of allowed applications.

For more information on using parental controls, see Mac Help.

Mouse, Trackpad, and Keyboard

Parallels Desktop lets you configure your mouse or trackpad and your keyboard to work just the way you want them to.

You can also use trackpad gestures to control Windows programs just as you can with macOS applications.

Read on to learn how to customize how your mouse, trackpad, and keyboard work with Windows programs.

Set Your Mouse or Trackpad to Right-Click and Middle-Click

Many tasks in Windows, such as bringing up shortcut menus, are accomplished by right-clicking.

By default, Parallels Desktop is set to mimic a right-click when you press Shift+Control and click the mouse. You can change which key combination triggers a right-click.

You can also set your trackpad to allow right-clicking, and if you have an Apple Mighty Mouse (included with Apple desktop computers from 2005-2009) or Magic Mouse (included with current Apple desktop computers), you can set the mouse to allow right-clicking.

Most other mice are pre-configured for right-clicking.

Set the Trackpad for Right-Clicking.

1   Choose **Apple menu** > **System Preferences** and click **Trackpad** > **Point & Click**.

2   Select **Secondary click** and choose how you want to imitate a right-click.

Set an Apple Mighty Mouse for Right-Clicking

1   Choose **Apple menu** > **System Preferences** and click **Mouse** or **Keyboard & Mouse**.

2   Choose **Secondary Button** from the menu to the right of the mouse.

Now you can press the right side of the mouse to right-click.

Set an Apple Magic Mouse for Right-Clicking

1   Choose **Apple menu** > **System Preferences** and click **Mouse** or **Keyboard & Mouse**.

2   Select **Secondary click**.

Now you can press the right side of the mouse to right-click.

Set Which Key Combination Triggers a Right-Click or a Middle-Click

1   Do one of the following:

- Click the Parallels icon ‖ in the menu bar and choose **Preferences**.
- If the Parallels Desktop menu bar is visible at the top of the screen, choose **Parallels Desktop** > **Preferences**.

2   Click **Shortcuts**.

3   Select **Mouse Shortcuts** in the sidebar.
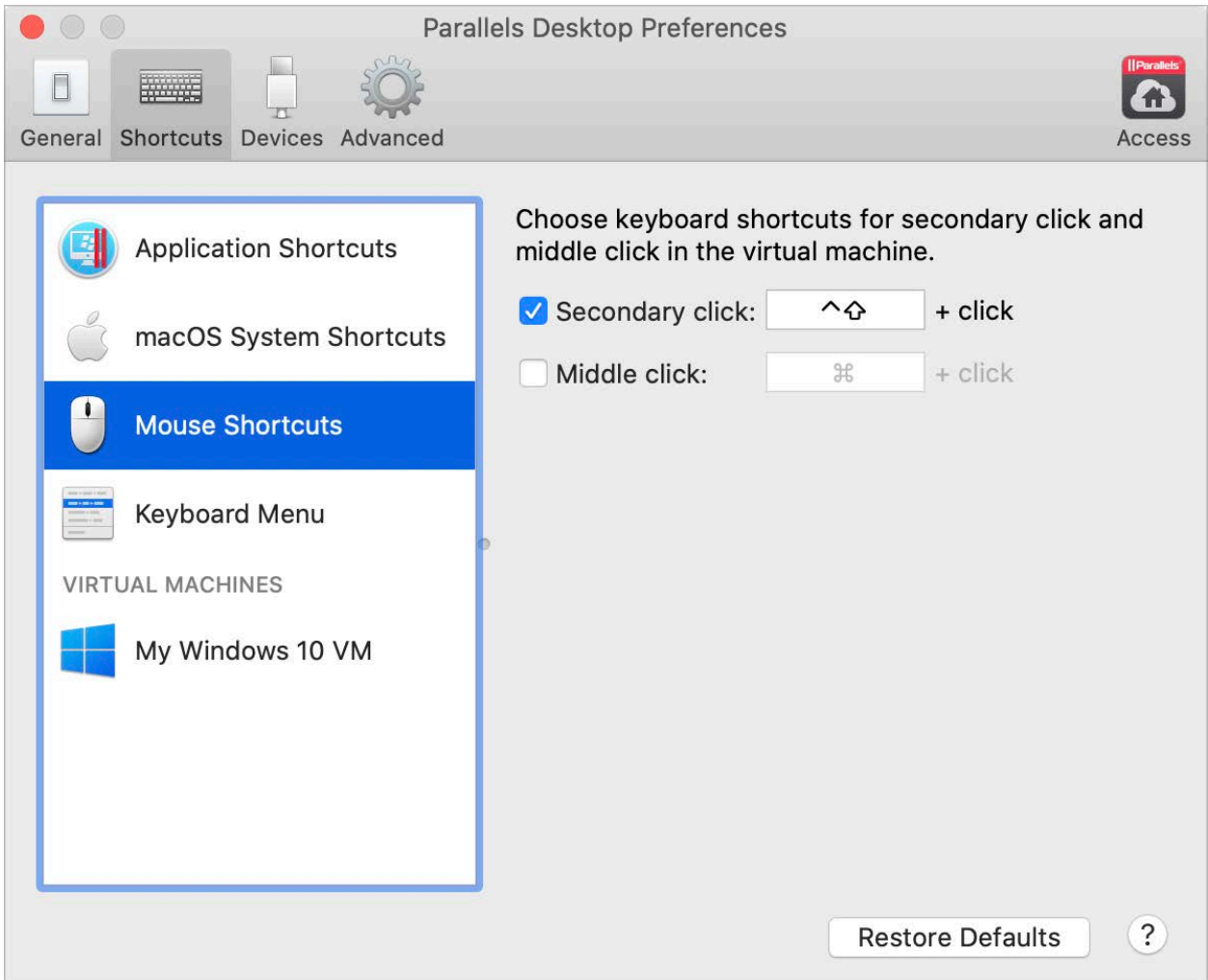
4   Select **Secondary click** (for right-click) or **Middle click**.

5   Click in the corresponding text field and press the key or combination of keys that you want to use with a mouse click to trigger a right-click or middle-click.

You can use any combination of the Control, Option (Alt), Shift, and Command keys.

Control Programs with Trackpad Gestures

If you have an Apple portable computer, such as a Macbook, or if you have an Apple Magic Trackpad, you can use gestures, such as swiping left or right across the trackpad, to control some Windows programs.

Note: You can control some Windows programs using three-finger swipes only if you're using Parallels Desktop with macOS Snow Leopard. In OS X Lion and later, three-finger swipes are used by default to move between full-screen apps and spaces.

The following table provides commands to control some of the more popular Windows programs.

Action	Keyboard and Mouse Combination	Touchpad Gesture
General		
Scroll	Up, down, left, or right arrow	Swipe up, down, left, or right with two fingers
Microsoft Power Point		
Start slide show	F5	n/a
End slide show	Esc	n/a
Perform the next animation or advance to the next slide	N, Enter, Page Down, Right Arrow, Down Arrow, Space (or click the mouse)	Swipe right with three fingers
Perform the previous animation or return to the previous slide	P, Page Up, Left Arrow, Up Arrow, Backspace	Swipe left with three fingers
Zoom in/zoom out	Ctrl+wheel up /Ctrl+wheel down	Pinch open/pinch close
Microsoft Word/Excel		
Zoom in/zoom out	Ctrl+wheel up /Ctrl+wheel down	Pinch open/pinch close
Windows Media Player		
Start/pause playback	Space	n/a
Skip to the next song	Ctrl+F	Swipe right with three fingers
Play the previous song	Ctrl+B	Swipe left with three fingers
Volume up	F8, Up Arrow, wheel up	n/a
Volume down	F9, Down Arrow, wheel down	n/a
Media Player Classic (k-lite)		
Start playback/pause	Space	n/a
Volume up	F8, Up Arrow, wheel up	n/a
Volume down	F9, Down Arrow, wheel down	n/a
Winamp		
Start playback/pause	X to start, C to pause	n/a
Volume up	Up Arrow, wheel up	n/a
Volume down	Down Arrow, wheel down	n/a
Microsoft Internet Explorer		
Page back	Backspace, Option+Left Arrow (Alt+Left Arrow)	Swipe right with three fingers
Page forward	Option+Right Arrow (Alt+Right	Swipe left with three fingers

	Arrow)	
Zoom in/zoom out	Ctrl+wheel up/Ctrl+wheel down	Pinch open/pinch close
Mozilla Firefox		
Page back	Backspace, Option+Left Arrow (Alt+Left Arow)	Swipe right with three fingers
Page forward	Option+Right Arrow (Alt+Right Arrow)	Swipe left with three fingers
Zoom in/zoom out	Ctrl-wheel up/Ctrl-wheel down or Ctrl-"+"/Ctrl-"-"	Pinch open/pinch close
Windows Picture and Fax Viewer		
Next image	Right Arrow	Swipe right with three fingers
Previous image	Left Arrow	Swipe left with three fingers
Zoom in/zoom out	"+"/"-"	Pinch open/pinch close
Rotate clockwise	Ctrl+K	Rotate right with two fingers
Rotate counterclockwise	Ctrl+L	Rotate left with two fingers

Use Keyboard Shortcuts

Both macOS and Windows provide extensive keyboard shortcuts. For example, in macOS you can hold down the Command key and press Q (Command-Q) to quit the current application.

To enter a keyboard shortcut, simply press a key combination on your keyboard.

You can also enter keyboard shortcuts by doing one of the following:

* Click the Parallels icon ‖ in the menu bar, then choose **Devices** > **Keyboard** and choose a key combination.

* Choose **Devices** > **Keyboard** and choose a key combination.

These methods are most useful for using keyboard shortcuts that include keys not included on a Mac keyboard, such as Alt + PrintScreen.

> **Note:** To use the F1-F12 keys on a MacBook, press and hold the Fn key and then press an F key.

Customize Keyboard Shortcuts

By default, Parallels Desktop maps common macOS keyboard shortcut key combinations to the equivalent Windows key combinations. That way if you're used to, for example, pressing Command-C to copy text in macOS, you don't have to switch to the Windows equivalent, Control-C.

You can also use and customize keyboard shortcuts for switching between Full Screen and Window view modes, and for showing and hiding Parallels Desktop.

Customize Keyboard Shortcuts

1   Do one of the following:

- Click the Parallels icon ‖ in the menu bar and choose **Preferences**.
- If the Parallels Desktop menu bar is visible at the top of the screen, choose **Parallels Desktop** > **Preferences**.

2   Click **Shortcuts**

3   Select Windows from the Virtual Machines list in the sidebar.

Or if you're using another operating system with Parallels Desktop and you want to customize keyboard shortcuts for it, select it in the sidebar.
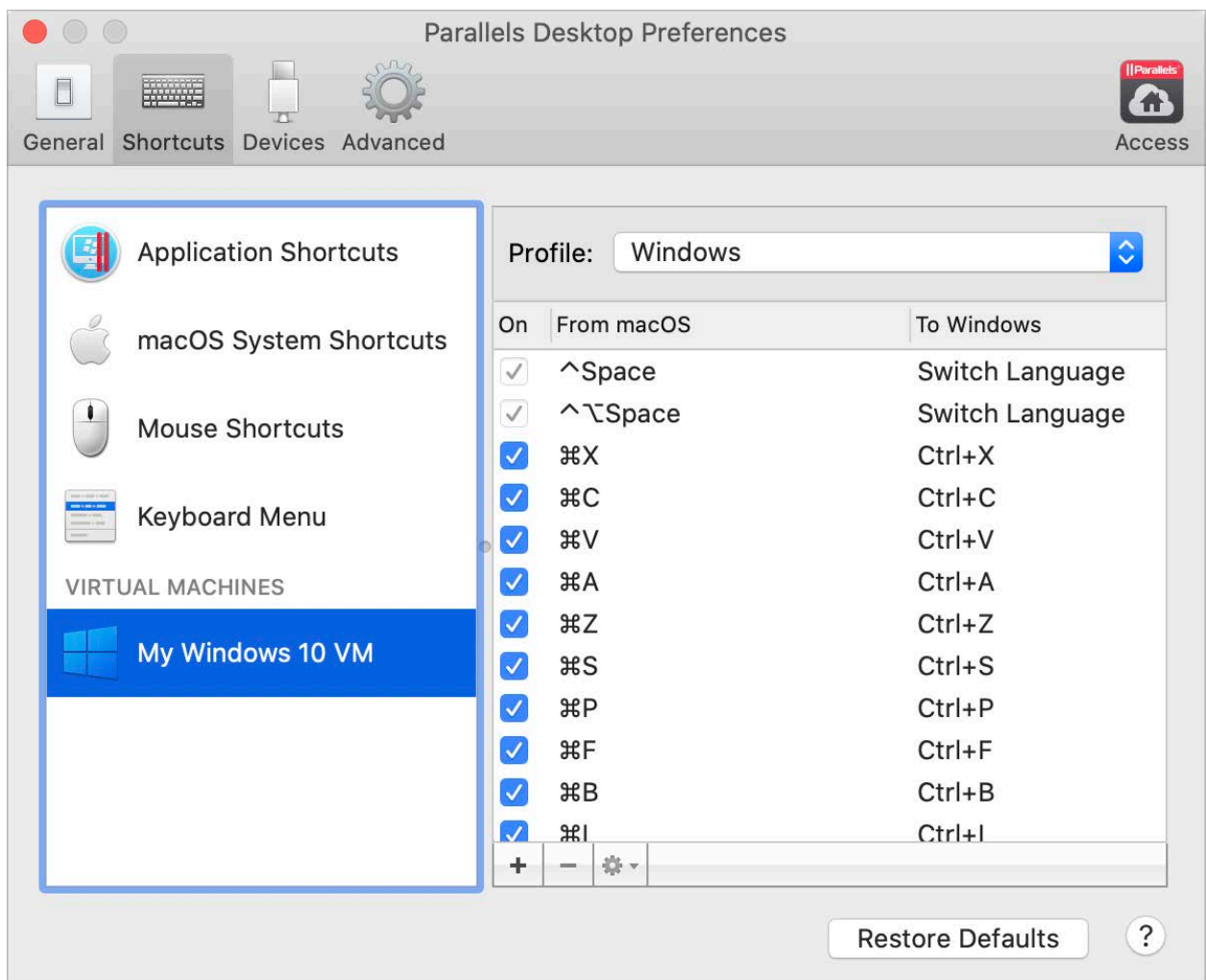
When you're using a Windows application, pressing a key combination in the **From** column above triggers the key combination in the **To** column.

4 Do one of the following:

- To edit an existing key combination, double-click the key combination or select it and click the **Edit** button ![gear icon]. Click modifier keys to select or deselect them. If you wish, change the character in the text field.

- To delete a key combination, select it and click the **Remove** button ![minus icon].

- To add a new key combination, click the **Add** button ![plus icon].

If you're using multiple operating systems with Parallels Desktop, you can create keyboard profiles for each OS (p. 115).

> **Note:** 1. Some key combinations can't be edited or deleted.
>
> 2. There are Mac shortcuts that do not have similar shortcuts in Windows For example, you can use the F11 key or Fn+F11 combination to see your macOS desktop with Expose, but in Windows there are no keys or key combinations that enable you to perform the same action, because there is no Expose in Windows.

Enable or Disable macOS System Shortcuts

In macOS the function keys on your keyboard (F1, F2, F3 and so on) control functions like activating Dashboard and Mission Control, adjusting screen brightness, and controlling the volume. By default, when a Windows application is active the function keys and other Mac system shortcut key combinations (such as pressing Cmd + Tab to switch between open applications) continue to activate macOS functions.

To set whether function keys and macOS system shortcut key combinations activate functions in macOS or Windows:

1 Click **macOS system shortcuts** in the sidebar.

2 Select one of the following from the **Send macOS system shortcuts** menu:

- **Always**: When Windows or Windows applications are active, function keys and other system shortcuts always trigger functions in Windows.

- **Never**: Function keys and other system shortcuts always trigger functions in macOS.

- **Auto**: If you're working with Windows, system shortcuts that don't function in Windows (for example, Control-Up Arrow button to display Mission Control) trigger functions in macOS. If you're using macOS as a guest OS and a guest OS or its application is active, system shortcuts that are typical only to macOS trigger functions in the guest version of macOS.

Customize Keyboard Menu

In Window mode you can enter key combinations by choosing **Devices** > **Keyboard** and then choosing a key combination. To customize available key combinations, do the following:

1   Do one of the following:

- Click the Parallels icon ▌▌ in the menu bar and choose **Preferences**.
- If the Parallels Desktop menu bar is visible at the top of the screen, choose **Parallels Desktop** > **Preferences**.

2   Click **Shortcuts** > **Keyboard Menu**.

3   Do one of the following:

- To add a new key combination, click the **Add** button ⊞ .
- To remove a key combination from the Keyboard menu, select it and click the **Remove** button ⊟ .
- To edit an existing key combination, double-click the key combination or select it and click the **Edit** button ⚙▾ . Click modifier keys to select or deselect them. If you wish, change the character in the text field.

-
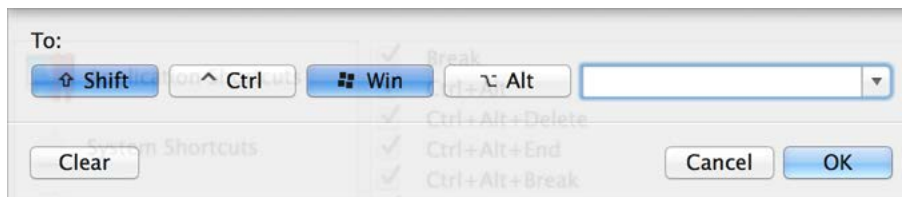
Create New Keyboard Shortcuts

You can press certain key combinations, called keyboard shortcuts, to quickly trigger various actions in Parallels Desktop. For example, you can press Command-Control-F to switch Windows to Full Screen mode. You can use existing keyboard shortcuts (you can see them in the **Parallels Desktop** > **Preferences** > **Shortcuts** > **Application Shortcuts** pane), and you can also create your own.

To create a new keyboard shortcut:

1 Make a note of the name for the command you want a shortcut for as it appears in a menu in Parallels Desktop. For example, if you want to create a new shortcut for switching to Full Screen mode, you can see by opening the **View** menu in Parallels Desktop that the name of the menu item is **Enter Full Screen**:
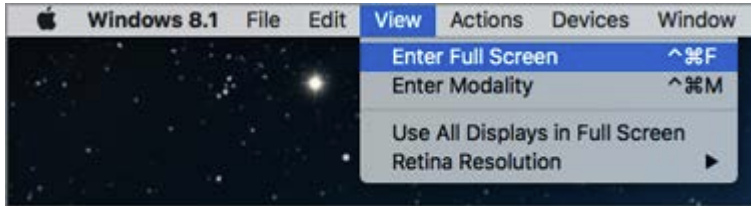
2 In macOS, choose **Apple Menu** > **System Preferences.**

3 In System Preferences, click **Keyboard** and click **Shortcuts**.

4 Select **App Shortcuts** in the sidebar and click the Add button ⊞.

5 If you want a new shortcut to work only for Parallels Desktop, choose Parallels Desktop from the **Application** menu. If you leave **All Applications** selected, the shortcut will work for any application that has the same command name and is currently active.

6 Enter the menu item name from Step 1.

> **Important:** You must enter the command name exactly as it appears in the Parallels Desktop menu or your new shortcut won't work.

7 In the **Keyboard Shortcut** field, press the key combination that you want to trigger the action.

> **Note:** You must create separate shortcuts for commands that change in the menu depending on the state of Parallels Desktop, such as **Enter Full Screen** and **Exit Full Screen**.

See and Change Windows Input Language In macOS

While you're working with Windows or any Windows applications, Parallels Desktop shows the input language set in Windows in macOS menu bar.

As soon as you switch to Mac, the input language in macOS menu bar changes back to the language that was set before you started working with Windows.

To make this feature work properly, Parallels Tools (p. 119) must be installed and the same input languages must be available in Windows and macOS. To learn how to add input languages, please refer to the help resources for these operating systems.

Change Windows Input Language From macOS Menu Bar

To change the Windows input language from the macOS menu bar:

1   Click Windows or your Windows application to make it active.

2   Choose the language you need from the Input menu available in the macOS menu bar.
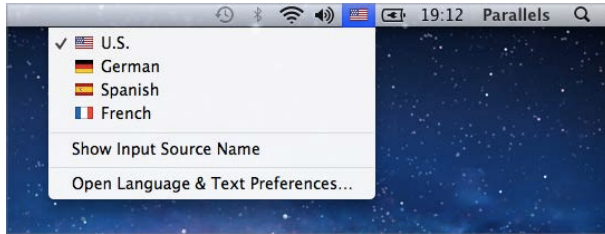
> **Note:** The language you're selecting from the Input menu must be also available in Windows. To learn how to add a language to the list of input sources in Windows, please refer to the Windows help resources.

If the Input menu isn't available in macOS menu bar, you can set it to show by doing the following:

1   In macOS, choose **Apple menu** > **System Preferences** and click **Keyboard**.

2   Click **Input Sources**.

3   Select the language or languages you want to use from the sidebar.

4   Select **Show input menu in menu bar**.

Connect USB Devices

Parallels Desktop allows you to use USB devices with Windows.

To connect a USB device:

1   Connect the device to your Mac.

2 If Windows is running and the device can't be used with both Windows and macOS at the same time, you're prompted to choose which one you want to use it with. To use the device with macOS applications, click the Mac icon. To use it with Windows programs, click the Windows screen.

Important: To be able to use a USB device with Windows programs, you may need to install Windows drivers for the device. Typically you can download drivers from the manufacturer's website.

You can also set what happens when any new external device is connected and set particular external devices to always be used with either macOS or Windows (p. 39).

Adjust Devices Settings

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

* Set what happens when you connect any new USB device to your Mac.

* Set a particular device to always be used with either macOS or Windows.
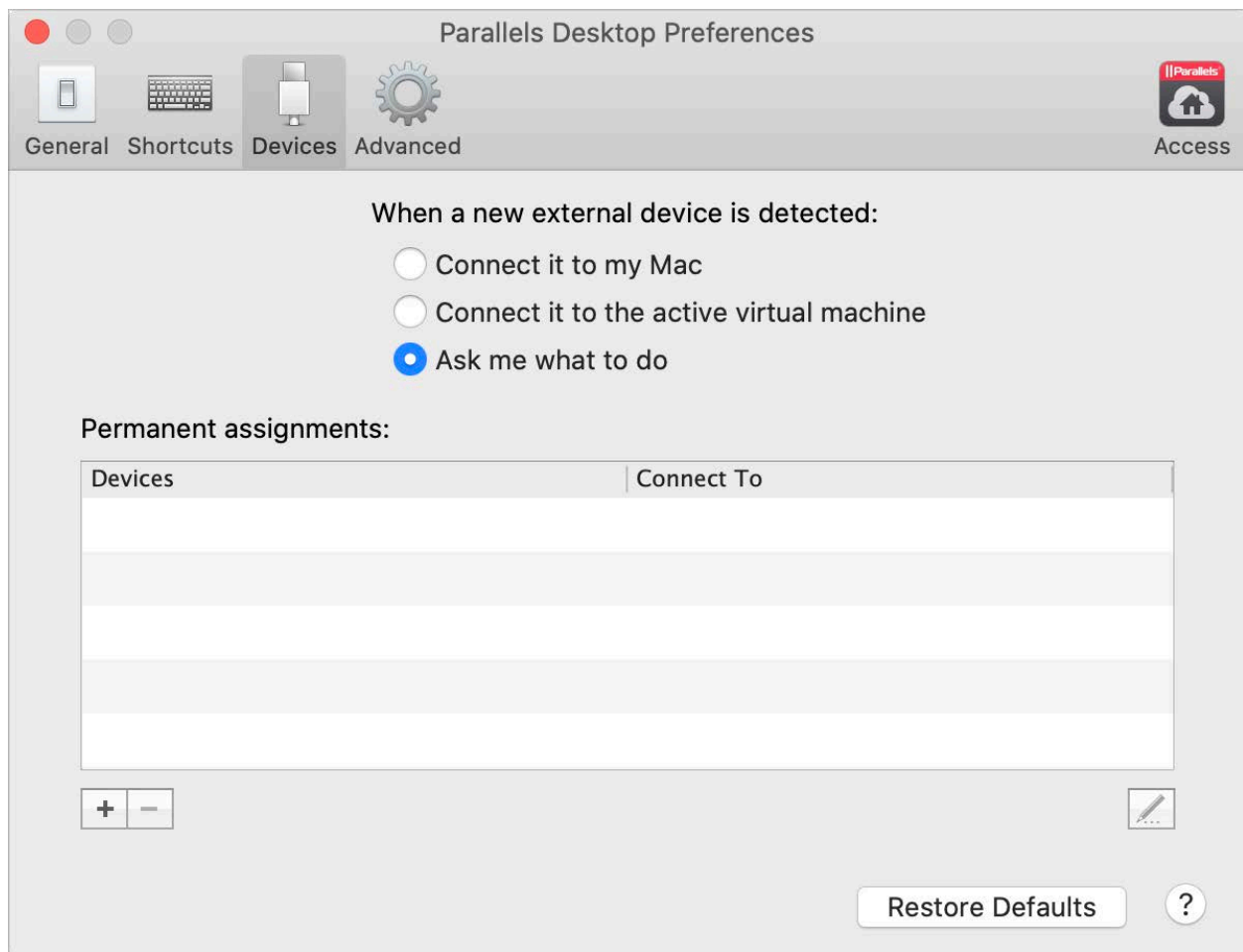
To access Devices Settings:

1 Do one of the following:

* Click the Parallels icon ❙❙ in the menu bar and choose **Preferences**.

* If the Parallels Desktop menu bar is visible at the top of the screen, choose **Parallels Desktop** > **Preferences**.

2 Click **Devices**.

Set What Happens When You Connect a New External Device to Your Mac

Choose one of the following:

- **Connect it to my Mac**. New external devices are automatically available for use with macOS applications.

- **Connect it to the active virtual machine**. New external devices are automatically available for use with Windows programs. If Windows isn't running, the external device is connected to macOS.

- **Ask me what to do**. Each time you connect an external device, you're prompted to choose whether you want to connect the device to Windows or the Mac.

Set a Particular External Device to Always Be Used With macOS or Windows

If you know you always want a particular external device to be available to either macOS or Windows, you can set it to do so by following the instructions below. The device must already have been connected to your Mac at least once.

1   Click the **Add** (+) button towards the bottom of the window.

2   Select the device from the list.

3   Double-click the word (either **Computer** or some form of **Windows**) in the **Connect To** column. The word becomes a pop-up menu.

4   Do one of the following:

- To set the device to always be available to macOS applications, choose **Computer** from the menu.

- To set the device to always be available to Windows programs, choose **Windows** from the menu.

To remove an existing assignment, so that the device no longer automatically connects to macOS or Windows, select the device in the **External Device** column and click the **Remove** (-) button.

Important: To be able to use an external device with Windows programs, you may need to install Windows drivers for the device. Typically you can download drivers from the manufacturer's website.

Print from Windows

By default, Windows is set to use the same printer that you use with macOS. Simply print from a Windows application the way you normally would.

You can also set Windows to use a different printer. There are a few ways to set up printing in Windows:

- Share any of the printers connected to your Mac.

- Connect to a network printer.

- Connect a USB printer directly to Windows.

Share a Printer Connected to Your Mac

You can use any printer connected to your Mac with Windows programs.

> **Note**: This functionality is also available for Linux with Parallels Tools installed (p. 121).

To print a document from a Windows program:

- Open the document and simply print it the way you normally would (for example, choose **File** > **Print**).

In the print window, you can choose any printer that's connected to your Mac.

Share Printers Connected to Your Mac

1 Do one of the following:

- Click the Parallels icon ‖ in the menu bar and choose **Configure.**

- Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2 Click **Hardware** and select **Shared Printers**.

> **Note:** The **Shared Printers** pane is available for Windows 2000 and newer versions of Windows.

3 Select **Share Mac printers with Windows**.

Set a New Default Printer

By default, Windows is set to use the same default printer as your Mac. To use a different default printer for Windows.

1 Do one of the following:

- Click the Parallels icon ‖ in the menu bar and choose **Configure.**

- Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2 Click **Hardware** and select **Shared Printers**.

3 Deselect **Synchronize default printer**.

Now you can set a new default printer in Windows the way you normally would.

Set Up a Network Printer

You can install a network printer directly into Windows.

Before installing a network printer in Windows, make sure that:

- Your Mac can access the Internet.

- Windows is configured to work in the Shared networking mode (p. 46) and can access the Internet too.

- The user account in Windows has permission to access the network printer.

- You know the printer IP address.

After that, you can log in to Windows and install a network printer. To learn how to set up a network printer in your virtual machine operating system, please refer to this OS help resources.

Set Up a USB Printer

You can connect a USB printer directly to Windows. In this case, the printer isn't available to macOS. If you want to use the printer to print both from macOS and from Windows, see **Share a Mac Printer** (p. 41).

To connect a USB printer directly to Windows:

1   In Parallels Desktop, start Windows.

2   When Windows starts, install the printer driver. For detailed information on how to do that, refer to the printer manufacturer's documentation. Typically you can find drivers on the manufacturer's website.

3   Do one of the following:

- If the USB printer is already connected to your Mac:

  - Click the Parallels icon ‖ in the menu bar, choose **Devices** > **Printer** > **Printer** and select this printer from the list.

- If the USB printer is not connected to your Mac, connect it. In the **New USB device detected** window, connect the printer to Windows.

1   In the next step, Windows may set up the printer automatically. If it doesn't, please refer to your Windows version help resources to learn how to set up the newly connected printer in Windows.

Create a PDF File

When working with a text document, web page, or other file, you may wish to create a Portable Document Format (PDF) file out of it. A PDF file preserves the format and layout of a document, so others can see it as if it were printed on the page.

To create a PDF file, select **Print to PDF (Mac Desktop)** when choosing a printer. A PDF file is saved on the Mac desktop.

> **Note:** This functionality is available for Windows guest operating systems provided that Parallels Tools are installed (p. 118) and all Mac printers are shared (p. 41) with Windows.

Use the Built-in iSight Camera or Another Webcam

If your Mac or display has a built-in iSight camera, or if you connect a compatible external webcam, by default you can use it with Windows.

To use a built-in iSight or external camera with Windows:

- Simply open a Windows program that uses a camera, you should be able to select the iSight or external camera for use with the program.

Disable Camera Sharing

If you don't want Windows programs to be able to use connected webcams or the built-in iSight camera, you can disable camera sharing by doing the following:

1   Do one of the following:

- Click the Parallels icon ▋▋ in the menu bar and choose **Configure**.

- Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2   Click **Hardware** and click **Sound & Camera**.

3   Deselect **Share Mac camera with Windows**.

Show a Presentation on an External Monitor or Projector

You can easily connect your Mac to an external monitor or projector and show a presentation from a Windows application, with little configuration needed.

To do so:

1   Start Windows (p. 15) if it isn't already running.

2   Connect your Mac to the external monitor or projector as you normally would. A message appears asking if you're going to show a presentation.

43
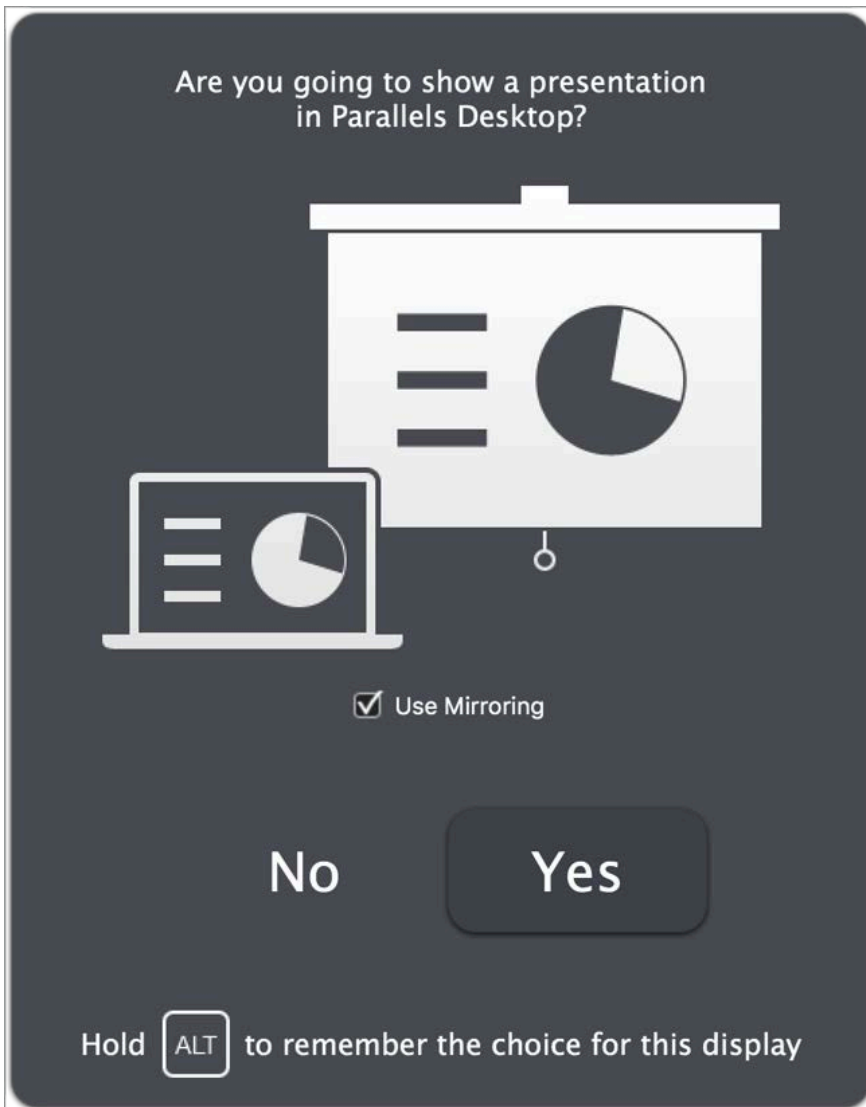
3   If you want to show the exact contents of your computer's display on the external display or projector, select **Mirror display**.

If you don't select **Mirror display**, certain applications, such as Microsoft Powerpoint, may show a presenter view on your computer while showing only the presentation on the external display or projector.

4   Click **Yes**. Windows switches to Presentation mode, displayed at full screen on both your computer's display and external display or projector. After that, you can start showing your presentation.

Note: To learn how to choose on which display the presentation is shown, please refer to Help of the application you're using for presentations.

Important! While you're working in Presentation mode, changing display settings in Windows may cause the presentation to malfunction.

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Protect Your Data

You probably have important documents, photos, and more on your Mac. When running Windows on your Mac, it's especially important to protect your data from viruses and unauthorized use. Read this section to learn how.

Isolate Windows from Mac

You can isolate Windows from macOS, so that they no longer share folders, profiles, and applications, connected external devices are no longer automatically accessible by Windows, Windows and Mac no longer synchronize volume, and you can no longer copy or move objects between Windows and macOS. Isolating Windows from macOS may provide a higher level of security by not allowing compromised items from one OS to come into contact with the other.

To isolate Windows from macOS

1   Do one of the following:

- Click the Parallels icon ▊▊ in the menu bar and choose **Configure.**

- Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2   Click **Security**.

3   Select **Isolate Windows from Mac**.

Encrypt Windows to Protect It from Unauthorized Use

If you store any important data using Windows programs, it is highly recommended that you encrypt Windows to protect your data from any unauthorized use.

Encrypt Windows

To encrypt Windows (it must be shut down):

1   Select Windows and click **Actions** > **Configure** > **Security**.

2   On the **Security** tab, 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 Windows.

Change Your Password

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

1   Select Windows and click **Actions** > **Configure** > **Security**.

2   On the **Security** tab, click **Change Password**, specify a new password, and click **OK**.

Remove Encryption from Windows

To remove encryption from Windows (it must be shut down):

1   Select Windows and click **Actions** > **Configure** > **Security**.

2   On the **Security** tab, click **Turn Off**.

Connect to the Internet or a Network

Parallels Desktop allows you to use two types of networking with Windows:

- **Shared Networking**: Windows programs share a network connection with macOS. This is the default setting.
- **Host-only networking**: Windows can access only your Mac.

In most cases, you don't need to adjust network settings. If your Mac is set to connect to a network or to the Internet, Windows programs have access to the same network and the Internet.

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

Share Network Settings Between macOS and Windows

By default, Windows is set to share network settings with macOS. Windows programs can access other computers on your local network and the Internet by using the IP address of your Mac. Windows does not have its own IP address on the network.
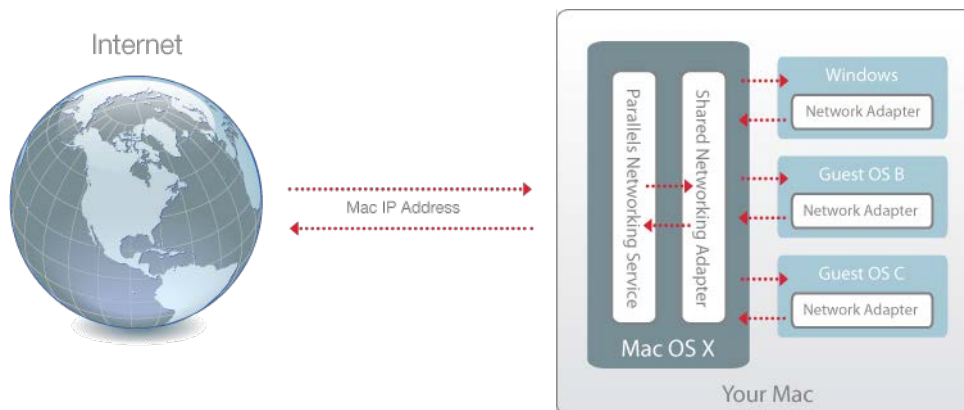
In most cases, you don't need to adjust network settings. If your Mac is set to connect to a network or to the Internet, Windows programs have access to the same network and the Internet.

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

* Your Mac accesses the Internet via a modem or another non-Ethernet device.

* You need to access the Internet from inside Windows but are concerned about security.
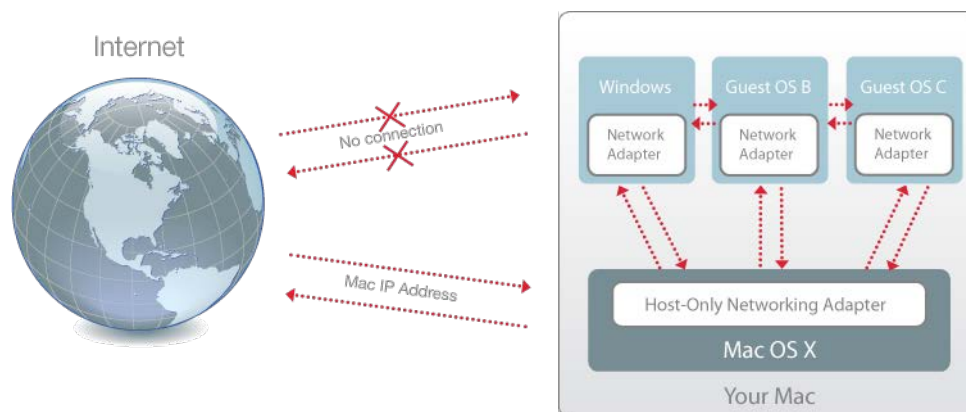
To configure Windows to use Shared Networking:

1 Do one of the following:

* Click the Parallels icon ▋▋ in the menu bar and choose **Configure.**

* Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2 Click **Hardware** and then click **Network**.

3 In the **Network** pane, make sure the **Shared Network** option is selected.

> **Note:** In the MAC address field, you can change the MAC address currently assigned to Windows. MAC addresses are automatically generated when you first set up Windows on your Mac. 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.

For the information about troubleshooting networking problems, refer to the Parallels knowledge base available at the Parallels website.

Use Host-Only Network Settings

Parallels Desktop provides a closed network that is accessible only to macOS and Windows. macOS is connected to this network via the Parallels Host-Only Networking adapter automatically created on your Mac during the Parallels Desktop installation. The addresses for Windows are provided by the Parallels DHCP server.

To configure Windows to use Host-Only Networking:

1 Do one of the following:

* Click the Parallels icon ▋▋ in the menu bar and choose **Configure.**

- Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2   Click **Hardware** and then click **Network**.

3   In the **Network** pane, make sure the **Host-Only Network** option is selected.

> **Note:** In the MAC address field, you can change the MAC address currently assigned to Windows. MAC addresses are automatically generated when you first set up Windows. 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.

For the information about troubleshooting networking problems, refer to the Parallels knowledge base available at the Parallels website.

Optimize Performance

If Windows isn't working as speedily as you'd like, there are several simple ways you can optimize its performance. This section contains many helpful instructions for doing just that.

Set How Much Memory is Allocated to Windows

Parallels Desktop is set to allocate a certain amount of your Mac's available RAM memory to Windows and the rest to macOS. If too much memory is allocated to Windows, macOS may slow down, which in turn can cause Windows programs to slow down because they're running on top of macOS. If, on the other hand, too much memory is allocated to macOS, then macOS applications may run well but Windows programs might slow down.

To optimize the performance of both Windows and macOS, set the memory allocated to Windows to be somewhere within the recommended range.

To set how much memory is allocated to Windows:

1   Shut down Windows (p. 17).

2   Choose **Actions** > **Configure** > **Hardware** > **CPU & Memory**.

3   Move the memory slider to somewhere within the recommended range, indicated by the graphic under the slider.

If you use Windows programs that require lots of memory, like 3D or video production programs, it's best to set the memory allocation towards the high end of the range (move the slider to the right). If not, it's usually best to set it closer to the middle.

> **Note:** No matter how much memory (RAM) your Mac has, the maximum amount of memory that can be assigned to Windows is 8 GB.

If you change this setting and then you don't like how Windows is performing, then try a different setting.

Optimize Virtual Machine for Productivity or Games

When creating a virtual machine, you can optimize it according to your needs. You can choose to configure the virtual machine for:

* **Productivity**. Choose this profile if you're using the virtual machine for your everyday work with text editors, email, web browsers, etc.

* **Games only**. Choose this profile if you're using the virtual machine to play PC games on your Mac.

You can change this setting after the virtual machine is created:

1   Start Parallels Desktop.

2   In **Control Center**, right-click the virtual machine (it must be shut down) and choose **Configure**.

3   On the **General** tab, click **Change**.

4   Select the profile that best fits your need.

Work with Windows in Travel Mode

If you often travel with your MacBook, you must have come across the situations when you had no power adapter at hand to charge the Mac's batteries or experienced some problems when connecting to public networks.

Travel Mode makes Windows use less energy to extend the Mac's battery life and adjusts settings to connect to public networks.

Enter Travel Mode

To switch Windows to Travel Mode, do the following:

1   Start your virtual machine (p. 15).

2   When Windows boots up, do one of the following:

* Click the Parallels icon ‖ in the menu bar and choose **Actions** > **Enter Travel Mode**.

* Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Enter Travel Mode**.

Quit Travel Mode

To quit Travel Mode, do one of the following:

* Click the Parallels icon ‖ in the menu bar and choose **Actions** > **Quit Travel Mode**.

- Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Quit Travel Mode**.

Enter and Quit Travel Mode Automatically

You can also configure your virtual machine to enter and quit Travel Mode automatically:

1 Do one of the following:

- Click the Parallels icon ▌▌ in the menu bar and choose **Configure.**

- Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2 Click **Options** and select **Travel Mode**.

3 To enter Travel Mode automatically, choose one of the following:

- **Always when on battery power**: The virtual machine enters Travel Mode when the Mac starts working on battery power.

- **When battery power is**: Choose from the menu when you want your virtual machine to enter Travel Mode.

- **Never**: The virtual machine never enters Travel Mode automatically.

4 To quit Travel Mode automatically, choose one of the following:

- **When connected to power**: The virtual machine quits Travel Mode when you connect your Mac to power.

- **Never**: The virtual machine never quits Travel Mode automatically.

Use Windows on Your iPad, iPhone or Android Device

Parallels Access is a product created by Parallels that allows you to work with your Mac or Windows PC and their applications remotely from your iPad, iPhone or Android device. It also allows you to work with a remote computer via a web browser.

If you have Parallels Desktop installed on your Mac, you can use the Parallels Access app to access and control Windows.

Parallels Access lets you:

- Use any of your Windows programs on your mobile device

- Remotely start, stop, and reset Windows

- Connect over Wi-Fi or 3G

- Access Windows from anywhere over the Internet

Get Started

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

1   On your iPad, iPhone or Android device, download and install Parallels Access from the App Store or Google play.

2   Be sure you have installed Windows on your Mac (p. 12).

3   In Parallels Desktop, do one of the following:

- Click the Parallels icon ▐▐ in the menu bar and choose **Preferences.**

- If Windows is running in Window mode (p. 20), choose **Parallels Desktop** > **Preferences**.

4   Click **Access**.

5   Read the onscreen instructions to install the Parallels Access agent on your Mac.

You only have to do these steps once.

Access Windows from your iPad, iPhone or Android device

1   Turn on your Mac.

Your Mac must be on for Parallels Access to access and use Windows.

2   Open Parallels Access on your iPad, iPhone or Android device and log in to your account using the same email and password you used to register Parallels Desktop.

3   Tap your Mac in the list of available Macs.

When you access Windows for the first time, you see tips about gestures you can use to control Windows. Tap **Close** to go to the Windows desktop.

For more information about using Parallels Access, see *Parallels Access User's Guide*, available online.

Allow Windows Updates While Your Mac is Sleeping

Parallels Desktop supports macOS Power nap, which lets you keep aspects of Windows up-to-date even while your Mac is sleeping. When Power Nap is enabled, services that usually update information after Windows wakes from sleep (for example, new emails in email applications and new event updates in Calendar) will update while your Mac is in sleep.

To use Power Nap, your computer must be compatible. See Apple.com for more information.

To enable Power Nap:

1 On your Mac, choose **Apple menu** > **System Preferences** and click **Energy Saver**.

2 Depending on whether your Mac is working on batteries or is plugged, make sure **Enable Power Nap while on battery power** or **Enable Power Nap while plugged into a power adapter** is selected.

Note: To learn more about Power Nap, please refer to the macOS help resources.

Translate Words in Windows

If you're working with Windows and come across a word you don't know, you can easily look it up in macOS Dictionary. Just hover the mouse cursor over the word and either press Control-Command-D or tap (don't click) the touchpad with three fingers.

Notes:

1. Parallels Tools (p. 119) must be installed in Windows.

2. When you hover the mouse over a word, the mouse cursor should change from arrow ⬚ to text selection ⌶. You cannot look for words depicted on pictures.

C H A P T E R   5

Parallels Desktop Preferences and Virtual Machine Settings

Read this chapter to learn which options are available in the Parallels Desktop Preferences and virtual machine settings, how these options work, and how to add new devices, such as hard disk or DVD-drive, to the virtual machine configuration.

To access Parallels Desktop Preferences, right-click the Parallels Desktop icon in the Dock and choose **Preferences**.

To access your virtual machine settings, do one of the following:

* If the virtual machine is running in Full Screen or Window view mode, move the mouse pointer to the top of the screen, click **Actions** and choose **Configure**.

* If the virtual machine is running in Coherence view mode, click the Parallels icon ▊▊ in the top right corner of the macOS menu bar and choose **Configure**.

In This Chapter

C H A P T E R   6

Parallels Desktop Preferences

In This Chapter

General Preferences

Use **General** Preferences to specify whether the Parallels menu is available in the macOS menu bar and change the folder where your virtual machines are stored.

To open these preferences, choose **Parallels Desktop** > **Preferences**, then click **General**.
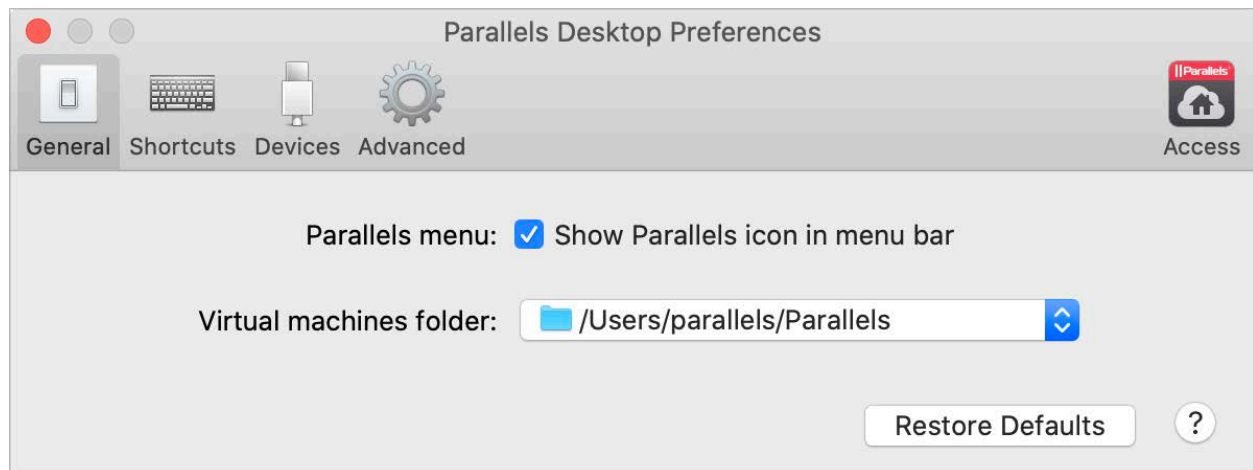
| Option	Description
Parallels menu	Choose whether the Parallels menu ‖ is available in the macOS menu bar. This menu provides a quick access to the Parallels Desktop menus, Preferences, Control Center, help resources, virtual machine actions, and more.
Virtual machines folder	Set where new virtual machines are stored. By default, they are saved to the *Parallels* folder inside the user's home folder.

Shortcuts Preferences

Use **Shortcuts** Preferences to customize keyboard shortcuts, create keyboard profiles for multiple operating systems, enable or disable macOS system shortcuts, and more.

To open these preferences, choose **Parallels Desktop** > **Preferences**, then click **Shortcuts**.

Application Shortcuts
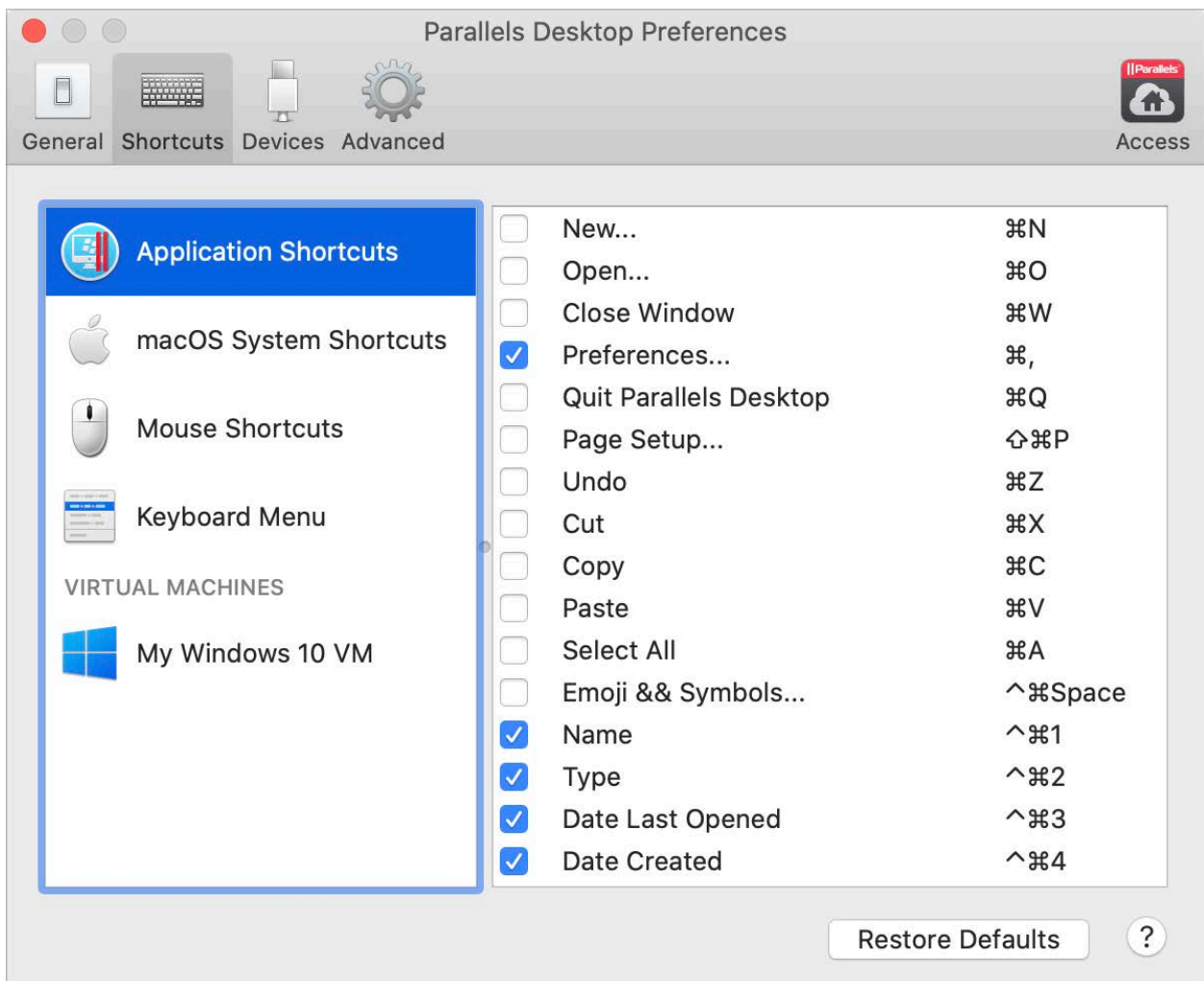
You can perform various actions in Parallels Desktop either by choosing menu items from the corresponding menus or by pressing key combinations. For example, you can open an existing virtual machine either by clicking **File** > **Open** or by pressing Command + O. However, if you deselect this key combination, the shortcut will not work.

To customize which actions can be performed by pressing key combinations, do the following:

1   Choose **Application Shortcuts** on the **Shortcuts** tab.

2   Enable or disable actions that can be performed by pressing key combinations.

macOS System Shortcuts
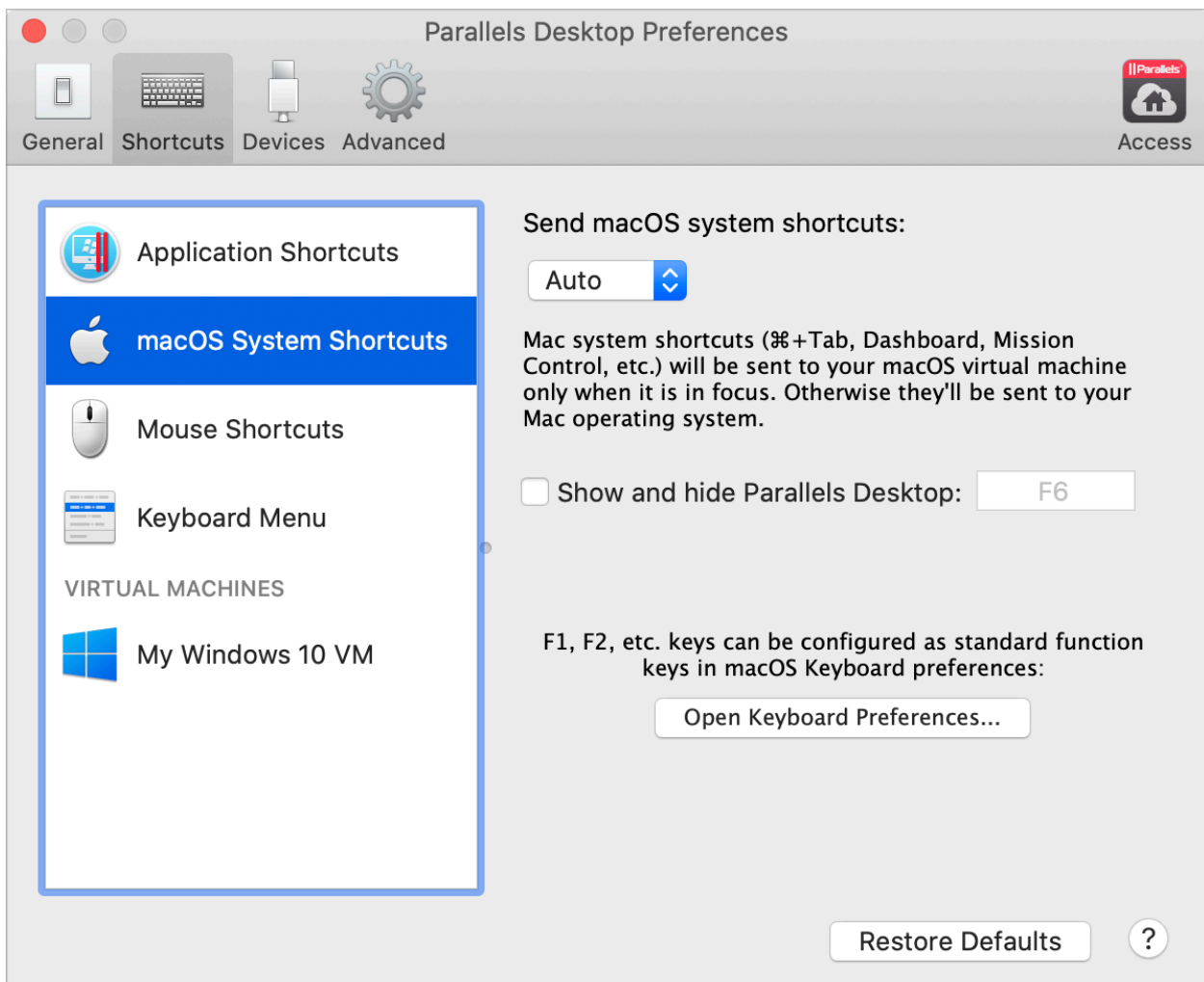
In macOS the function keys on your keyboard (F1, F2, F3 and so on) control functions like activating Dashboard and Mission Control, adjusting screen brightness, and controlling the volume. By default, when a Windows application is active the function keys and other Mac system shortcut key combinations (such as pressing Cmd + Tab to switch between open applications) continue to activate macOS functions.

To set whether function keys and macOS system shortcut key combinations activate functions in macOS or Windows:

1   Choose **macOS System Shortcuts** on the **Shortcuts** tab.

2   Select one of the following from the **Send macOS system shortcuts** menu:

- **Auto**: If you're working with Windows, system shortcuts that don't function in Windows (for example, Control-Up Arrow button to display Mission Control) trigger functions in macOS. If you're using macOS as a guest OS and a guest OS or its application is active, system shortcuts that are typical only to macOS trigger functions in the guest version of macOS.

- **Always**: When Windows or Windows applications are active, function keys and other system shortcuts always trigger functions in Windows.

- **Never**: Function keys and other system shortcuts always trigger functions in macOS.

To show and hide Parallels Desktop, use the Fn + F6 key combination. To use any other key instead of F6, click the corresponding text field and press the key you want.

Mouse Shortcuts
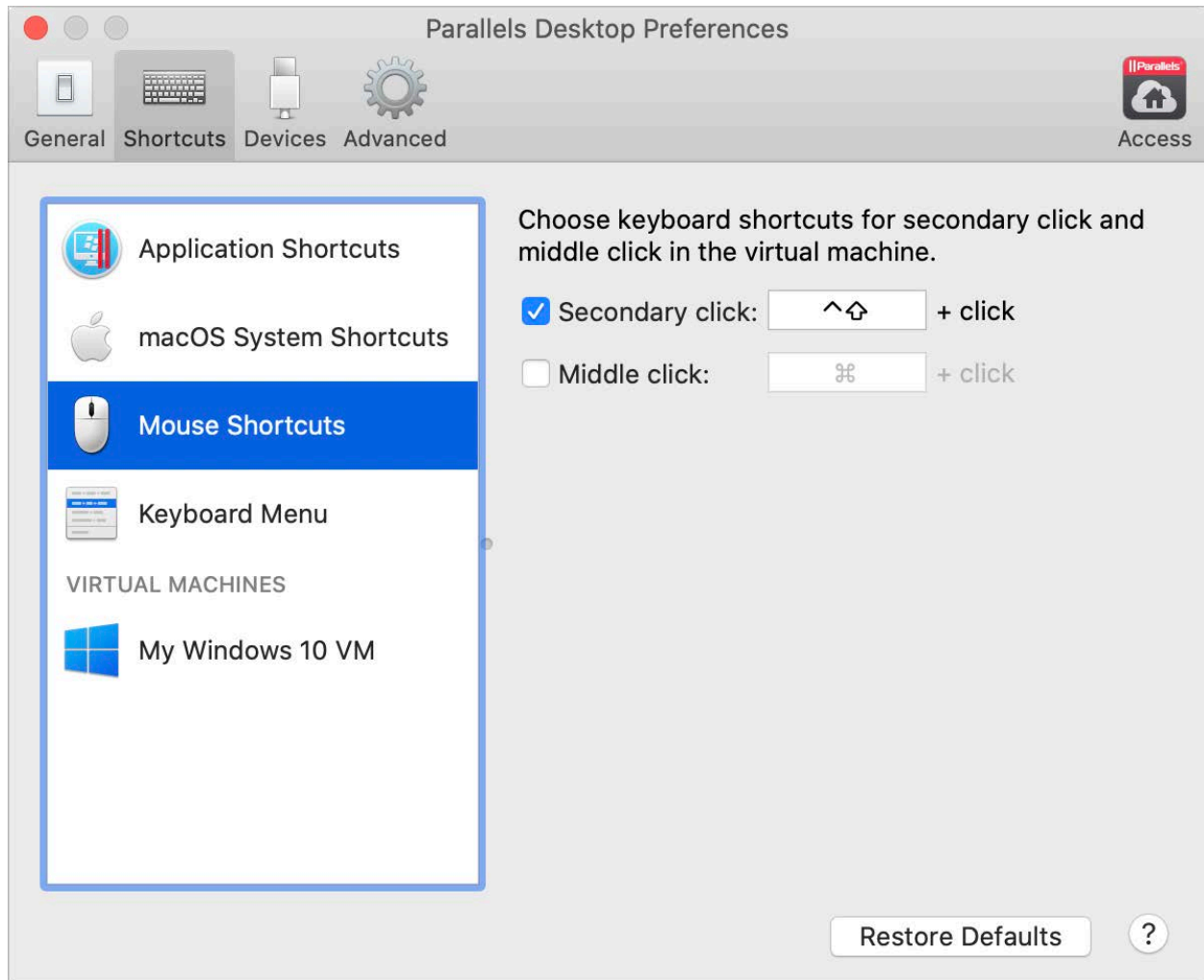
Many tasks in Windows, such as bringing up shortcut menus, are accomplished by right-clicking. By default, Parallels Desktop is set to mimic a right-click when you press Shift+Control and click the mouse. You can change which key combination triggers a right-click. Do the following:

1   Choose **Mouse Shortcuts** on the **Shortcuts** tab.

2   Select **Secondary click** (for right-click) or **Middle click**.

3   Click in the corresponding text field and press the key or combination of keys that you want to use with a mouse click to trigger a right-click or middle-click.

You can use any combination of the Control, Option (Alt), Shift, and Command keys.

Keyboard Menu
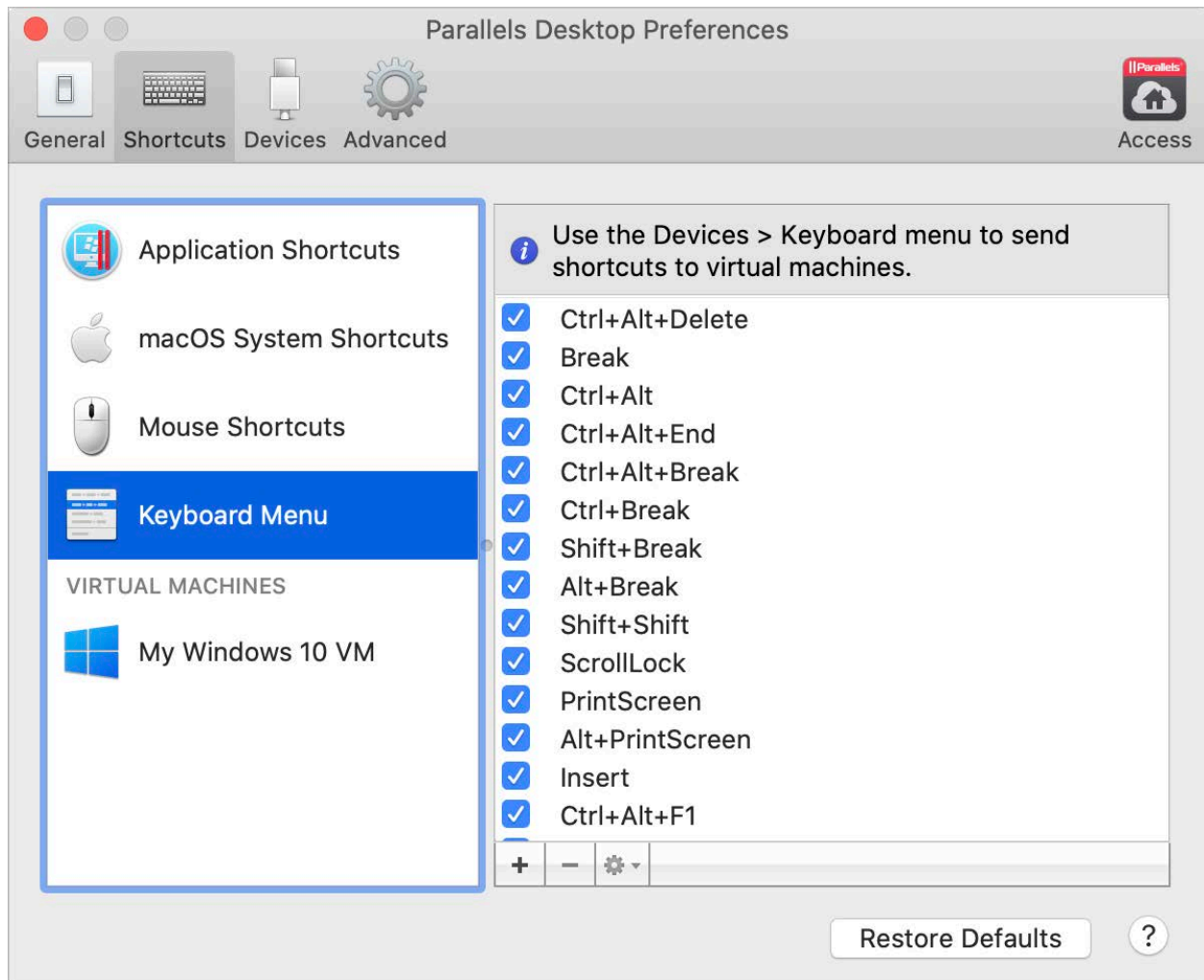
While working with a virtual machine, you can enter key combinations by choosing **Devices** in the macOS menu bar > **Keyboard** and then choosing a key combination. To customize available key combinations, do the following:

1 Choose **Keyboard Menu** on the **Shortcuts** tab.

2 Do one of the following:

- To add a new key combination, click the **Add** button ⊞.

- To remove a key combination from the Keyboard menu, select it and click the **Remove** button ▭.

- To edit an existing key combination, double-click the key combination or select it and click the **Edit** button ⚙▾. Click modifier keys to select or deselect them. If you wish, change the character in the text field.
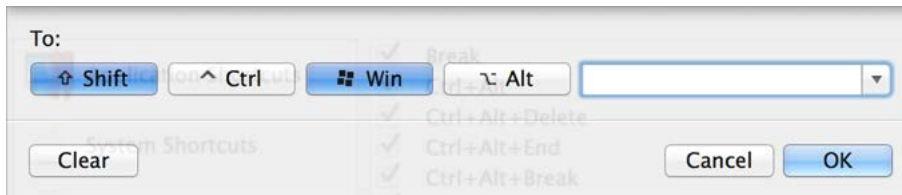
Virtual Machine Shortcuts
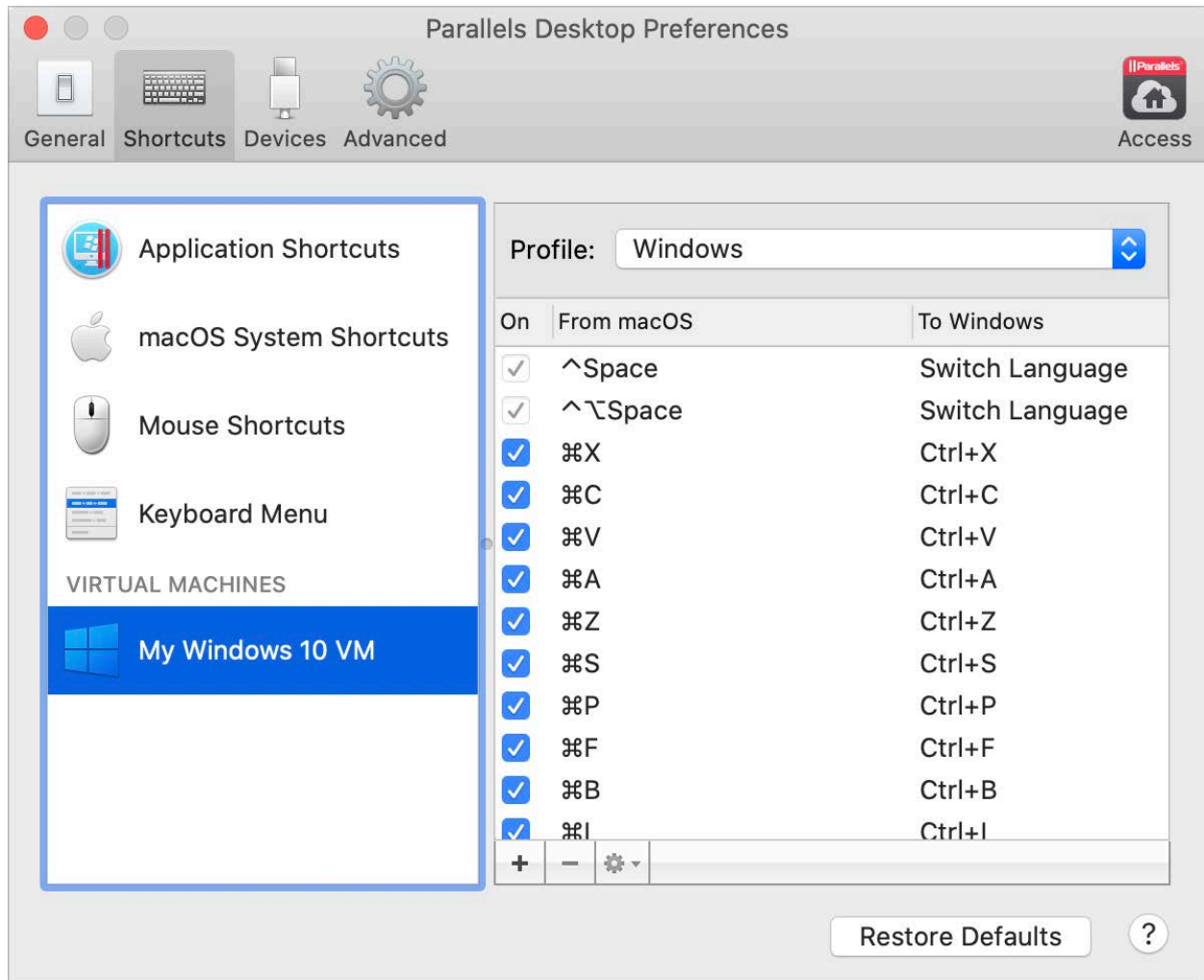
By default, Parallels Desktop maps common macOS keyboard shortcut key combinations to the equivalent Windows key combinations. That way if you're used to, for example, pressing Command-C to copy text in macOS, you don't have to switch to the Windows equivalent, Control-C.

To customize keyboard shortcuts, do the following:

1 Select your virtual machine from the **VIRTUAL MACHINES** list on the **Shortcuts** tab. When you're using a Windows application, pressing a key combination in the **From macOS** column above triggers the key combination in the **To Windows** column.

2 Do one of the following:

- To edit an existing key combination, double-click the key combination or select it and click the **Edit** button ⚙▾. Click modifier keys to select or deselect them. If you wish, change the character in the text field.

Click **OK** to save the changes.

- To delete a key combination, select it and click the **Remove** button ▬.

- To add a new key combination, click the **Add** button +.

Devices Preferences

Use **Devices** Preferences to specify where to connect new external devices and permanently assign devices to Mac or a virtual machine.

To open these preferences, choose **Parallels Desktop** > **Preferences**, then click **Devices**.

Option	Description
When a new external device is detected	Choose what to do when a new external device is connected to your Mac:
	• **Connect it to my Mac**. New external devices are automatically connected to your Mac and become available for use with macOS applications. If you want to connect such a device to a virtual machine, use the **Devices** > **USB** menu.
	• **Connect it to the active virtual machine**. New external devices are automatically connected to the virtual machine you're currently working with and become available for use with the guest OS applications. If no virtual machine is running, the external device is connected to macOS.
	• **Ask me what to do**. Each time you connect an external device, you're prompted to choose whether you want to connect the device to your virtual machine or Mac.

Permanent assignments	If you want a particular external device to be always available to either Mac or a virtual machine, do the following:

	`Click the` **Add** `(+) button towards the bottom of the`
	`window.`
	`Select the device from the list.`
	`Double-click the word (either` **Your Mac** `or some`
	`virtual machine) in the` **Connect To** `column. The word`
	`becomes a pop-up menu.`
	`Do one of the following:`

	• To set the device to always be available to the Mac, choose **Your Mac** from the menu.
	• To set the device to always be available to a virtual machine, choose the virtual machine from the menu.
	To remove an existing assignment, so that the device no longer automatically connects to the Mac or virtual machine, select the device in the **Devices** column and click the **Remove** (-) button.

Advanced Preferences

Use **Advanced** Preferences to participate in the customer experience program, reset hidden messages, and more.

To open these preferences, choose **Parallels Desktop** > **Preferences**, then click **Advanced**.

Option	Description
Feedback	If you want to help us make Parallels Desktop better fit your needs, please select **Participate in the Customer Experience Program**. Parallels will collect information about your Mac and virtual machines configuration. **Note:** Any types of private information like your name, e-mail, address, phone number, and keyboard input *will not* be collected.
Troubleshooting	While functioning, Parallels Desktop automatically creates a log file that can be used by the Parallels support team for solving problems and improving the product. If you select the **Use detailed log messages** option, Parallels Desktop will start creating a more detailed log file. It can be helpful for the Parallels support team, but uses more hard disk space and may lower the system performance. You're not recommended to enable this option until you're asked to do so by the Parallels support team.
Reset all dialog warnings	Some Parallels Desktop dialogs and 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 Warnings** button, you can reset all dialogs and windows with this option selected so that they would be displayed again each time you initiate the corresponding operation.

Parallels Access

Parallels Access allows users to work with their Mac and Windows applications from iOS and Android devices or via a web browser.

Parallels Access lets you:

- Use any of your Mac and Windows applications on your mobile device;
- Remotely start, stop, and reset Windows or Mac;
- Connect over Wi-Fi or 3G;
- Access Windows and Mac from anywhere over the Internet;
- And more...

For more information about using Parallels Access, see the *Parallels Access User's Guide*, available online.

C H A P T E R 7

Virtual Machine Settings

In This Chapter

General Settings

On the **General** tab of virtual machine configuration, you can edit the virtual machine name, configure the virtual machine to better fit your needs, reduce the virtual machine size, and more…

To open these settings, choose **Actions** > **Configure**, then click **General**.

Option	Description
Guest OS type	Click the menu at the top of the **General** tab to change the guest OS type and version. You may need to do this after upgrading the operating system (for example, from Windows 7 to Windows 10). The OS indicated in this menu must match the OS that is actually installed in the virtual machine. Otherwise, Parallels Tools may start working incorrectly.
Name	In this field, you can edit the virtual machine name.
Description	Use this field to add some description to your virtual machine. The description is displayed in Control Center together with the virtual machine name.
Configure for	Use this option to choose a profile that better fits your needs. Click **Change** and select what for you usually use the virtual machine. The virtual machine settings will be optimized according to your needs.

Total size	Click **Reclaim** to compress the virtual machine hard disk(s) and remove unnecessary files to free up disk space.
	Note: The total size you see here may differ from the virtual machine size in Finder. It's because Apple counts 1 GB as 1000 MB while Parallels, like most standards, as 1024 MB

Options

Startup and Shutdown Settings

In the **Startup and Shutdown** pane, you can configure how the virtual machine starts or shuts down.

To open these settings, choose **Actions** > **Configure** > **Options**, then click **Startup and Shutdown**.
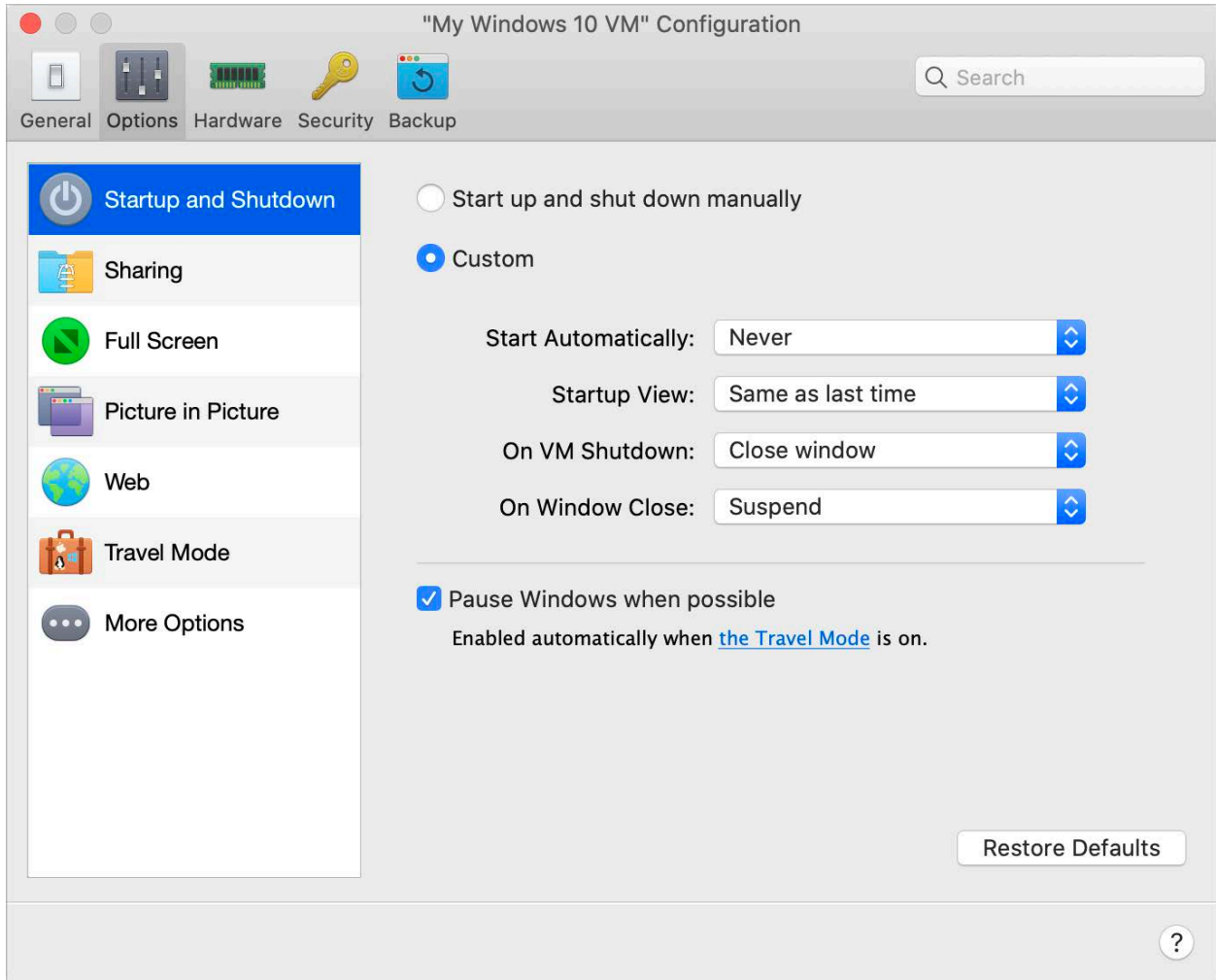
Option	Description
Start up and shut down manually	Select this option if you want to always start and shut down the virtual machine manually.

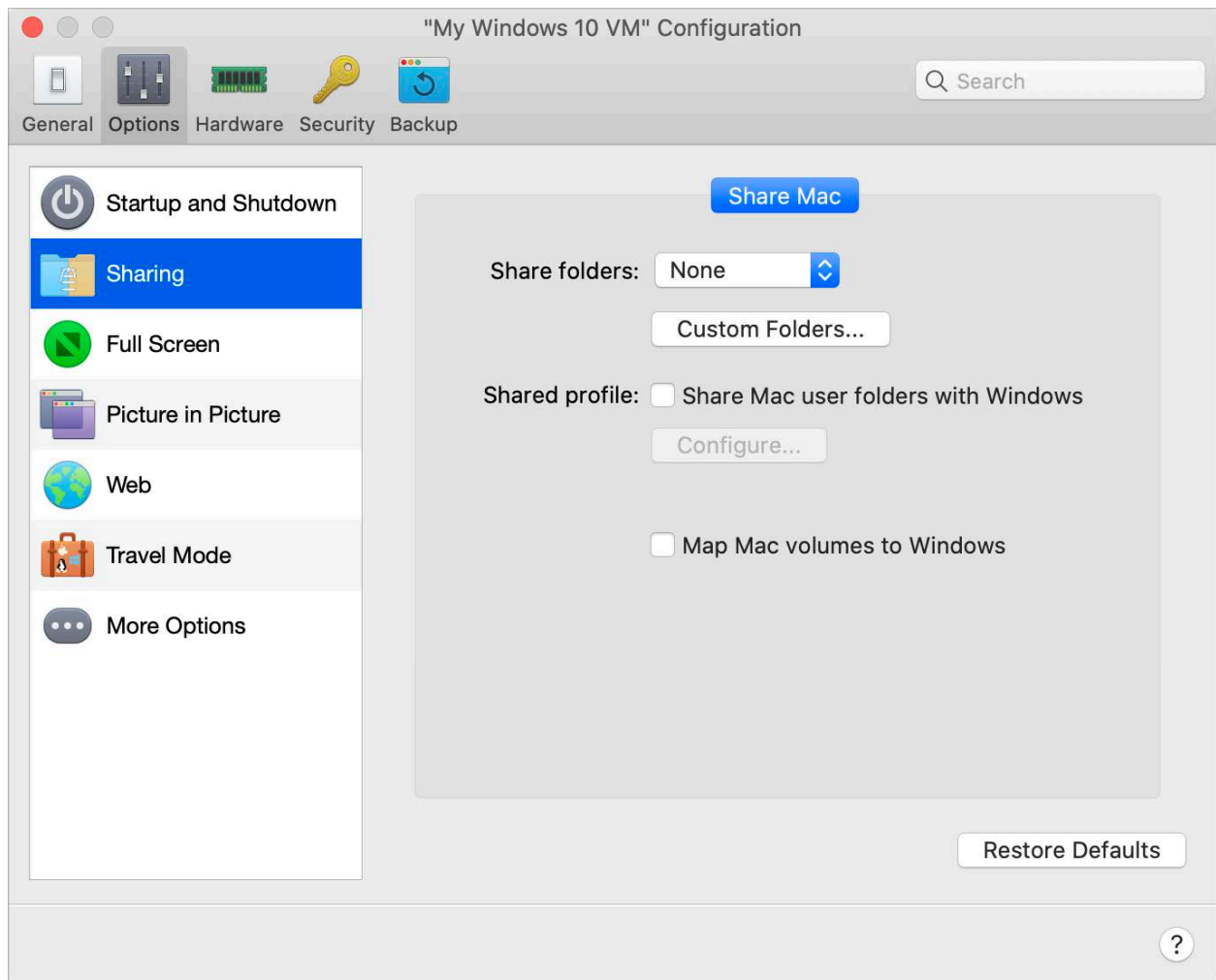| Custom	If you want to specify not only how the virtual machine starts or shuts down but also the view mode and what happens on closing the virtual machine window, select **Custom** and specify the following:
	
	• **Start Automatically**. Use this menu to set whether the virtual machine starts automatically:
	
	    • **Never**: The virtual machine never starts automatically.
	
	    • **When window opens**: The virtual machine starts automatically when you open it from **Control Center**.
	
	    • **When Parallels Desktop starts**: The virtual machine starts automatically when you start Parallels Desktop.
	
	• **Startup view**. Use this menu to choose in which mode the virtual machine starts when you start the virtual machine or guest OS application.
	
	• **On VM Shutdown**. Use this menu to set what happens when you shut down your virtual machine:
	
	    • **Keep window open**: If the virtual machine is set to appear in a separate window, the window stays open when you stop or shut down the virtual machine.
	
	    • **Close window**: If the virtual machine is set to appear in a separate window, the window closes when you stop or shut down the virtual machine.
	
	    • **Quit Parallels Desktop**: Parallels Desktop quits when you stop or shut down the virtual machine.
	
	• **On Window Close**. Use this menu to set what happens when you close the Parallels Desktop window. These settings affect what happens only when the virtual machine is set to appear in a separate window.

Pause Windows when possible	Select this option to conserve your Mac's resources by setting the virtual machine to pause automatically when no Windows applications are open. That way, more resources such as RAM and CPU can be used for macOS applications.

Sharing Settings

In the **Sharing** pane, you can view and configure the virtual machine sharing settings.

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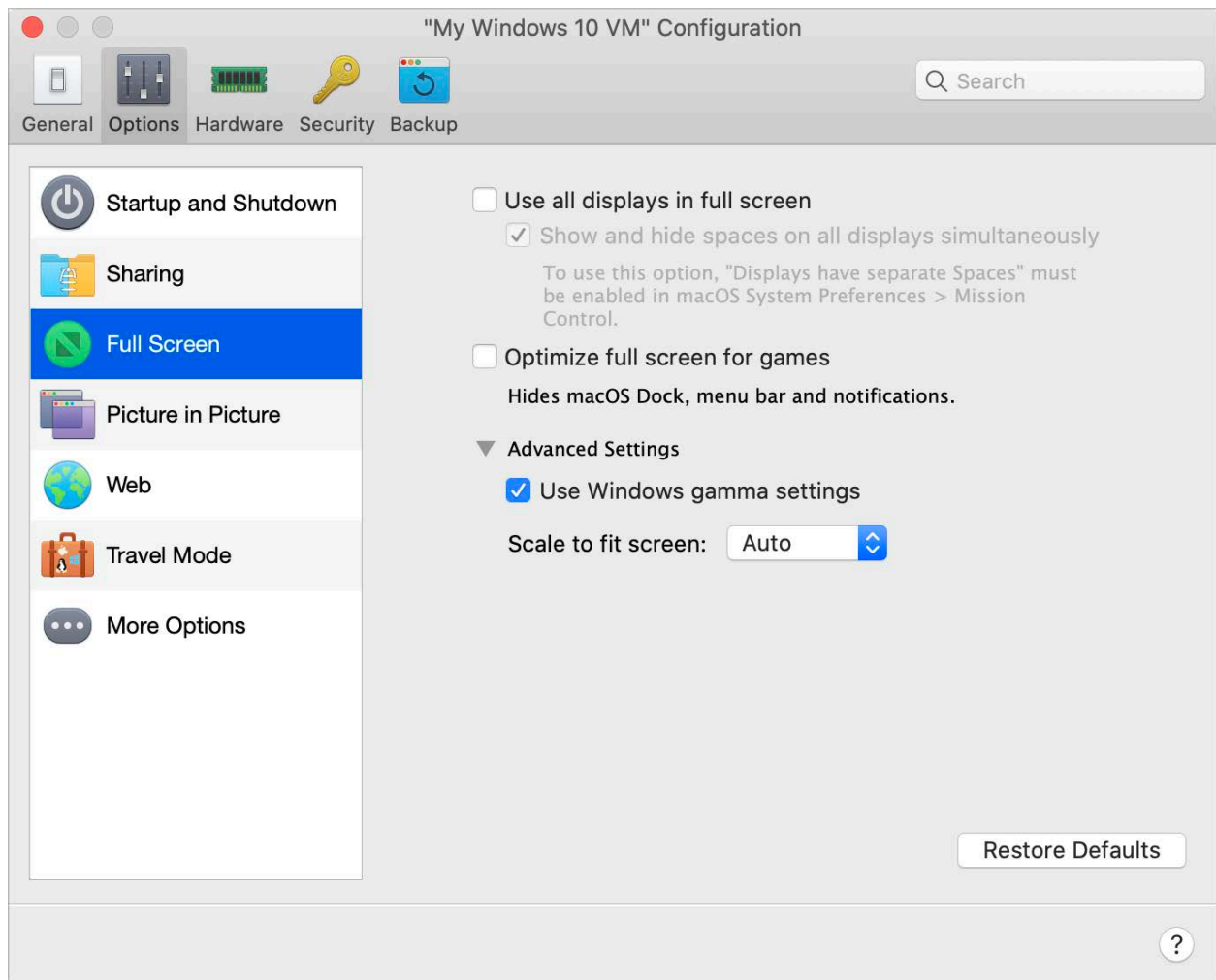To open these settings, choose **Actions** > **Configure** > **Options**, then click **Sharing**.

Option	Description
Share folders	With folder sharing enabled, you can navigate to any shared macOS folder from within a Windows application. When you open a file (for example, by choosing **File** > **Open** in many applications), your shared macOS folders appear as network shared directories labeled "\\Mac".
	To enable macOS folders for sharing with Windows applications, do one of the following:
	• To share just the folders in your Home folder, choose **Home folder** from the **Share folders** menu.
	• To share all your macOS folders, choose **All disks** from the **Share folders** menu.
	• To share any folder you want, click **Custom Folders** and click the add (+) button, then choose the folder you want to share. You can add more folders by clicking the add (+) button again. Once you share a macOS folder with Windows you can:
	• Disable the folder sharing by deselecting **On**.
	• Change the folder name that will be displayed in Windows by double-clicking the folder name in the **Name** column and typing another name.
	• Restrict writing to this folder by clicking **Read & Write** in the **Permissions** folder and choosing **Read only**. You will not be able to add items to the folder.
Shared profile	You can set macOS and Windows to use the same folders for things like music, documents, pictures, your desktop, and deleted files. So for example, if you save a file to the Documents folder, it will be in the Documents folder whether you're using a macOS application or a Windows application.
	To enable this functionality, select **Share Mac user folders with Windows**.
	Your macOS `Desktop`, `Documents`, `Pictures`, `Music`, `Movies`, and `Downloads` folders are merged with the corresponding Windows folders, and the macOS Trash is merged with the Windows Recycle Bin.
	If you only want to map some of the folders, click **Configure** and select the folders you want. To map the macOS Trash to the Windows Recycle Bin, select **Merge Recycle Bin with Trash**.

Map Mac volumes to Windows	When you connect an external storage device, such as a USB drive, to your Mac, you can access the contents from macOS applications.
	You can set Parallels Desktop to automatically mount storage devices and volumes to Windows. That way, you can access the contents from both macOS and Windows.
	The following items can be mounted to Windows:
	• **Removable drives**: External storage devices, such as USB hard disks and USB flash drives.
	• **CD/DVD drives**: CD and DVD drives or mounted CD/DVD images.
	• **Network folders**: Folders shared over the network.
	To make these items mount to Windows automatically, select **Map Mac volumes to Windows**.
	When you connect a storage device or volume, it is mounted as a network drive. For example, a USB flash drive plugged in to your Mac will be accessible from both the `/Volumes` folder in macOS and `My Computer` in Windows.

Full Screen Settings

In the **Full Screen** pane, you can configure this view mode-related settings.

To open these settings, choose **Actions** > **Configure** > **Options**, then click **Full Screen**.

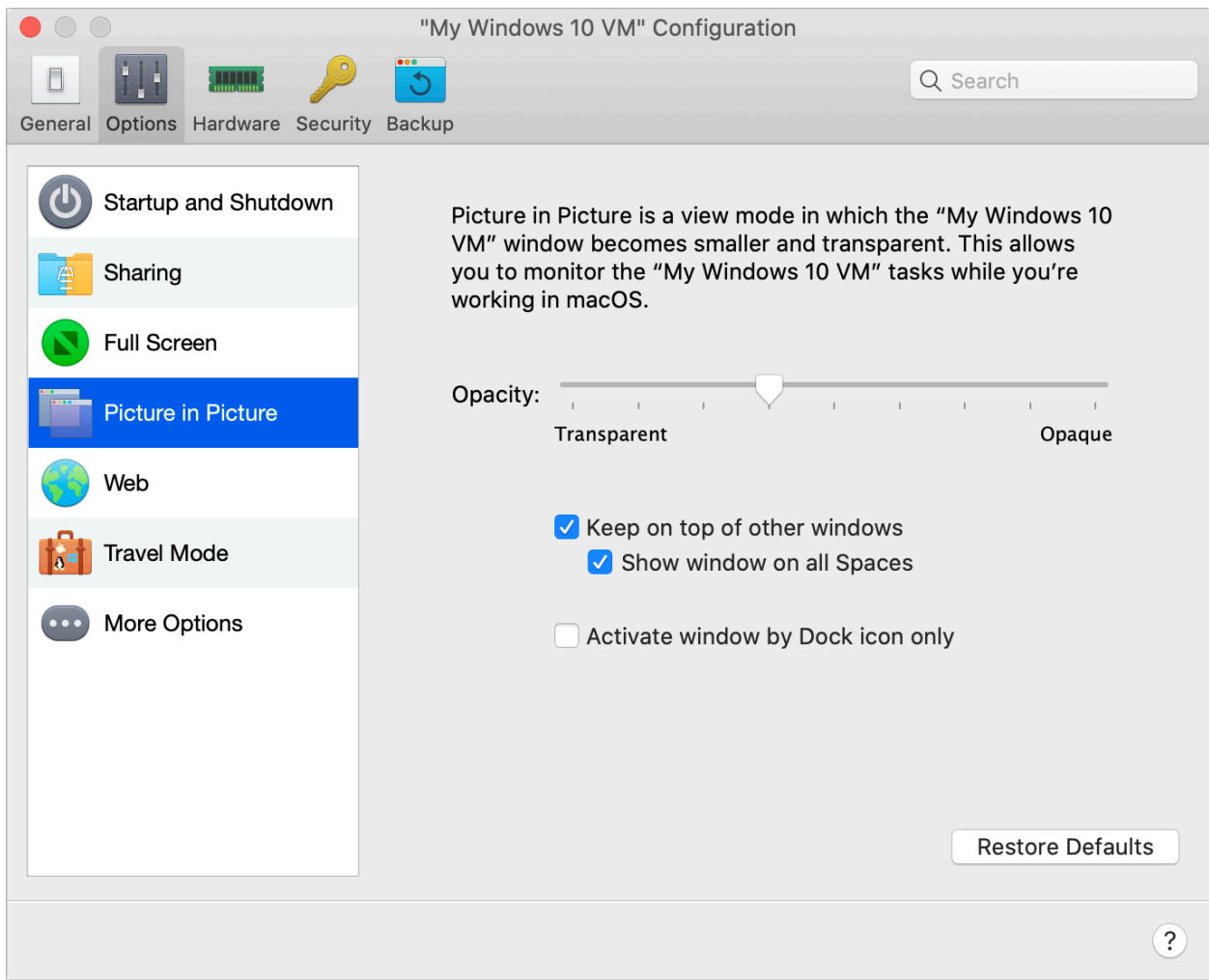| Option	Description
Use all displays in full screen	If you have a second display connected to your Mac, by default when you switch to Full Screen mode, Windows is displayed only on one display.
	You can choose which display Windows is shown on by dragging its window to that display and then clicking the Full Screen icon ⬤.
	To extend Windows across all your displays, select **Use all displays in full screen**.
Show and hide spaces on all displays simultaneously	If you selected to show your virtual machine on all displays when it switches to Full Screen, you can also choose **Show and hide spaces on all displays simultaneously**.
	With this option selected, when you click the virtual machine on one of your displays, it appears on all other displays. And when you switch focus to something else on one of your displays, virtual machine spaces hide on all other monitors.
Optimize full screen for games	If you use a virtual machine to play video games in Full Screen view mode, select **Optimize full screen for games**. With this option selected, macOS Dock, menu bar and notifications will not be displayed. To release the mouse input, press Ctrl + Alt.
Use Windows gamma settings	If you're using the virtual machine to play video games, the virtual machine may need to temporarily change your Mac's display gamma setting to properly display different visual effects. To allow the virtual machine to change gamma settings, select **Use Windows gamma settings**. This option works in the Full Screen view mode only.

Scale to fit screen	Use this menu to configure how the virtual machine is displayed when working in Full Screen: • **Off.** If Parallels Tools are installed, the virtual machine resolution matches that of the Mac. If Parallels Tools aren't installed, the virtual machine resolution remains unchanged. If it is lower than that of the Mac, the virtual machine is displayed on the black background. If higher, the virtual machine has scroll bars. • **Auto.** If Parallels Tools are installed, the virtual machine resolution matches that of the Mac. If Parallels Tools aren't installed, the virtual machine resolution remains unchanged. If it is lower than that of the Mac, the virtual machine is displayed on the black background. If higher, the virtual machine is entirely displayed on the screen without any scroll bars. • **Keep ratio**: No matter whether Parallels Tools are installed or not, the virtual machine resolution remains unchanged. If it is lower than that of the Mac, the virtual machine is displayed on the black background. If higher, the virtual machine is entirely displayed on the screen without any scroll bars. • **Stretch**: No matter whether Parallels Tools are installed or not, the virtual machine resolution remains unchanged but the virtual machine is stretched to occupy the whole screen.

Picture in Picture Settings

In the **Picture in Picture** pane, you can configure this view mode-related settings.

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To open these settings, choose **Actions** > **Configure** > **Options**, then click **Picture in Picture**.

Option	Description
Opacity	In the Picture in Picture mode, the virtual machine window becomes transparent by default. You can specify the level of visibility in the **Opacity** field by dragging the slider between **Transparent** and **Opaque**.
Keep on top of other windows	Clear this option if you do not want the virtual machine window to appear on top of all other open windows when the virtual machine is in Picture in Picture mode.
Show window on all Spaces	Clear this option if you don't want the virtual machine window to be displayed on all Spaces.
Activate window by Dock icon only	Select this option if you want to make the virtual machine window inactive. When selected, you will click "through" the window. If you need to make the window active again and capture the mouse or keyboard input, click the virtual machine icon in the Dock.

Web Settings

In the **Web** pane, you can enable the plugin for Safari to open web pages in Internet Explorer.

To open these settings, choose **Actions** > **Configure** > **Options**, then click **Web**.

Option	Description
Safari plugin	Some webpages work best when viewed in Windows Internet Explorer. If you are browsing in macOS using Safari, you can quickly open the current page in Internet Explorer by doing the following:
	`Click` **Enable Plugin** `to enable the "Open in Internet Explorer" plugin.`
	`Once the plugin is enabled, click the` **Open in IE** `button` `in the Safari toolbar.`
	If Windows isn't already open, it starts up and the page opens in Internet Explorer.

Travel Mode Settings

Work with your virtual machine in Travel Mode to extend the battery life of your Mac. This mode is useful when you're traveling and often use your Mac on battery.

In the **Travel Mode** pane, you can configure when your virtual machine enters and quits Travel Mode. To open these settings, choose **Actions** > **Configure** > **Options**, then click **Travel Mode**.
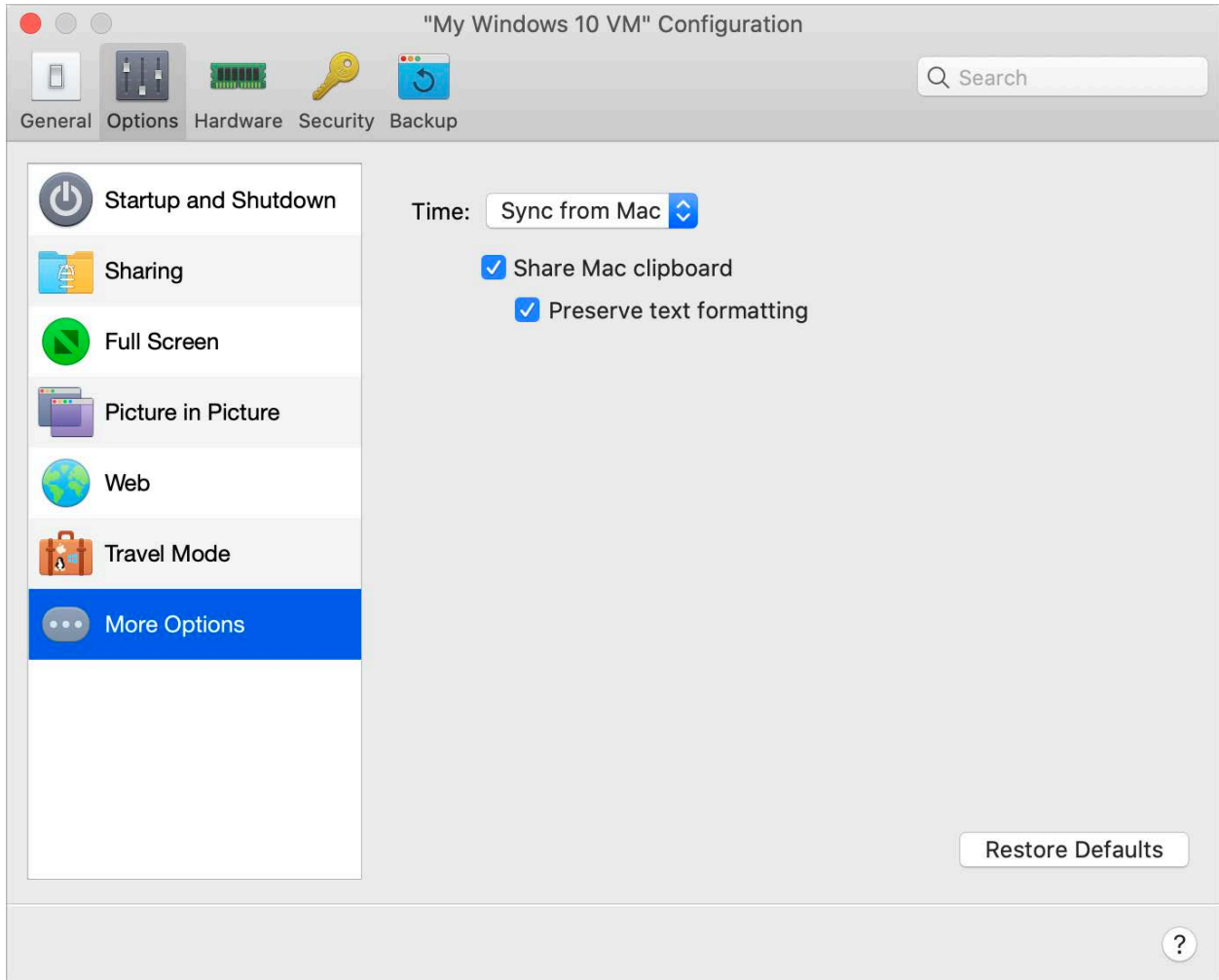
"My Windows 10 VM" Configuration

General   Options   Hardware   Security   Backup

Q Search

Startup and Shutdown

Sharing

Full Screen

Picture in Picture

Web

Travel Mode

More Options

In Travel Mode, Windows uses less energy to save battery power, and adjusts settings to connect to public networks.

Enter automatically:

◯ Always when on battery power

◯ When battery power is   Less than 30% ⬍

⦿ Never

Quit automatically:

◯ When connected to power

⦿ Never

Restore Defaults

?

Option	Description
Enter automatically	In this section, select when your virtual machine automatically enters Travel Mode. Choose one of the following:
	• **Always when on battery power**. Select this option if you want to switch the virtual machine to Travel Mode always when the Mac is unplugged and starts working on battery power.
	• **When battery power is**. In this menu, select the battery charge level at which the virtual machine enters Travel Mode.
	• **Never**. Select this option if you never want the virtual machine to switch to Travel Mode.

Quit automatically	In this section, select when your virtual machine automatically quits Travel Mode. Choose one of the following:
	• **When connected to power**. Select this option if you want the virtual machine to quit Travel Mode when the Mac is connected to power.
	• **Never**. Select this option if you never want the virtual machine to quit Travel Mode automatically. Only manual interaction is allowed.

More Options

In the **More Options** pane, you can choose whether to share the Mac clipboard and set whether to sync time from macOS.

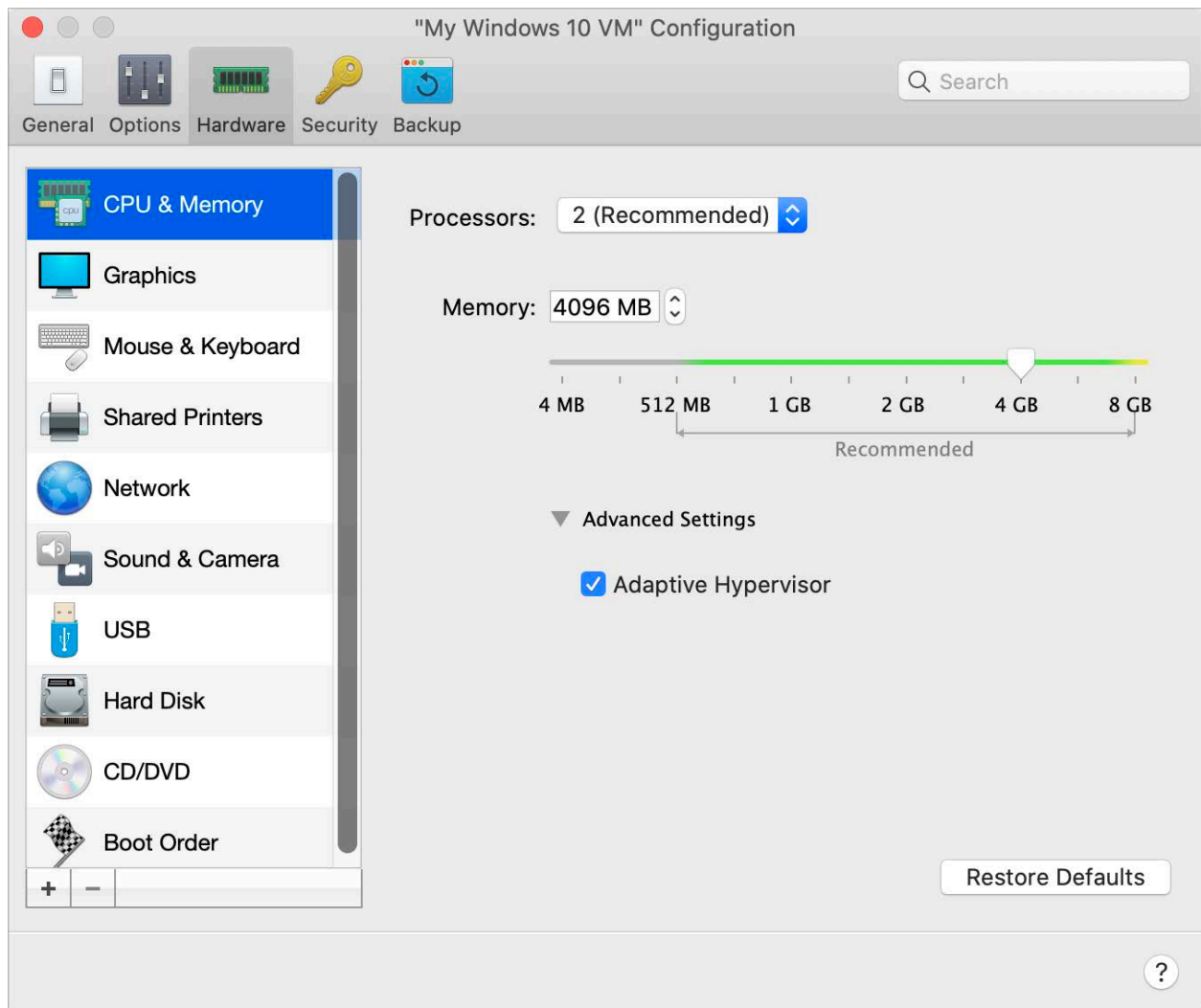To open these settings, choose **Actions** > **Configure** > **Options**, then click **More Options**.

Option	Description
Time	Select **Sync from Mac** to synchronize the virtual machine time settings with those of your Mac.
	If you want the virtual machine and macOS time settings to always be the same, select **Sync from either OS**. With this option selected, if you manually change the time settings in the virtual machine, they are changed accordingly in macOS and vice versa.
	If the time zone set in your virtual machine differs from that of your Mac, you can maintain this time difference by selecting **Do not sync**.
Share Mac clipboard	If you want to copy and paste data between the host and guest operating systems, select **Share Mac clipboard**. If the data you copy and paste between macOS and your virtual machine is text and you want to preserve text formatting, select **Preserve text formatting**.

Hardware Settings

CPU & Memory Settings

In the **CPU & Memory** pane, you can view and configure the CPU- and memory-related settings.

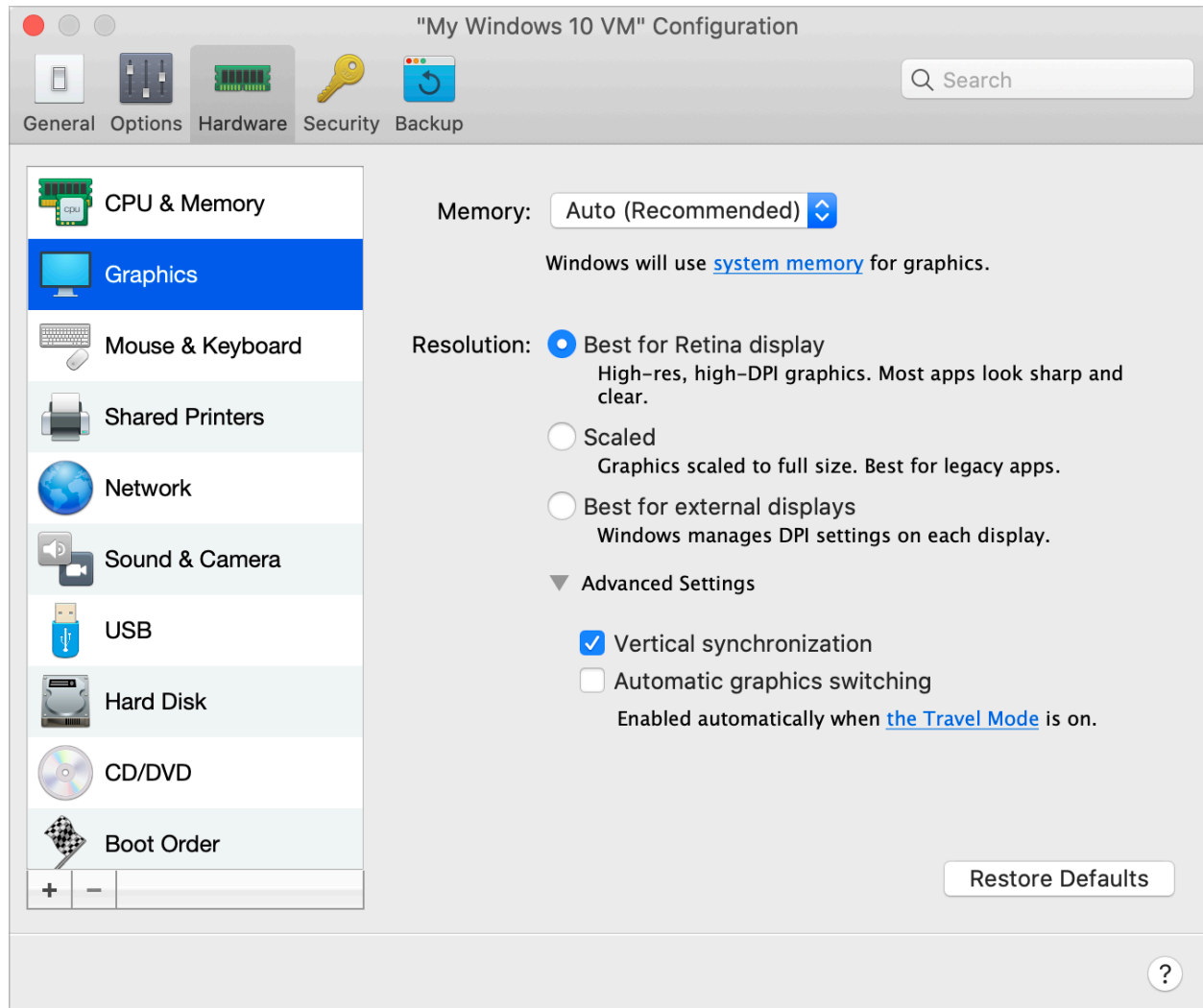To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **CPU & Memory**.

Option	Description
Processors	Use this menu to change the number of virtual CPUs allocated to your virtual machine.
Memory	Use this menu or slider to change the amount of memory allocated to your virtual machine. To optimize the performance of both the virtual machine and macOS, set the memory allocated to the virtual machine to be somewhere within the recommended range.
Adaptive Hypervisor	Select this option to set Parallels Desktop to automatically optimize performance for the virtual machine or macOS depending on which application you're working with at the moment. When you're using a virtual machine app, more resources are given to the virtual machine, and when you're using a macOS application, more resources are given to macOS.

Graphics Settings

In the **Graphics** pane, you can view and configure the amount of video memory available to the virtual machine video card, set resolution, and more.

To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **Graphics**.
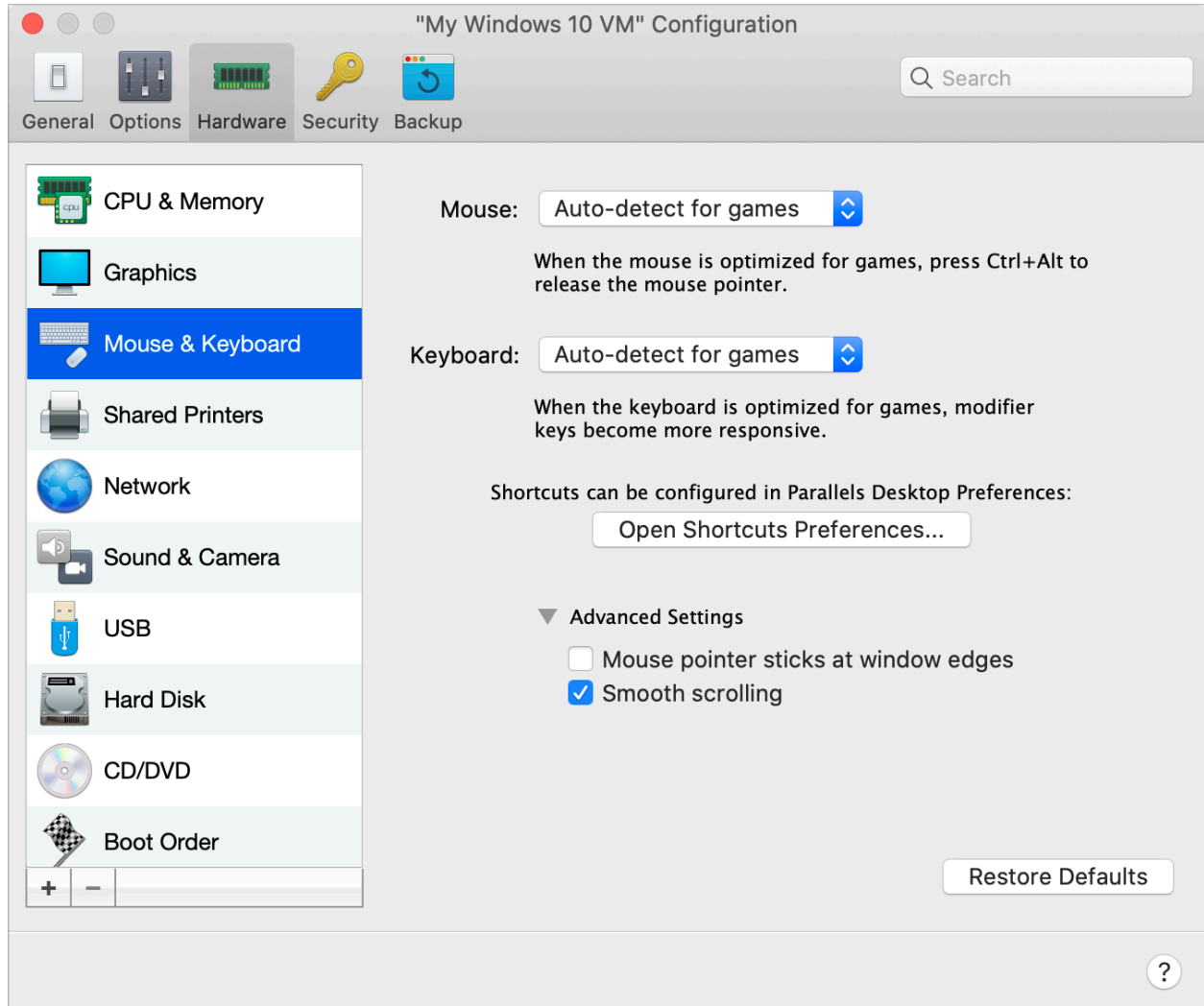

Option	Description
Memory	Use this field to set the amount of video memory that will be available to the virtual machine. **Auto** is recommended.
	When **Auto** is selected, Windows may use system memory as graphics memory. If any of your Windows applications reports that it lacks graphics memory, please increase the amount of system memory (p. 83) within the recommended range.

Resolution	If you're working with Windows 7 or later on a Mac with a Retina display, you can choose how Windows is displayed on the screen:
	• **Best for Retina display**. Windows resolution matches that of the Retina display and the DPI setting increases. Windows interface elements and text are clear, sharp, and at full size. This option is supported by Windows 7 and later.
	• **Scaled**. Windows resolution and DPI setting don't change. Instead, Windows is scaled to full size. As a result, Windows interface elements and text are not sharp. This option is useful for Windows applications that don't support high-DPI settings and appear small onscreen.
	• **Best for external displays**. Use this option if you're working with Windows on multiple displays one of which is non-Retina. The option is supported by Windows 8 and Windows 10.
	For Windows XP:
	If you're working with Windows XP on a Mac with a Retina display, Windows becomes scaled but its resolution doesn't change. As a result, Windows interface elements and text are not sharp.
	However, you can enable full (2880x1800) Retina resolution for Windows by selecting **Enable Retina resolution**. At such a high resolution, Windows interface elements and text become sharp but small.
3D acceleration	This menu is available for Linux virtual machines only. If you want to use games and applications that require video cards that support OpenGL, select **On** from the **3D acceleration** menu.
	For Linux guest operating systems, Parallels Desktop supports OpenGL 2.
	In Windows virtual machines, this menu is not available because 3D acceleration is turned on by default. For Windows, Parallels Desktop supports DirectX 10 or DirectX 11.0 - this depends on the version of macOS installed on your Mac. In macOS 10.14.4 Mojave and later, Parallels Desktop supports DirectX 11.0.
	•
	If any of your Windows or Linux apps claims that it requires a higher version of DirectX or OpenGL, please let us know about this application on the Parallels forum. To access the forum, either click **Help** > **Suggest a Feature** or use the following direct links:
	• for DirectX - https://forum.parallels.com/threads/directx-11-support-list-of-titles.340556/
	• for OpenGL - https://forum.parallels.com/threads/opengl-3-support-list-of-app-titles.340621/
Vertical synchronization	Sometimes in games and 3D applications, a newly rendered frame may overlap a previously rendered one and then screen tearing happens. This occurs when the video card or the software using it begins updating the actively-displayed memory in a manner that is out of sync with the monitor's refresh rate. To prevent screen tearing, select the **Vertical synchronization** option.
Automatic graphics switching	This option is visible only if your Mac supports graphics switching. Select this option for better battery life or clear for better performance.

Mouse & Keyboard Settings

In the **Mouse & Keyboard** pane, you can view and configure the mouse- and keyboard-related settings.

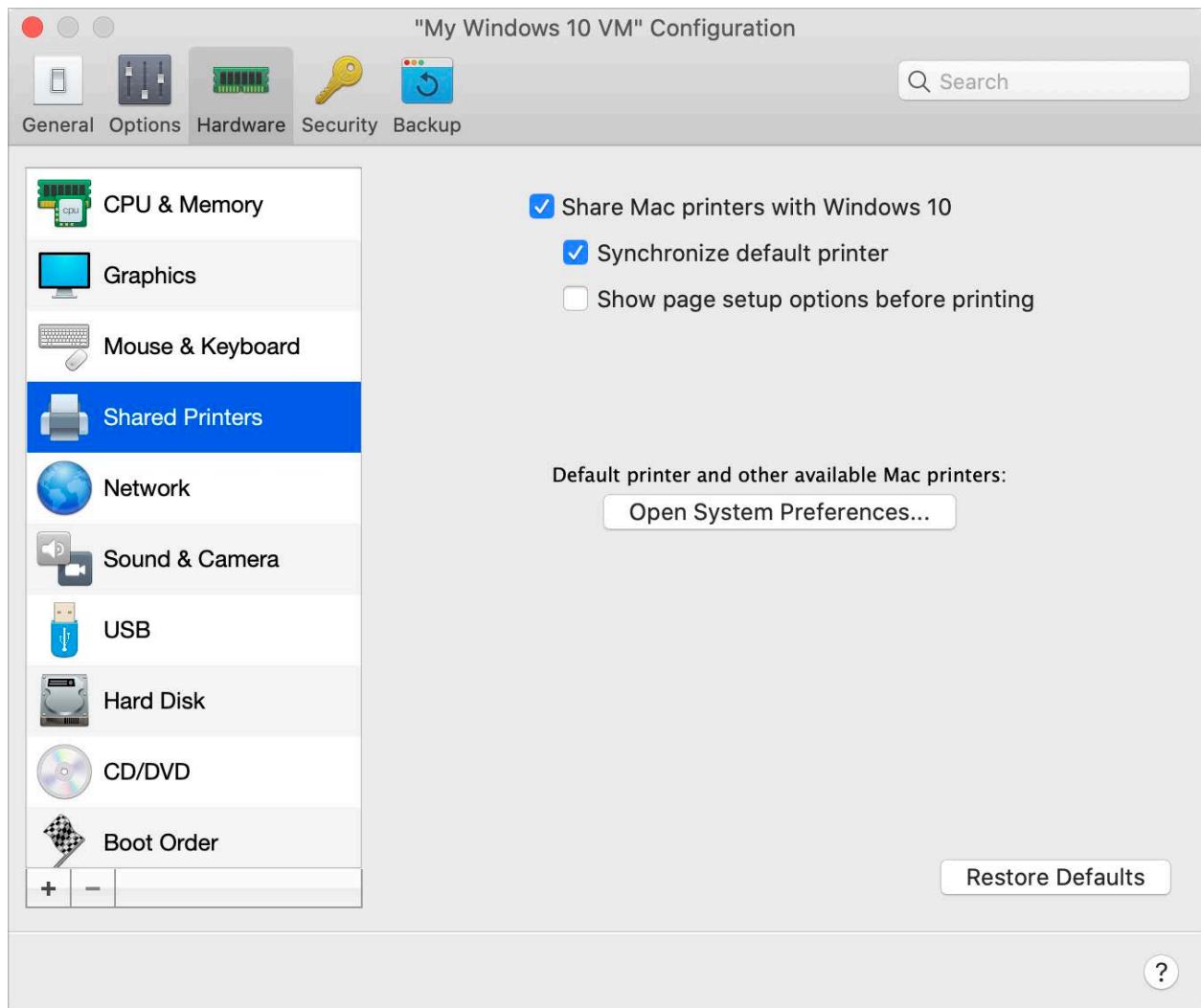To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **Mouse & Keyboard**.

Option	Description
Mouse	If you play games in a virtual machine, the **Mouse** menu allows you to set how to use a mouse: • **Auto-detect for games**. This is a recommended default setting. If you're working with a guest OS application, the mouse moves freely between the guest operating system and macOS. However, when you start a game, the mouse input is automatically captured in the virtual machine so that you couldn't move the mouse to macOS by mistake and automatically released when you quit the game. • **Optimize for games**. If your mouse accidentally moves to macOS when you're playing a game, select this option to make the mouse work in the virtual machine only. To release the mouse input and switch to macOS, press Ctrl + Alt. • **Don't optimize for games**. In some rare cases, Parallels Desktop may detect an application as a game and the mouse starts working incorrectly with the application. If you have this problem, choose **Don't optimize for games**.
Keyboard	If you play games in a virtual machine, the **Keyboard** menu allows you to set how to use a keyboard: • **Auto-detect for games**. This is a recommended default setting. When you launch a game in a virtual machine, the signals from the modifier keys Option (Alt), Ctrl, and Shift are processed immediately. • **Optimize for games**. Select this option if you use the virtual machine only to play games. • **Don't optimize for games**. Select this option if you don't play games in the virtual machine. **Note:** You're not recommended to optimize keyboard for games when not playing games. Some key combinations with the Ctrl, Alt, Shift or Option keys may not work.
Mouse pointer sticks at window edges	When working with a virtual machine in Window view mode, you may often need to move the mouse pointer to the edges of the virtual machine window to display various guest OS items: for example, to display the Start menu in Windows 8, hidden taskbar in Windows XP, or macOS menu bar when any of the guest macOS applications is running in full screen. The **Mouse pointer sticks at window edges** option makes the mouse pointer pause for a while at the edges of the virtual machine window and you won't move the mouse outside of the virtual machine window by mistake. To move past the edge, just move the mouse quickly.
Smooth scrolling	Select this option for the mouse to scroll smoothly.

Shared Printers Settings

In the **Shared Printers** pane, you can share the Mac printer with the virtual machine, sync the default printer, and more.

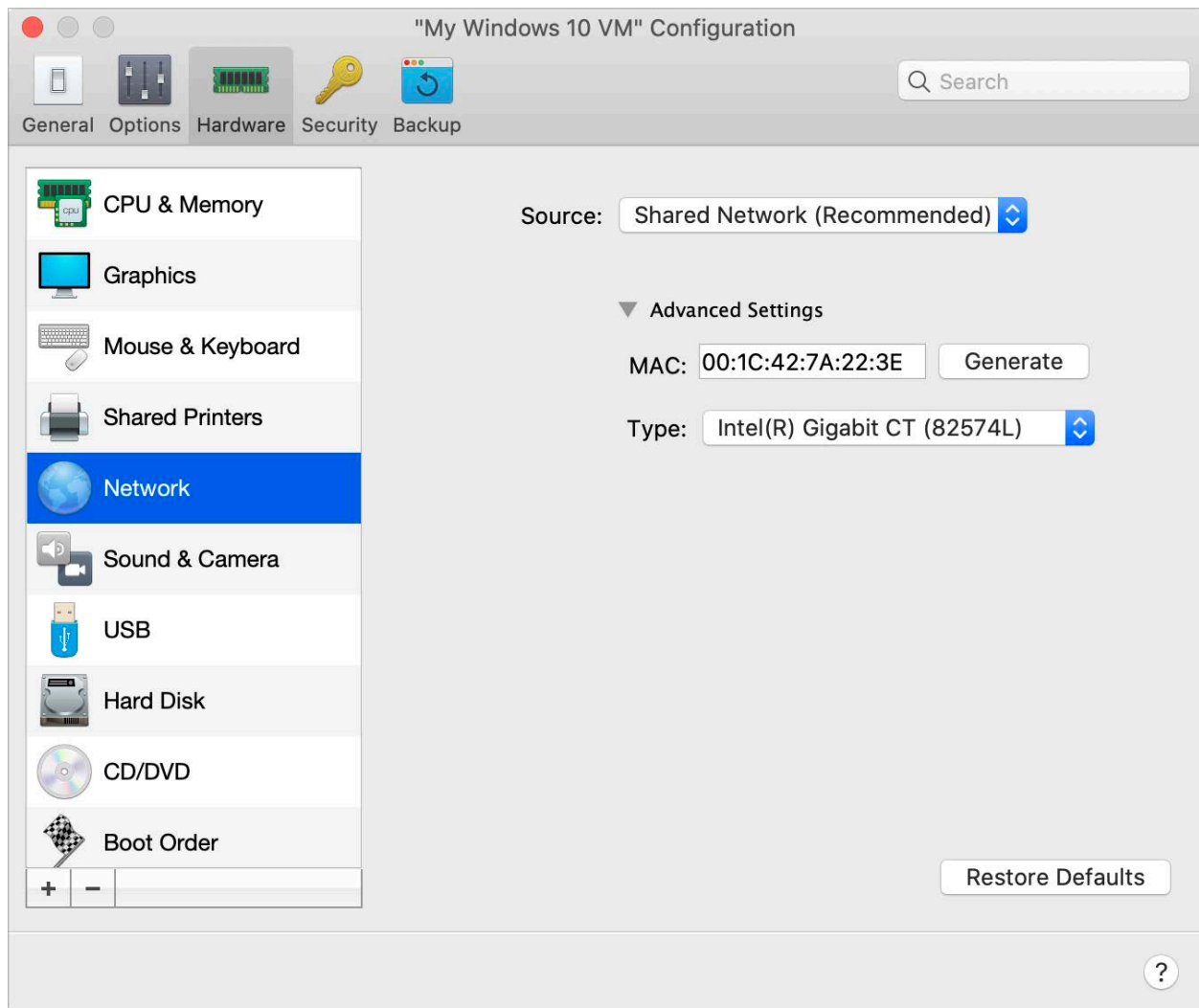To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **Shared Printers**.

Option	Description
Share Mac printers with Windows	Select this option to share the printer connected to your Mac with the virtual machine.
Synchronize default printer	By default, virtual machines are set to use the same default printer as your Mac.
	To use a different default printer for your virtual machine, deselect **Synchronize default printer**. After that, you can set a new default printer in the guest OS the way you normally would.

Show page setup options before printing	When you choose to print a document from the virtual machine, first you need to set how the document will be printed. You usually have to specify various printing settings, such as orientation, page size, whether to print the document on one or both sides, etc. Once everything is ready and you click **Print** in the virtual machine, the macOS window with printing settings appears as well. It's done by default for you just to ensure that the document will be printed exactly the way you want. Or you can specify additional settings, for example, select to **Save as PDF** instead of printing. To make the documents print without showing this macOS page setup window, deselect **Show page setup options before printing**.

Network Settings

In the **Network** pane, you can view and configure the virtual machine network adapter-related settings.

To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **Network**.
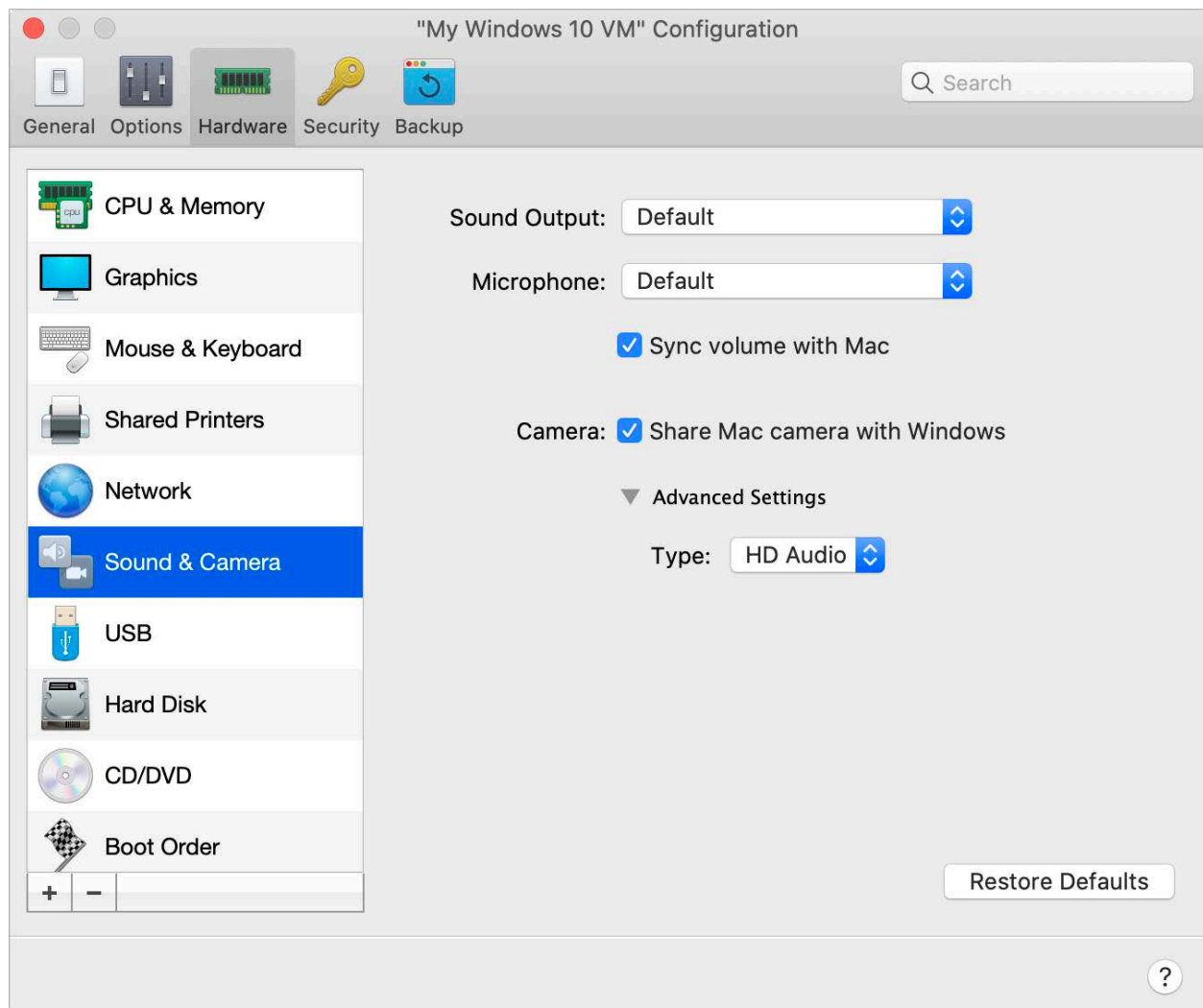
Option	Description
Source	Use this menu to choose one of the following network types for the virtual machine network adapter: • **Shared Network**. Select this option to enable the Network Address Translation (NAT) feature for the virtual machine. In this case, your virtual machine will share whatever network connection is currently used by your Mac. • **Host-Only Network**. Select this option to allow the virtual machine to connect to your Mac and the virtual machines residing on it and to make it invisible outside the Mac. If this option is selected, the virtual machine cannot connect to the Internet.

MAC	In the **MAC** 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** field or clicking the **Generate** button. When entering a new MAC address, make sure that it is unique within your network. This option is for advanced users only.
Type	In this menu, you can change the type of the network interface card. You're not recommended to change the default setting unless you're told to do so by the Parallels support team. This option is for advanced users only.

Sound & Camera Settings

In the **Sound & Camera** pane, you can view and configure the sound device parameters and share the Mac's camera with the virtual machine.

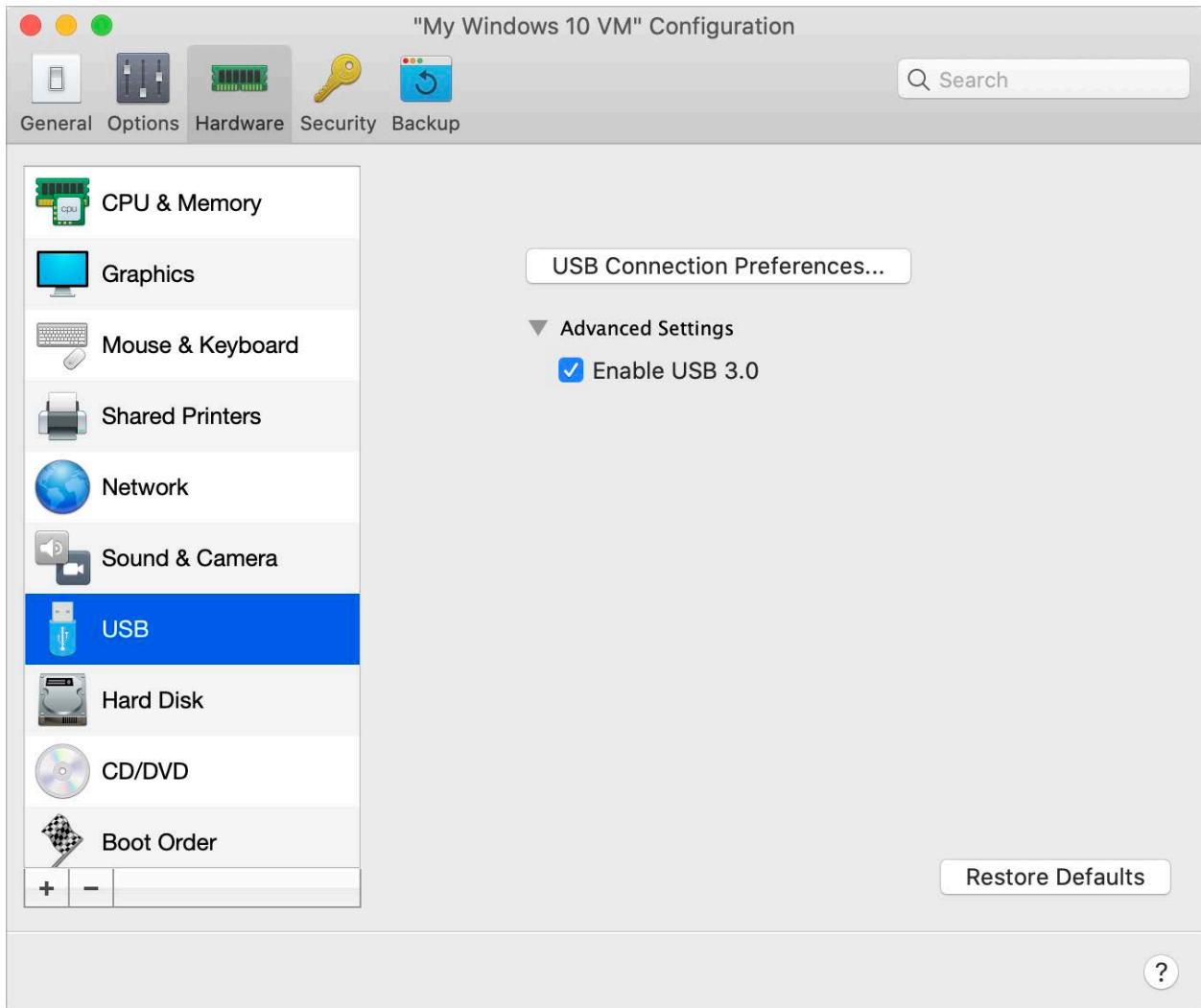To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **Sound & Camera**.

Option	Description
Sound Output	Use the **Sound Output** list to choose the necessary device: • **Default**. Select this option if you want to use the output device set as default in macOS. • **Built-in Output**. Select this option if you want to use one of the output devices from your Mac. • **Mute**. Select this option if you want to mute the output device.
Microphone	Use the **Microphone** list to choose the necessary device: • **Default**. Select this option if you want to use the microphone set as default in macOS. • **Built-in Microphone**. Select this option if you want to use the built-in microphone. • **Mute**. Select this option if you want to mute the microphone.
Sync volume with Mac	For Windows XP and later with Parallels Tools installed, you can set Windows and macOS volume levels to always be the same. With the **Sync volume with Mac** option selected, if you manually change the volume level in Windows, it is changed accordingly in macOS and vice versa. If Parallels Tools are not installed, this option is called **Use Mac sound volume**. When it is selected, Windows has the same sound volume as in macOS.
Share Mac camera with Windows	Use this option to enable or disable camera sharing.
Type	From the **Type** menu, you can select the type of sound card you want to use in the virtual machine. You can choose between **AC'97** and **HD Audio**.

USB Settings

In the **USB** pane, you can view and configure the USB-related settings.

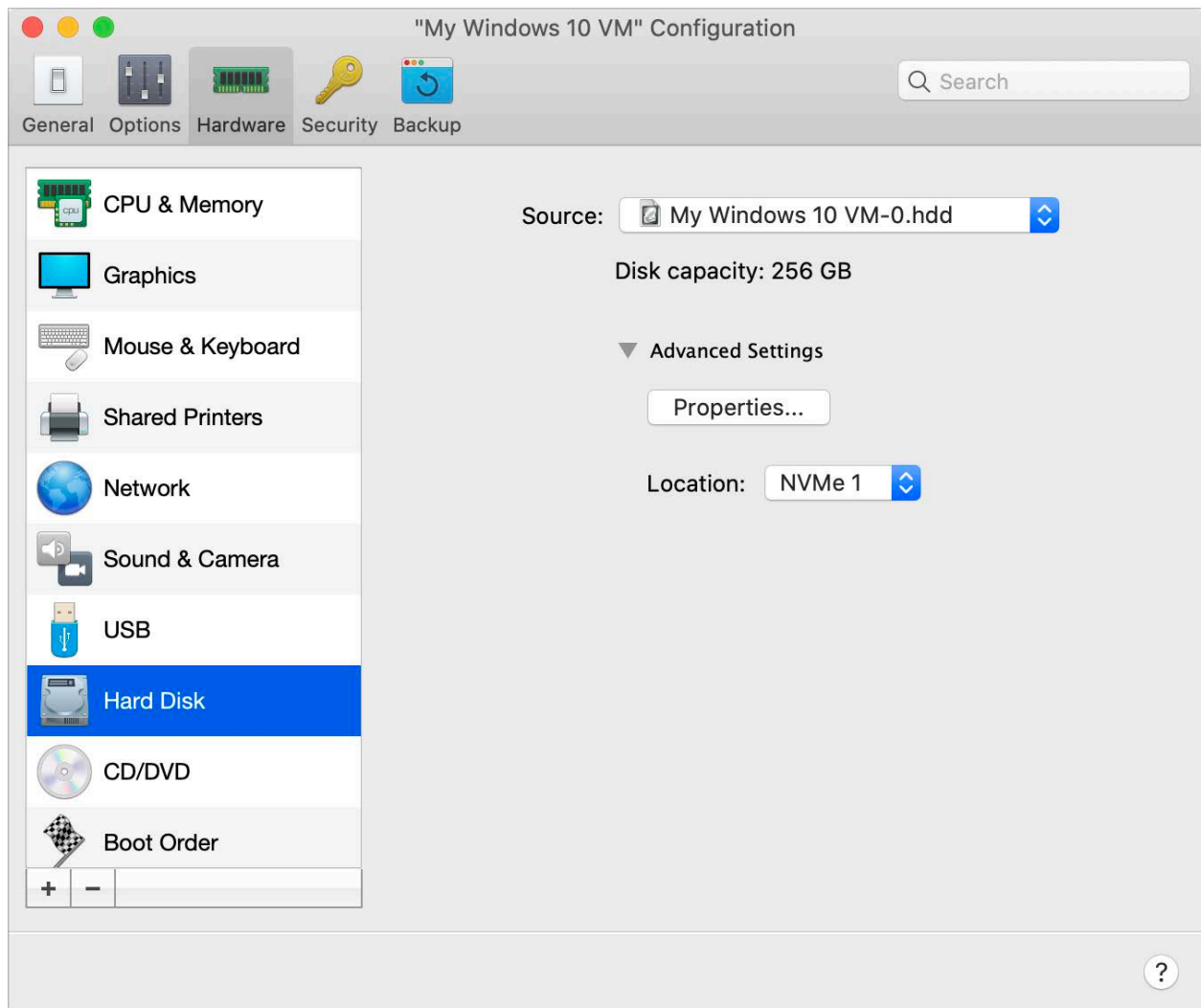To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **USB**.

Option	Description
Enable USB 3.0	Use this option to enable or disable USB 3.0 support.

Hard Disk Settings

In the **Hard Disk** pane, you can view and configure the virtual machine hard disk-related settings.

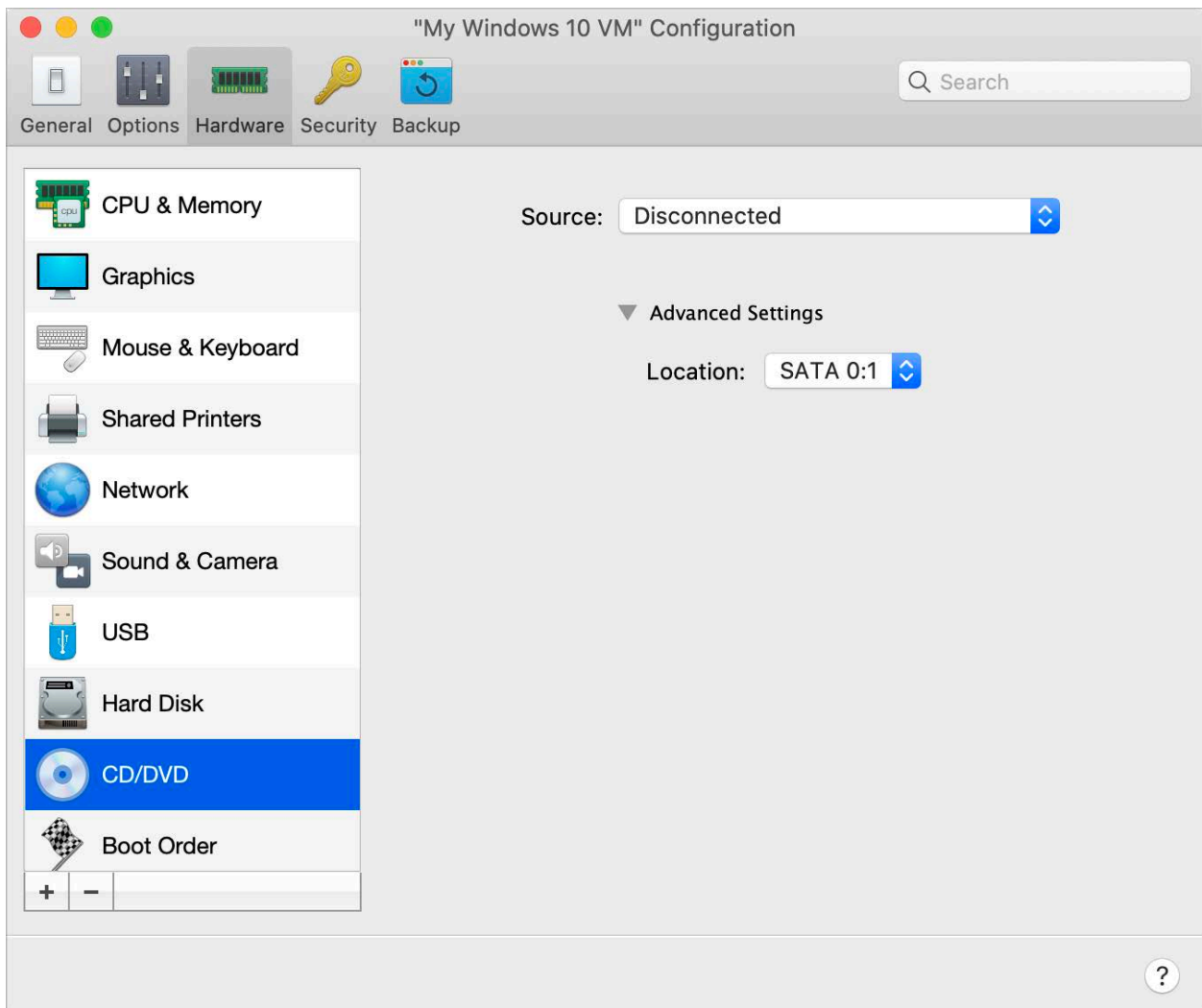To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **Hard Disk**.

Option	Description
Source	Use this field to specify the virtual hard disk file (`.hdd`) that emulates the virtual machine hard disk: • To use a virtual hard disk file as the virtual machine hard disk, choose the virtual hard disk file from the list, or click **Choose an image file** and specify the path to the desired image file (`.hdd`).

Properties	Click this button to edit the hard disk properties:
	• **Size**. Use this field or slider to change the disk size.
	• **Expanding disk**. Deselect this option to convert the disk format from *expanding* to *plain*.
	• **Split the disk image into 2 GB files**. Select this option if you want the virtual hard disk to be split.
Location	Use this field to specify the type of interface for connecting the hard disk. This option is for advanced users only.

CD/DVD Settings

In the **CD/DVD** pane, you can view and configure the virtual machine CD/DVD-ROM settings.

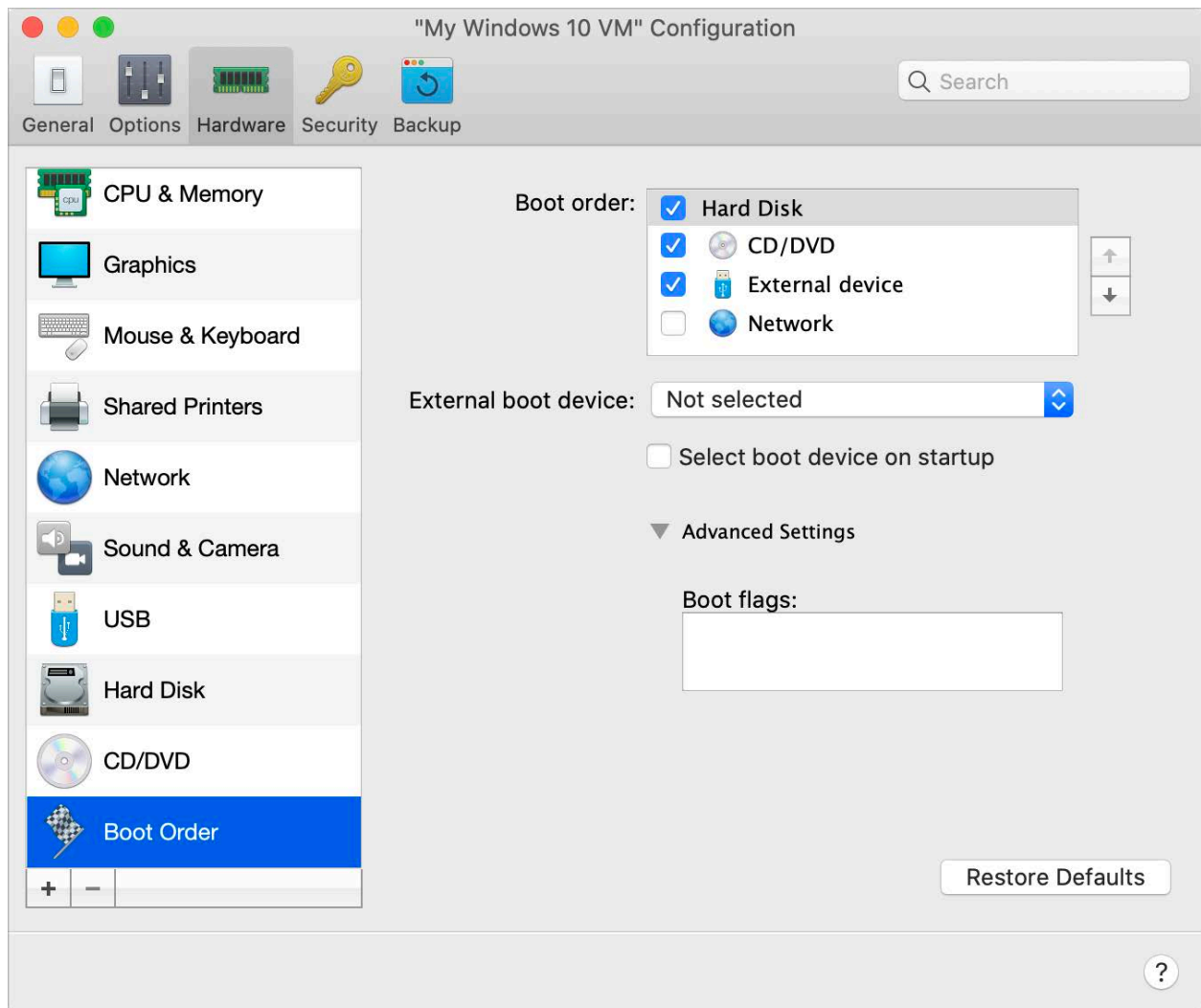To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **CD/DVD**.

Option	Description
Source	Use this field to specify the source device or image file that emulates the virtual machine CD/DVD drive: • To use a physical CD/DVD drive as the virtual machine CD/DVD drive, select the physical device name from the list. • To use an image file as the virtual machine CD/DVD drive, choose the image file from the list, or click **Choose an image file** and specify the path to the desired image file.
Location	Use this field to specify the type of interface for connecting the device. This option is for advanced users only.

Boot Order Settings

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

To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **Boot Order**.
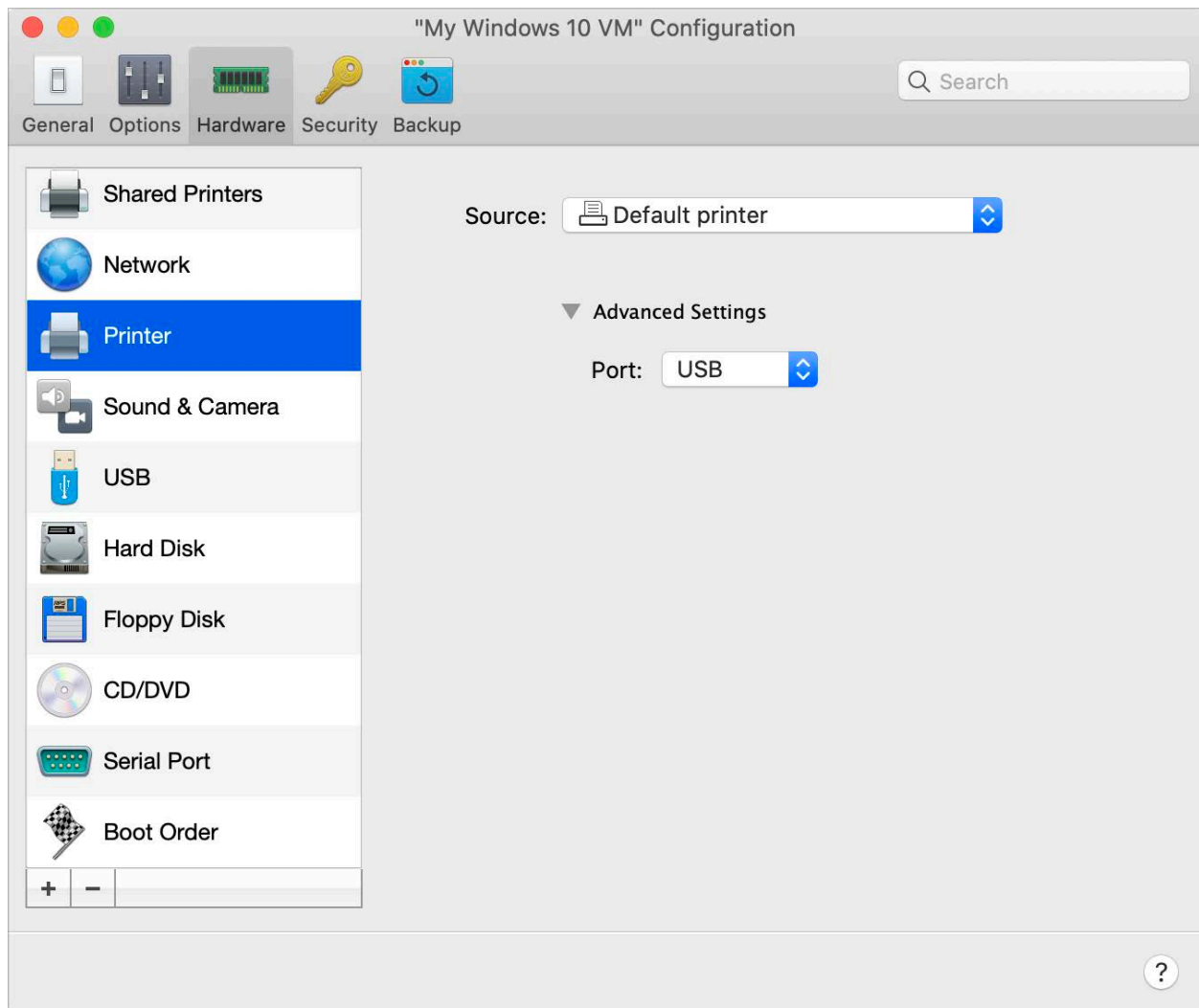
Option	Description
Boot order	Use this list to edit the boot order settings. The currently supported boot devices are listed below: • **Hard Disk**. Select this device if you want the virtual machine to boot up from its virtual hard disk drive. • **CD/DVD**. Select this device if you want the virtual machine to boot up from the media connected to its virtual CD/DVD drive. **Note:** The virtual machine will use the CD/DVD drive specified as CD/DVD-ROM in its configuration. • **External device**. Select this device if you want the virtual machine to boot up from a bootable external device (USB, FireWire, Thunderbolt, etc.) connected to your Mac. Once selected, choose the device from the **External boot device** menu located below. • **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**. Select this device if you want your virtual machine to boot from a network adapter using PXE (Pre-Execution Environment). **Note:** The virtual machine will use the network adapter specified as Network in its configuration. Every time you start the virtual machine, it tries to boot from the device specified as the first one in the **Boot order** list. If the virtual machine cannot boot from the first device (for example, no media is connected to it), the virtual machine proceeds to the second device in the list and tries to boot from this device, and so on. In this list, you can perform the following operations: • Change the currently set boot sequence by selecting the name of the corresponding boot device and moving it up or down using the arrows to the right of the list. • Remove a boot device from the sequence by clearing the check box next to its name.
External boot device	If you chose **External device** from the **Boot order** menu, use this menu to select the external boot device.

Select boot device on startup	If you choose this option, you will see the following message at the virtual machine startup: "`Press ESC to select boot device`". If you press ESC pending 5 seconds, you will be able to select a boot device. If you do not press ESC, the virtual machine will try to boot from the devices specified in the **Boot order** list.
	Note: Make sure that the device you wish to use for your virtual machine booting (hard disk drive, CD-ROM drive, floppy disk drive, or network adapter) is available to the virtual machine and configured properly. If you do not have any boot devices configured in your virtual machine, you will see the following error message after you start the virtual machine: "`No boot device is available`". In this case, you should stop the virtual machine and configure at least one boot device for it.
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.

Printer Settings

In the **Printer** pane, you can view and configure the virtual machine printer port settings.

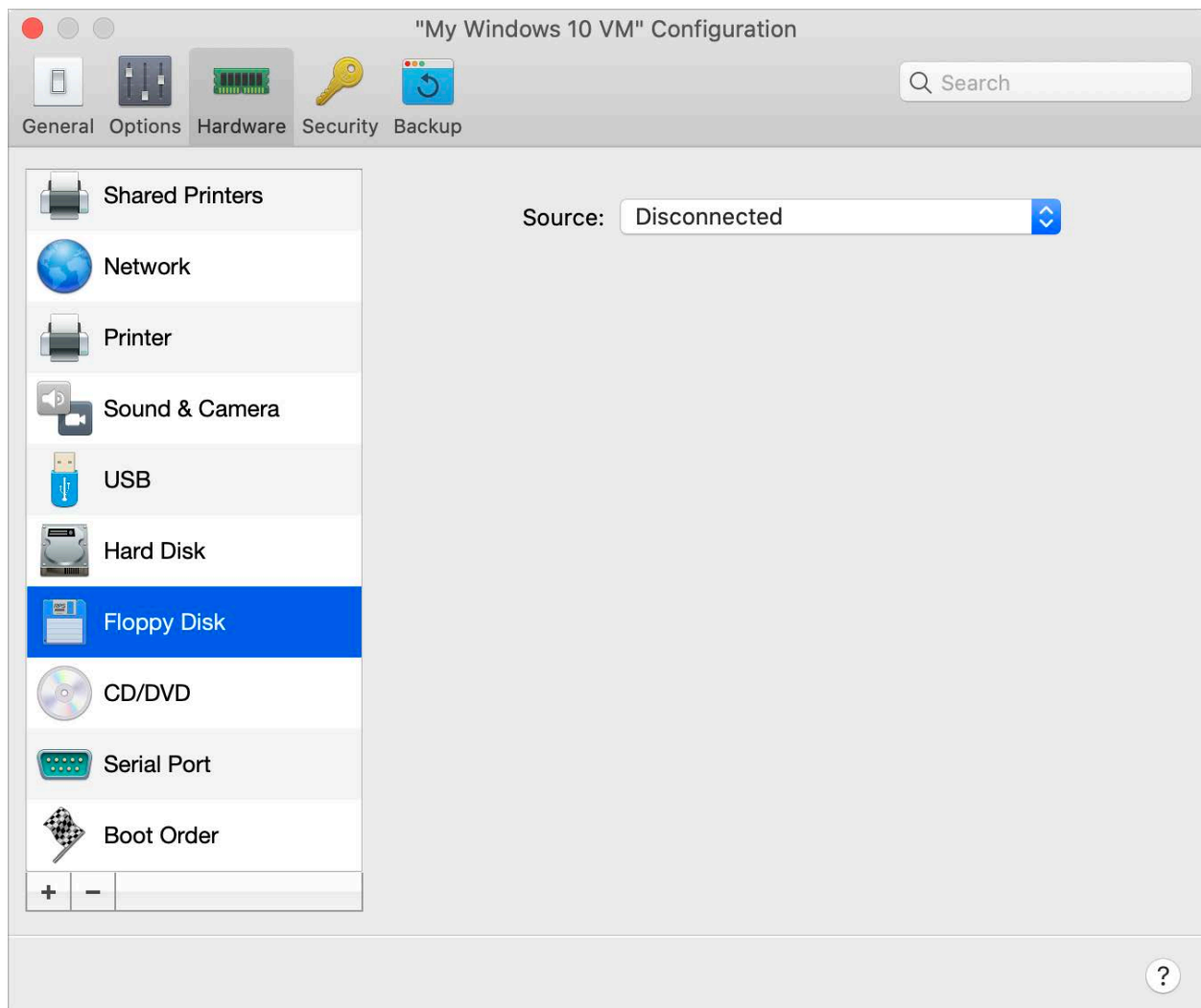To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **Printer**.

Option	Description
Source	In the **Source** field, specify the source device that emulates this printer port: • **Printers**. You can use any of the printers connected to your Mac in your virtual machine. Select the appropriate printer from the list. • **Output File**. You can emulate the virtual machine printer port by using an output file. Choose an output file from the list or click **Choose an output file** and specify the path to the desired output file.
Port	In the **Port** field, choose the port type. If available, you're recommended to use the **USB** port type. Connecting a printer to a virtual machine via USB ensures faster data transfer rate than connecting it via LPT.

Floppy Disk Settings

In the **Floppy Disk** pane, you can view and configure the virtual machine floppy disk drive settings.

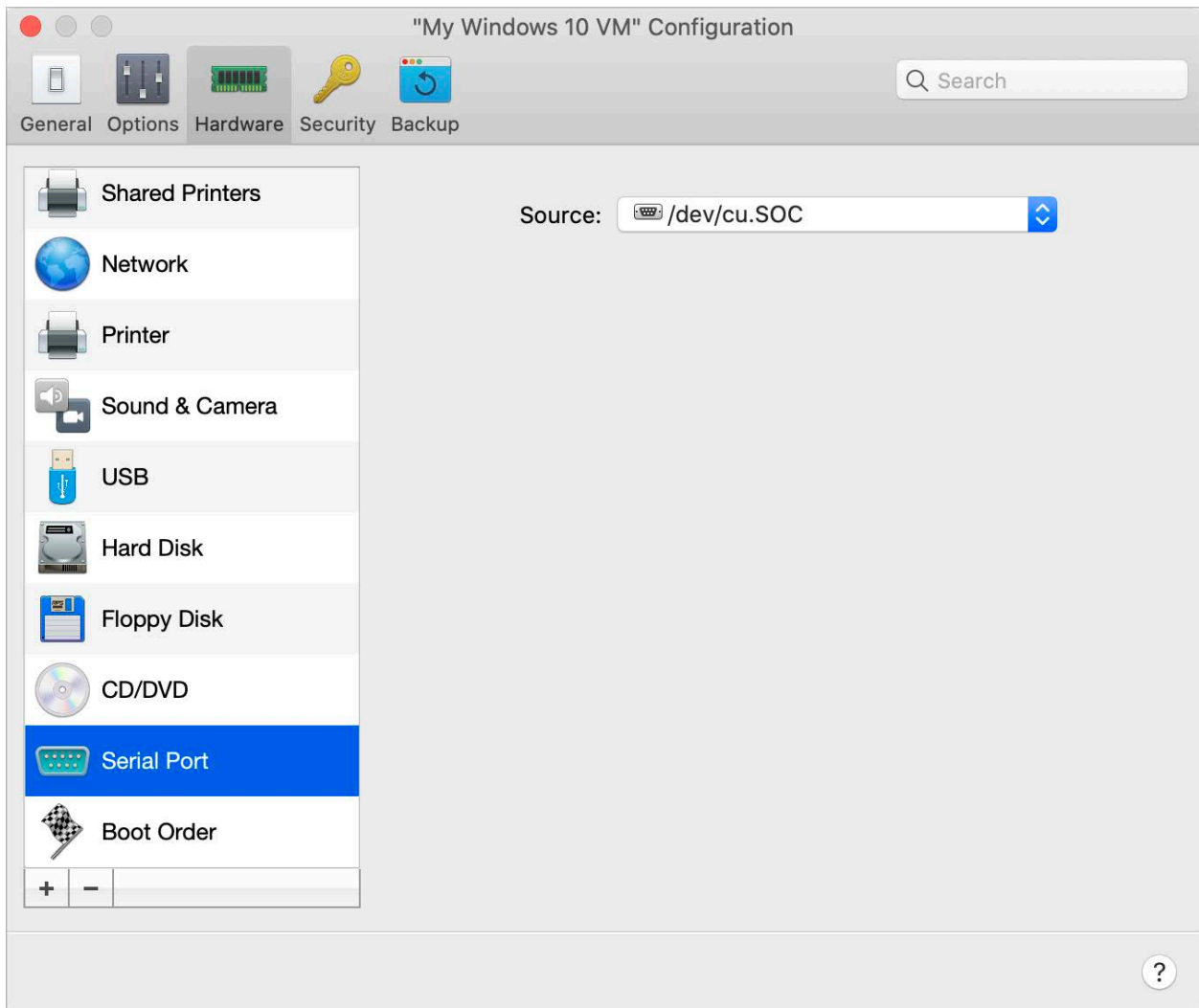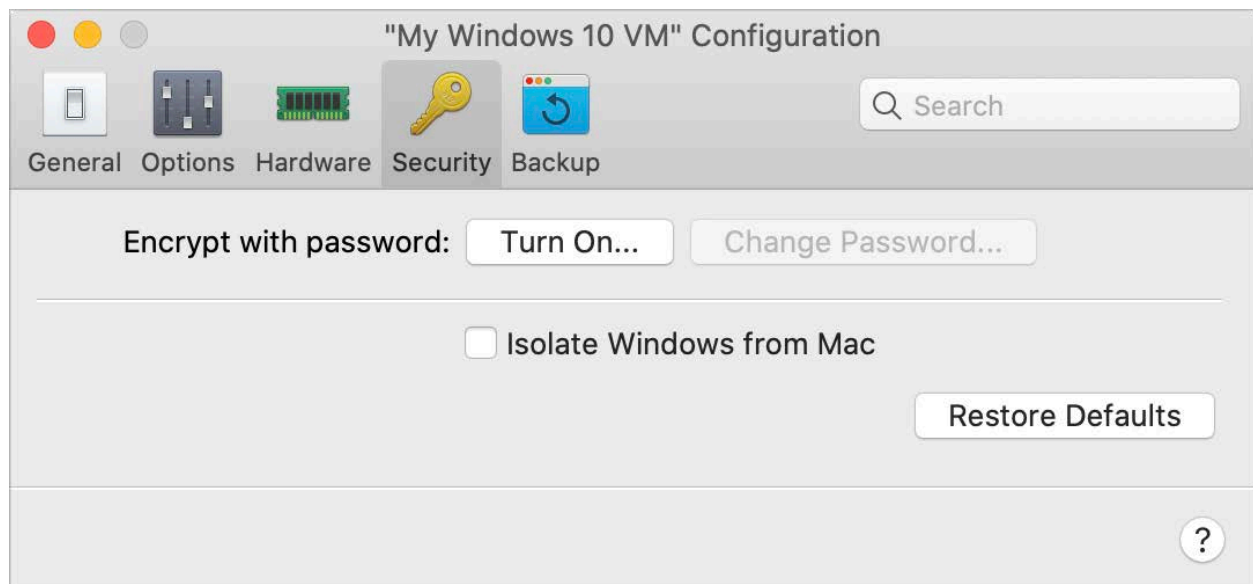To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **Floppy Disk**.

Option	Description
Source	In the **Source** field, specify the source device or image file that will emulate the virtual machine floppy disk drive: • If you want to use a physical floppy disk drive, click the **Source** field and select the physical device name from the list. • If you want to use a floppy disk image, click the **Source** field, click **Choose an image file,** and specify the path to the desired floppy disk image file.

Serial Port Settings

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

To open these settings, choose **Actions** > **Configure** > **Hardware**, then click **Serial Port**.

Option	Description
Source	In the **Source** field, select the source device that emulates this serial port: • **Physical Serial Port**. To connect the virtual machine serial port to one of the existing serial ports on your Mac, choose the appropriate port. • **Socket**. To connect two virtual machines through the sockets, choose the appropriate socket. If there are no sockets available, click **New socket** and specify its name in the **Enter a socket name** field. You should also configure the role the virtual machine will play in the connection by selecting the necessary role in the **Mode** list. Selecting **Server** enables you to use this virtual machine to direct the other one. Selecting **Client** enables you to direct this virtual machine from the other one. • **Output File**. To connect the virtual machine serial port to an output file, choose the appropriate output file or click **Choose an output file** to locate the necessary file.

Security Settings

On the **Security** tab of virtual machine configuration, you can encrypt your virtual machine with a password or isolate the virtual machine from Mac.

To open these settings, choose **Actions** > **Configure**, then click **Security**.

Option	Description
Encrypt with password	Use this setting to specify, change or turn off the password your virtual machine is encrypted with.
Isolate Windows from Mac	Select this option to isolate the virtual machine from macOS, so that they no longer share folders and profiles, connected external devices are no longer automatically accessible by the guest OS, the virtual machine and Mac no longer synchronize volume, and you can no longer copy or move objects between the virtual machine and macOS. Isolating your virtual machine from macOS may provide a higher level of security by not allowing compromised items from one OS to come into contact with the other.

Backup Settings

On the **Backup** tab of virtual machine configuration, you can automate saving the virtual machine snapshots.

To open these settings, choose **Actions** > **Configure**, then click **Backup**.
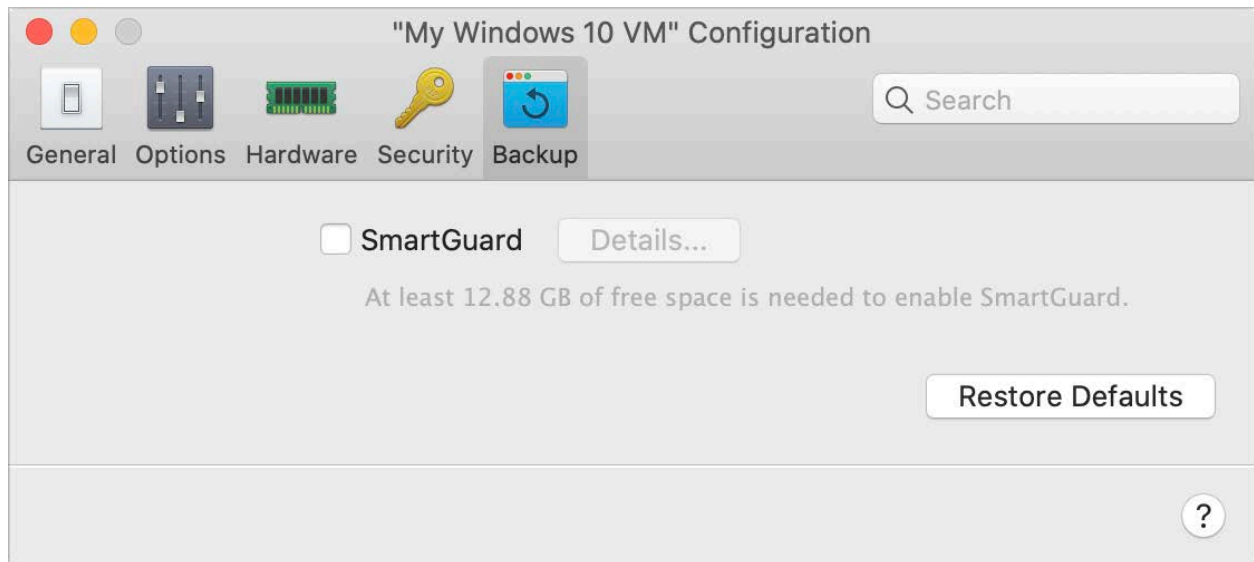
Option	Description
SmartGuard	If you want to create virtual machine snapshots automatically, select **SmartGuard** > **Details** and specify how often snapshots are made, how many snapshots are stored, and whether you want to be notified before a new snapshot is created.

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C H A P T E R 8

Advanced Topics

This chapter is intended to give you additional information on how to work with Parallels Desktop and virtual machines.

In This Chapter

Work with Virtual Machines

Read this section for basic information about working with virtual machines.

Supported Guest Operating Systems

You can install the following guest operating systems into Parallels Desktop virtual machines:

	Parallels Tools
Windows	
Windows 10	✔
Windows 8.1	✔
Windows 8	✔
Windows Server 2019	✔
Windows Server 2016	✔
Windows Server 2012 R2	✔
Windows 7 (SP0-SP1)	✔
Windows Server 2008 R2 (SP0-SP2)	✔

Windows Vista Home, Business, Ultimate and Enterprise (SP0-SP2)	✔
Windows Server 2003 R2 (SP0-SP2)	✔
Windows XP (SP0-SP3)	✔
Windows 2000 Server, Professional SP4	✔
Linux	
Red Hat Enterprise Linux (RHEL) 7, 6	✔
CentOS Linux 7, 6	✔
Fedora Linux 30*, 29	✔
Ubuntu 19.04, 18.04 LTS, 16.04 LTS	✔
Debian GNU/Linux 9, 8	✔
SUSE Linux Enterprise 15	✔
OpenSUSE Linux 15.1, 15	✔
Kali 2019, 2018	✔
Linux Mint 19, 18	✔
Elementary 5	✔
Manjago 18	✔
Mageia 7, 6	✔
Gentoo Linux	
Solaris 11, 10	
openBSD 6	
FreeBSD 12, 11	
openVZ 7	✔
eComStation 2, 1.2	
ReactOS 0.4	
Android OS*	✔
macOS	
macOS 10.15 Catalina	✔
macOS 10.14.x Mojave	✔
macOS 10.13.x High Sierra	✔
macOS 10.12.x Sierra	✔
OS X 10.11.x El Capitan	✔

OS X 10.10.x Yosemite	✔
OS X 10.9.x Mavericks	✔
OS X 10.8.x Mountain Lion	✔
OS X 10.7.x Lion	✔
OS X 10.7.x Lion Server	✔
OS X 10.6.x Snow Leopard Server	✔

* - only the version downloaded using the Parallels Desktop Installation Assistant.

Parallels Tools for Linux require X Window System version 1.15 - 1.20 and Linux Kernel version 2.6.29 - 5.1.

Please note that Parallels Desktop does not include operating system installation discs or their images. You should purchase them separately.

About Virtual Machines

To add Windows or another operating system to your Mac, Parallels Desktop creates a "**virtual machine**," or a virtual copy of a computer, inside your Mac. You can then install Windows in the virtual machine, just as you would install an operating system on a regular computer.

Many use Parallels Desktop to create one virtual machine and install Windows in it. But you can install as many virtual machines as you like, and install a different operating system in each of them. That way you can use multiple operating systems together at the same time on your Mac. And just like with a regular computer, you can turn virtual machines on and off, configure them, and install and use programs.

Set Where New Virtual Machines Are Stored

By default, Parallels Desktop stores virtual machines in ~/Documents/Parallels.

To change the default location for new virtual machine installations:

1 Do one of the following:

- Click the Parallels icon ‖ in the menu bar and choose **Preferences**. Then click **General**.
- If the Parallels Desktop menu bar is visible at the top of the screen, choose **Parallels Desktop** > **Preferences**, and then click **General**.

2 Choose a location from the **Virtual Machines Folder** menu.

All newly created virtual machines are stored in the new location. Any existing virtual machines remain in their original locations.

Arrange Virtual Machines

If you have many virtual machines, the **Control Center** window may get overloaded and inconvenient to work with.

You can configure **Control Center** to show the minimum information - only virtual machine names and icons. To do so, click the Parallels Desktop icon in the Dock and choose **View** > **Compact View** in the macOS menu bar.

Change the Virtual Machine Name

The name of a virtual machine is displayed in **Control Center** and at the top of the guest OS window when you are running in Window mode.

To change the virtual machine name:

1   Do one of the following:

 * Click the Parallels icon ▌▌ in the menu bar and choose **Configure.**

 * Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2   Click **General** and type a new name in the **Name** field.

The length of the name is limited to 50 characters.

Clone a Virtual Machine

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 Desktop.

2   In **Control Center**, 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 Desktop stores clones in your Documents > Parallels folder.

4   Click **Save** 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 on the **Backup** tab of the **Virtual Machine Configuration** dialog.
- Clone the virtual machine with the help of Clone Virtual Machine Assistant. 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

On the **Backup** tab 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. 109).

Copying the Virtual Machine Files

You can locate your virtual machine in Finder and create a backup copy of the virtual machine file (PVM).

1 In **Control Center** (or in the virtual machine window if it is shut down), right-click the virtual machine name and select **Show in Finder** from the context menu. In Finder, go to the folder where your virtual machine is stored.

2 Locate the required virtual machine PVM file.

> **Note:** PVM file is a bundle that contains the virtual machine configuration file (PVS), virtual hard disk file (HDD), and other files. For more information about the virtual machine files, see **About Virtual Machines** (p. 108).

3 Copy the virtual machine's PVM file to a safe location.

Save Snapshots of a Virtual Machine

A snapshot is a saved state of the guest OS. It's useful to create snapshots, for example, before:

- you're going to run some programs that may damage the guest OS; or

- if you're going to configure some guest OS software that requires a lot of settings; or
- if you want to mark milestones in the development process.

> **Notes:** 1. If your virtual machine has one or more snapshots, you can neither compress nor resize the virtual hard disk.
>
> 2. Creating a snapshot increases the size of the virtual machine .pvm bundle.

If something goes wrong, you can revert the changes back to any of your snapshots and continue working with the guest OS.

Create a Snapshot

1 Start Parallels Desktop.

2 In **Control Center**, select the virtual machine for which you want to create a snapshot.

3 Click **Actions** > **Manage Snapshots**.

4 Click **New**, specify the snapshot name and click **OK**.

Automate the Creation of Snapshots

The SmartGuard functionality allows you to automate snapshots creation.

To access settings for automating snapshots:

1 Start Parallels Desktop.

2 In **Control Center**, right-click the virtual machine for which you want to create a snapshot and choose **Configure**.

3 Click **Backup**.
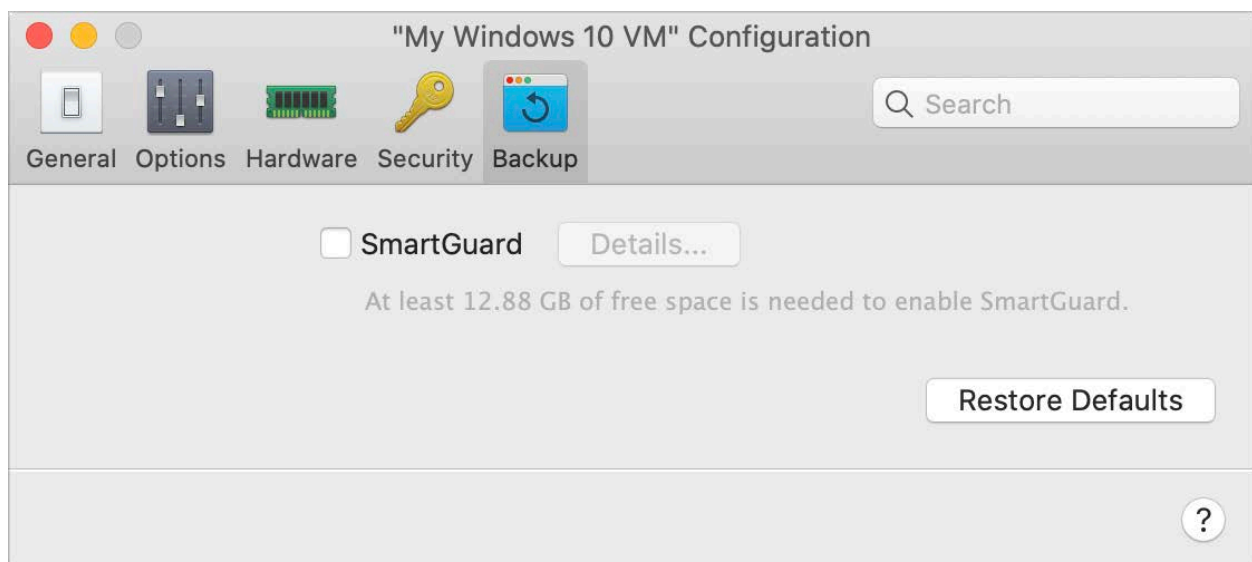
To automate snapshots, enable SmartGuard, click **Details**, and do one of the following:

- Manually set the snapshots frequency and maximum number of snapshots to keep. 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**.

To set how often snapshots are made:

- Use the **Take a Snapshot Every** field. You can set from one to 48 hours.

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

To limit how many snapshots are stored:

- Use the **Snapshots to Keep** field to set the maximum number of snapshots that can be stored on your Mac.

The maximum available value is 100 snapshots. As soon as Snapshots Manager reaches the limit for snapshots and needs to make a new one over limit, it deletes the oldest snapshot.

Revert to a Snapshot

To revert to a snapshot:

1 Start Parallels Desktop.

2 In **Control Center**, select the virtual machine that you want to revert.

3 Click **Actions > Manage Snapshots**.

4 Select the snapshot to which you want to revert and click **Go To**.

Delete a Snapshot

To delete a snapshot:

1 Start Parallels Desktop.

2 In **Control Center**, select the virtual machine which snapshot you want to delete.

3 Click **Actions > Manage Snapshots**.

4 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.

Use Mouse Wheel Horizontal Scrolling

You can use the mouse wheel horizontal scrolling when working with windows of virtual machine applications. This feature is available only if Parallels Tools (p. 133) are installed in the virtual machine.

Remove a Virtual Machine

Remove a Virtual Machine from your Mac

If you don't need a virtual machine any more, you can permanently remove it from your Mac:

> **Warning:** Before removing, check that none of the virtual machine files (e.g. virtual hard disk) are used by other virtual machines.

1 Shut down the virtual machine if it is running, right-click in the virtual machine window and choose **Remove**. You can also click **File** > **Remove** or right-click this virtual machine in **Control Center** and choose **Remove**.

2 Click **Move to Trash**.

Remove a Virtual Machine from Control Center

To temporarily remove a virtual machine from **Control Center**:

1 Shut down the virtual machine if it is running, right-click in the virtual machine window and choose **Remove**. You can also click **File** > **Remove** or right-click this virtual machine in **Control Center** and choose **Remove**.

2 Click **Keep Files**.

When you need this virtual machine again, you can easily import it in Parallels Desktop (p. 13).

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.

Downloading Parallels Virtual Appliances

Parallels Virtual Appliances are pre-built virtual machines.

To download such an appliance and use it with Parallels Desktop:

1 Right-click the Parallels Desktop icon in the Dock and choose **New**.

2 Select any of the following free systems and click **Continue**:

- Fedora Linux;

- CentOS Linux;

- Debian GNU/Linux.

3 In the next step, click **Download**. Once the download starts, you can pause it anytime by clicking **Pause**. To resume the download, click **Resume**.

Once the download is complete, you can start working with the virtual appliance in Parallels Desktop.

Set the Guest OS Type and Version

You can change which guest OS a virtual machine is configured to work with. You need to change it in the following cases:

- If you upgrade the guest operating system (for example, from Windows 8 to Windows 10), you need to change the guest OS type and version correspondingly or Parallels Tools (p. 118) may start working incorrectly.

- If you create a virtual machine without installing an operating system, and then decide to use it with a different operating system than the one you initially specified.

To set the guest OS type and version:

1 Shut down the virtual machine. (p. 17)

2 Open the **Actions** menu and choose **Configure**.

3 Click **General** and select an OS from the menu just above the **Name** field.

Set How Many Processors are Allocated to a Virtual Machine

You can change the number of virtual CPUs that will be used to handle the processes running in a virtual machine. Parallels Desktop automatically calculates the maximum allowable number of virtual CPU. The calculation is based on the number of physical CPUs available to your macOS 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.

To set how many processors are allocated to a virtual machine:

1 Shut down the virtual machine. (p. 17)

2 Open the **Actions** menu and choose **Configure**.

3 Click **Hardware > CPU & Memory** and select a number from the **Processors** menu.

Check Your Virtual Machine CPU and Memory Usage

While working with a virtual machine, you may need to check how much memory and CPU time of your Mac it is currently using. If the virtual machine is consuming too much and your running Mac applications become slow, you can easily reduce the number of CPUs (p. 114) and amount of memory (p. 48) assigned to the virtual machine.

To check the current CPU and memory usage, choose **Window** > **Show Resource Monitor**:

> **Note:** you may notice that an amount of memory consumed by a virtual machine is higher than the amount of memory allocated to this virtual machine on the **CPU & Memory** tab (p. 83). It's normal, the resource monitor shows memory consumption of all virtual machine processes.

Quickly Free Up Disk Space

Using **Free Disk Space Wizard**, you can compress the virtual machine hard disk(s) and remove various unnecessary files to free up disk space.

To quickly compress the disk(s), remove unnecessary files, and free up disk space:

1   Shut down the virtual machine.

2   Choose **File** > **Free Up Disk Space**.

   Free Disk Space Wizard shows whether you can reclaim any disk space by removing the virtual machine snapshots, cache files and various unnecessary files such as statistical, memory dump, and crash dump files, which are generated during the virtual machine life cycle.

You can also conserve disk space by compressing virtual disks manually.

Use Other Operating Systems on Your Mac

Read this section for the information that's specific to certain operating systems other than Windows XP or later.

Customize the Keyboard for the Guest OS

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

- Windows
- Linux

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- macOS

- Generic (for other guest OSs)

When you create or register a virtual machine, one of these profiles, depending on the guest operating system, is assigned to the machine by default. You can create your own profile and assign it to your virtual machines.

To create a custom keyboard profile or edit the existing profiles:

1 Do one of the following:

- Click the Parallels icon ‖ in the menu bar and choose **Preferences**.

- If the Parallels Desktop menu bar is visible at the top of the screen, choose **Parallels Desktop** > **Preferences**.

2 Click **Shortcuts**.
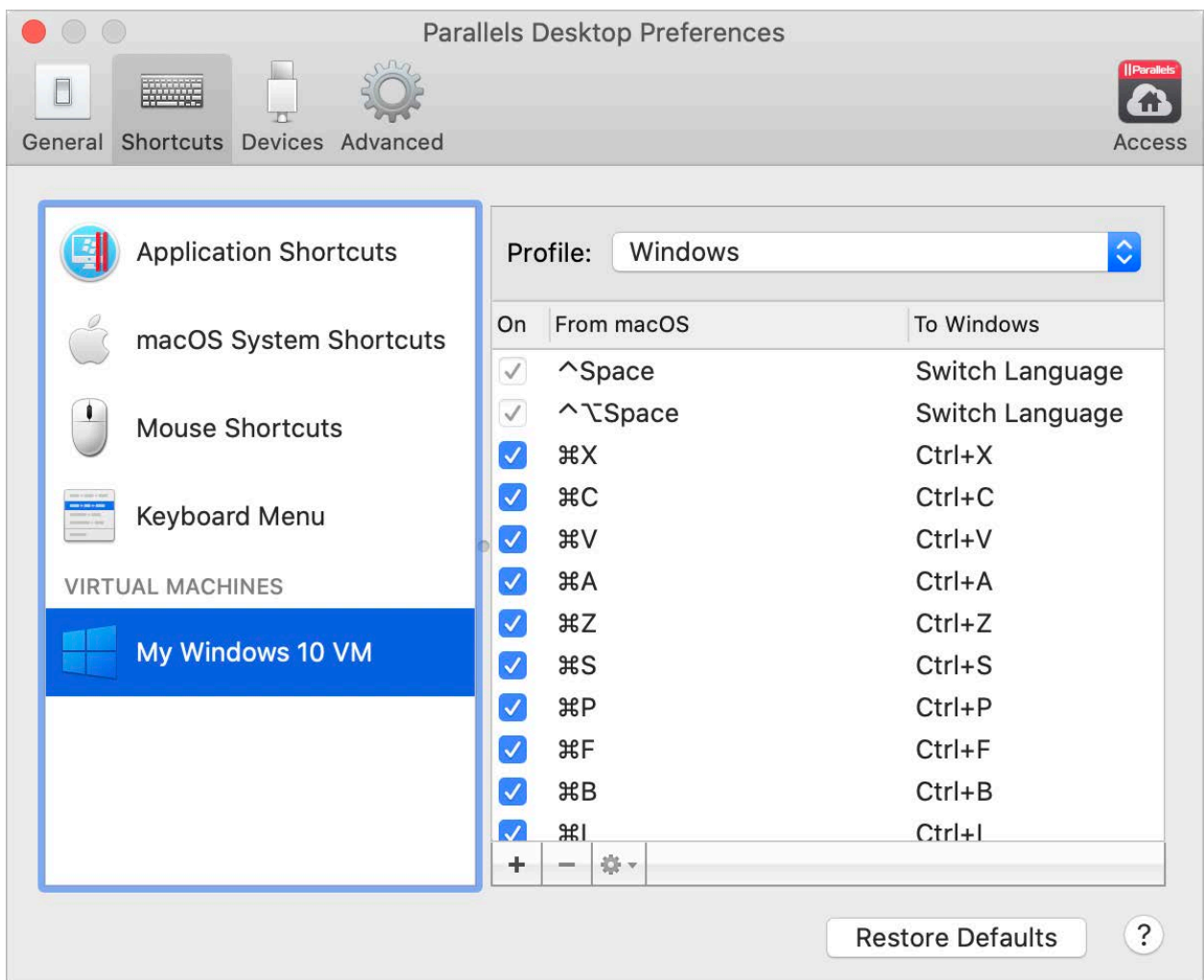
3   Select a virtual machine from the sidebar, click the **Profile** menu, and select **Edit profiles list**.
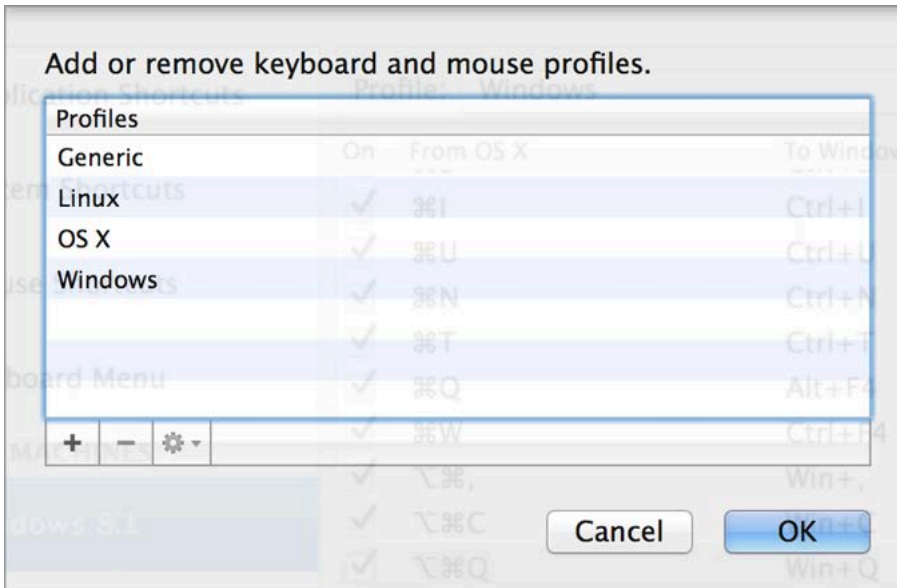
4   Do one of the following:

- To add a new profile, click the **Add** button ⊞. Specify the new profile name and select the base profile from the list. After the profile is created, you can submit the changes by clicking **OK**. Then select this new profile in the **Profile** list and configure its shortcuts.

- To remove one of the existing custom profiles, select it and click the **Remove** button ⊟.

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

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

In the **Shortcuts** pane of Parallels Desktop Preferences, you can also assign profiles to your virtual machines.

To change a profile assigned to a virtual machine:

- Select a virtual machine and choose a profile from the **Profile** menu.

Emulate a Mouse Right-Click or Middle-Click

To emulate a mouse right-click or middle-click:

1   Select **Mouse Shortcuts** in the sidebar.

2   Select **Secondary click** (for right-click) or **Middle click**.

3   Click in the corresponding text field and press the key or combination of keys that you want to use with a mouse click to trigger a right-click or middle-click.

You can use any combination of the Control, Option (Alt), Shift, and Command keys to specify the key combination that will be used to emulate a mouse right-click or middle-click in the virtual machine.

Install or Update Parallels Tools

Parallels Tools are a suite of behind-the-scenes tools that allow seamless operating between macOS and Windows or another guest operating system.

This section gives an overview of Parallels Tools, and has information about how to install them for various guest operating systems.

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 between the virtual machine and your Mac, 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, share your Mac's disks and folders with its virtual machines, copy text and drag and drop objects from macOS to a virtual machine and vice versa.

Parallels Tools are available for the most popular Windows, Linux, and macOS operating systems, and include the utilities listed below. All utilities supported by your guest OS are installed in your virtual machine as a single package when you install Parallels Tools.

Utility	Available for	Description
Mouse Synchronization Tool	Windows Linux macOS	Mouse Synchronization Tool captures the mouse input in the virtual machine each time the pointer moves over its window and automatically releases the input when the pointer moves outside the window.
Time Synchronization Tool	Windows Linux macOS	Time Synchronization Tool enables you to customize your virtual machine time settings. You can: • Automatically synchronize the time settings of your virtual machine with your Mac time settings. • Set up and maintain the time difference between your Mac and your virtual machine.
Drag-and-Drop Tool	Windows	Drag-and-Drop Tool allows dragging and dropping files between your virtual machines and macOS.

Clipboard Synchronization Tool	Windows Linux	Clipboard Synchronization Tool enables you to easily exchange texts between: • the virtual machine and your Mac. • different virtual machines irrespective of the guest operating systems installed in them. To copy and paste text, you should use the standard procedure for the current operating system. For example, to copy some text in the Windows guest OS, select the text, and press Ctrl+C. To paste this text in macOS, press Cmd+V, or select **Paste** from the shortcut menu.
Dynamic Resolution Tool	Windows Linux macOS	Dynamic Resolution Tool enables you to work with dynamic resolution. When you resize the guest OS window by dragging its lower right corner, the guest OS window resolution changes automatically.
Shared Folders Tool	Windows Linux macOS	Shared Folders Tool enables you to share Mac folders with the virtual machine.
Shared Profile Tool	Windows	Shared Profile Tool enables you to share your Mac desktop, pictures, documents, downloads, music and videos with your virtual machine, which allows you to access them right from Windows.
SmartMount	Windows Linux macOS	SmartMount automatically detects volumes connected to your Mac and makes them available to the virtual machine as well.
Printing Tool	Windows	Printing Tool allows you to synchronize the host and guest OS printers.
Tray Integration Tool	Windows	Tray Integration Tool allows you to use Windows tray icons in the Mac menu bar.

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

• `prl-tools-win.iso` - disc image with Parallels Tools for Windows guest operating systems.

• `prl-tools-lin.iso` - disc image with Parallels Tools for Linux guest operating systems.

• `prl-tools-mac.iso` - disc image with Parallels Tools for macOS guest operating systems.

These disc images can be found in the following location on your Mac:
`<username>/Applications/Parallels Desktop/Contents/Resources/Tools.`

Parallels Tools for Windows

Important: To take advantage of much of the functionality Parallels Desktop offers, Parallels Tools must be installed.

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

- Windows 10

- Windows 8

- Windows 7

- Windows Server 2008

- Windows Vista

- Windows XP

- Windows Server 2003

- Windows 2000

Installing Parallels Tools

If you chose **Express Installation** when you first installed Windows, Parallels Tools were installed automatically after the installation.

If you didn't choose **Express Installation**, do the following to install Parallels Tools:

1 Start Windows (p. 15).

2 When Windows boots up, choose **Install Parallels Tools** from the **Virtual Machine** menu.

> **Note:** After you choose **Install Parallels Tools** in Windows 7 and Windows Vista, User Access Control (UAC) may ask you whether to allow or deny the Parallels Tools installation. In this case, you need to allow the installation.

3 Click **Continue** to connect the ISO image with Parallels Tools for Windows to the virtual machine's CD/DVD-ROM drive.

4 Click **Install Parallels Tools** to start the installation.

> **Note:** After you click **Install Parallels Tools** in Windows 7 and Windows Vista, User Access Control (UAC) may ask you whether to allow or deny the Parallels Tools installation. In this case, you need to allow the installation.

5 When the installation is complete, click **Restart** to restart the virtual machine or wait for about 2 minutes and it will be restarted automatically.

If the Parallels Tools ISO image doesn't autoplay after you click **Continue**, the CD/DVD autorun must be disabled in your virtual machine. In this case, do the following to install Parallels Tools:

1 Open **My Computer**, right-click the Parallels Tools disc and choose **Open**.

2 Double-click the PTAgent file to start the installation.

3 When the installation is complete, click **Restart** to restart the virtual machine or wait for about 2 minutes and it will be restarted automatically.

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

Reinstall or Update Parallels Tools

To reinstall Parallels Tools:

1   Start Windows (p. 15).

2   When Windows boots up, choose **Reinstall Parallels Tools** from the **Actions** menu.

This option is available only if Parallels Tools are up-to-date. If Parallels Tools are outdated, you will see the **Update Parallels Tools** option instead.

Check Whether Parallels Tools Have Been Installed

You can easily confirm whether Parallels Tools were 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. When Parallels Tools are installed, you do not need to press any key to release the mouse and keyboard - they are released automatically.

Parallels Tools for Linux

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

* glibc 2.3.4 and later

* libstdc++ 3.4.6 and later (libstdc++.so.6)

* gcc 3.4.6 and later (including C++ support)

* make 3.80

* X Window System X11R6.7, X11R6.8, X11R6.8.99, X11R7.0, X11R7.1, X11R7.2 (1.3), X11R7.3 (1.4)

* kernel sources or development package

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

Preparing for installation

Before installing Parallels Tools in a Linux virtual machine, perform the following actions:

* Close all applications running on the virtual machine.

* If you use a 3D accelerated window manager, disable it.

- 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 **Installing the GCC package and Kernel Sources in Linux**.

> **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 systems

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 operating system boots up, click **Actions** and choose **Install Parallels Tools**.

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

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

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

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

```
su
```

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

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

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

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

```
./install
```

6 Follow the Parallels Tools Installer instructions to complete the installation.

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

Installing Parallels Tools in other versions of Linux guest OSs

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

1 Start the virtual machine.

2   When the guest OS boots up, choose **Install Parallels Tools** from the **Actions** 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.

> **Note:** If X Server fails to start in your virtual machine, you can install Parallels Tools manually in text mode.

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

How to check if Parallels Tools have been installed

You can easily confirm whether Parallels Tools were 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. When Parallels Tools are installed, you do not need to press any key to release the mouse and keyboard - they are released automatically.

Troubleshooting

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

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

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

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

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

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

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

```
selinux=0
```

and the whole entry will be:

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

4   Save the file and restart the virtual machine.

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

Update Parallels Tools

If a newer version of Parallels Tools for Linux is available, the **Parallels Tools Installation Agent** window appears. You're prompted to choose the command to gain root privileges and enter the password (if `su` - root password, if `sudo` - your user's password). After that, Parallels Tools update automatically.

Reinstall Parallels Tools

To reinstall Parallels Tools in Linux, first remove Parallels Tools and then install them once again.

Installing and Upgrading Parallels Tools in Text Mode in Linux

After upgrading to Parallels Desktop, the X Server may fail to start in Linux virtual machines. To fix the problem, you need to install Parallels Tools in text mode.

1   Start the virtual machine.

2   When you see a message that X Server failed to start, switch to another virtual console using Ctrl+Option+F1 (Ctrl+Alt+F1) and enter your login details.

3   Choose **Install Parallels Tools** from the **Actions** menu to connect the Parallels Tools ISO image to your virtual machine.

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

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

4   In the virtual machine console, type the following command to gain the `root` privileges:

```
su
```

5   Check if the Parallels Tools CD image is mounted by entering

```
mount | grep iso9660
```

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

If this command returns anything like

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

skip the next step and proceed to the following one.

If this command returns anything like

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

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

```
umount /dev/cdrom
```

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

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

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

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

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

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

```
./install
```

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

9   Follow the Parallels Tools Installer instructions to complete the installation.

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

For general information on installing Parallels Tools in Linux, refer to **Installing Parallels Tools in a Linux Guest OS**.

Parallels Tools for Mac

Install Parallels Tools

To install Parallels Tools in an macOS virtual machine:

1 Start the macOS virtual machine.

2 When macOS boots up, choose **Actions** > **Install Parallels Tools** and follow the onscreen instructions.

Reinstall Parallels Tools

To reinstall Parallels Tools:

1 Start your macOS virtual machine (p. 15).

2 When Windows boots up, choose **Reinstall Parallels Tools** from the **Virtual Machine** menu.

Update Parallels Tools

If a newer version of Parallels Tools for Mac is available, Parallels Tools update automatically.

Check Whether Parallels Tools Have Been Installed

You can easily confirm whether Parallels Tools were 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. When Parallels Tools are installed, you do not need to press any key to release the mouse and keyboard. They are released automatically.

Picture in Picture Mode

When you switch to Modality, you can resize the virtual machine windows and place them side by side with your Mac's applications.

In the Modality mode, you can:

- Resize the Windows window while keeping its shape by dragging its lower-right corner.
- Resize the Windows window by pressing and holding the Option (Alt) key and dragging the lower-right corner of the window.

- Resize the Windows window and dynamically adjust the screen resolution by pressing and holding the Shift and dragging the lower-right corner of the window.

Using the Picture in Picture settings, you can configure the virtual machine appearance and behavior when it is running in the Picture in Picture mode. In the Picture in Picture mode, you can resize the virtual machine windows and place them side by side with your Mac applications. A Picture in Picture window can be scaled to any size, and its content will still be active. This allows you to monitor the tasks running inside the virtual machine while you are working on the Mac side.

To edit these settings, do the following:

1 Click the Parallels icon ‖ in the menu bar and choose **Configure**. Or click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2 In the **Virtual Machine Configuration** window, click **Options** and select the settings name in the sidebar.

You can configure the settings in this pane even when the virtual machine is running.
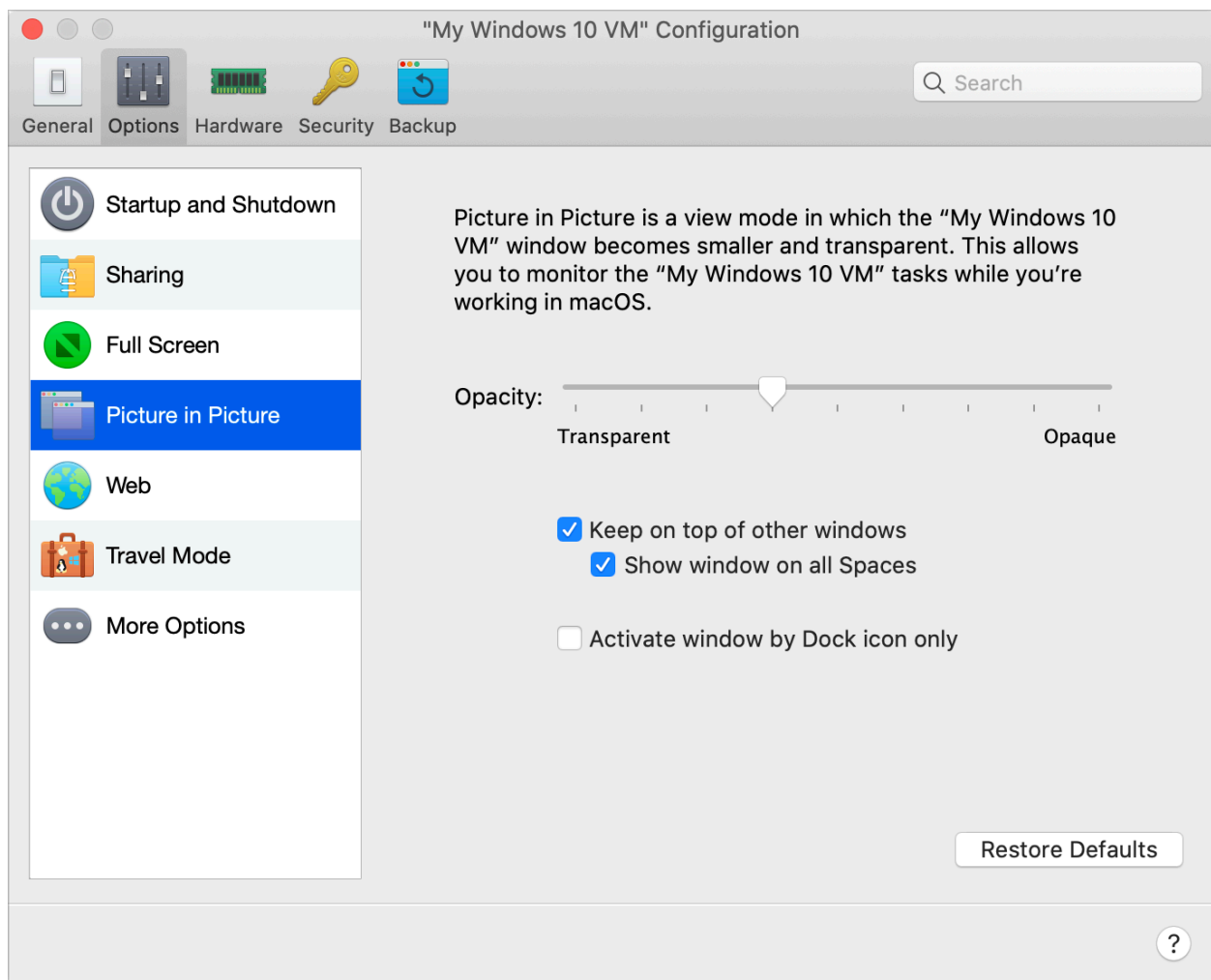
In the Picture in Picture mode, the virtual machine window becomes transparent by default. You can specify the level of visibility in the **Opacity** field by dragging the slider between **Transparent** and **Opaque**. You can change the level of transparency for your virtual machine that is running when it is in the Picture in Picture mode.

To manage the behavior of the virtual machine window in the Picture in Picture mode, use the following options selected by default:

- **Keep on top of other windows**. Clear this option if you do not want the virtual machine window to appear on top of all other open windows when the virtual machine is in Picture in Picture mode.

- **Show window on all Spaces**. Clear this option if you don't want the virtual machine window to be displayed on all Spaces.

- **Activate window by Dock icon only**. Select this option if you want to make the virtual machine window inactive. When selected, you will click "through" the window. If you need to make the window active again and capture the mouse or keyboard input, click the virtual machine icon in the Dock.

Hide and Show Parallels Desktop

When Parallels Desktop is running, you can hide and show it and all its windows by holding down the Function (Fn) key and pressing the F6 key.

If Parallels Desktop is visible but running in the background, pressing Fn-F6 brings Parallels Desktop and all its windows to focus.

> **Note:** Most function keys (F1, F2, and so on) on Mac keyboards serve as specific control keys, such as volume and brightness controls, and you must hold down the Fn key as you press the function key to trigger an alternate, application-specific function. If you want to set function keys to be used for alternate functions without having to press the Fn key, choose **Apple menu** > **System Preferences** and click **Keyboard**. Then click the **Keyboard** tab and choose **Use all F1, F2, etc. keys as standard function keys**.

Remove Parallels Desktop

To remove Parallels Desktop, open your Applications folder and drag the Parallels Desktop application to the Trash.

Adding and Removing Devices

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

- virtual hard disk drive
- CD/DVD drive
- floppy disk drive
- network adapter
- printer port
- sound device
- USB controller
- serial port

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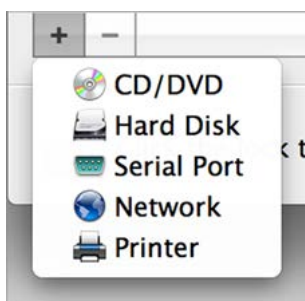
4 If you selected any device except for a hard disk, the corresponding device with a typical configuration is added at once and ready for use.

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 your Mac to the existing image file or the path and name for the new image file. By default, Parallels Desktop offers to save the new image file in the virtual machine PVM bundle.

- 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. 131).
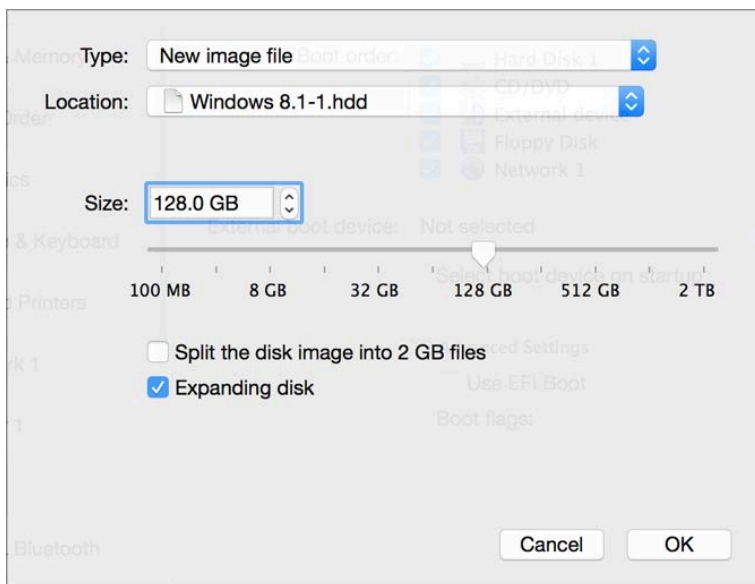
Click **OK**, to add the hard disk. After you added a new virtual hard disk to the virtual machine configuration, it will be invisible to the operating system installed inside the virtual machine until the moment you initialize it. For detailed information on how to initialize the newly added hard disk, see **Initializing the Newly Added Disk** (p. 132).

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 **Actions** 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.

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.

plain	A plain virtual hard disk image file has a fixed size. The size is determined when the disk is created.
expanding	An expanding virtual hard disk image file is small initially. Its size grows as you add applications and data to the virtual hard disk in the guest OS.

When you create a virtual machine, the disk is created in the *expanding* format. You can change the disk format in the **Hard Disk** pane of the **Virtual Machine Configuration** dialog. To add a *plain* hard disk to your virtual machine, clear the **Expanding disk** option when adding a hard disk to the virtual machine.

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 Desktop can access real CD/DVD discs and images of CD/DVD discs.

Parallels Desktop has no limitations on using multi-session CD/DVD discs. A virtual machine can play back audio CDs without any limitations on copy-protected discs.

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

Parallels Desktop supports CD/DVD disc images in the ISO format.

Note: DMG disk images made with macOS Disk Utility are also supported by Parallels Desktop. When creating such an image, make sure you create a *read-only* and *uncompressed* image without any encryption.

Floppy Disks and Floppy Disk Images

Parallels Desktop can use two types of floppy disks:

- Real diskettes inserted into a real floppy disk drive that is connected to the virtual machine.

- Floppy disk image files having the `.fdd` extension and connected to the virtual machine.

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

Initialize a 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. To learn how to initialize the newly added hard disk, please refer to the help resources of the operating system installed in the virtual machine.

Tips and Troubleshooting

If you're having trouble using Parallels Desktop, check this section for possible solutions.

In This Chapter

Install Parallels Tools for Seamless Operation Between Windows and macOS

Many issues with using Parallels Desktop can be solved by installing Parallels Tools.

Parallels Tools help you work with Windows in the most comfortable and efficient way. With Parallels Tools, you can:

- Move the mouse seamlessly between Windows and macOS

- Synchronize the Windows time and date settings with those of macOS

- Share your macOS disks and folders with Windows

- Copy text and drag and drop objects from macOS to Windows

> **Important**: Once you install Parallels Tools and restart Windows, you don't have to do anything else. Parallels Tools automatically just work, without any action or configuration on your part.

To install Parallels Tools:

1   Start Windows (p. 15).

2   Choose **Actions** > **Install Parallels Tools** and follow the onscreen instructions.

For more information on installing and updating Parallels Tools, see Parallels Tools for Windows (p. 119).

Find Settings

If you want to change a setting in Parallels Desktop but you aren't sure where to find the setting, you can search for it by doing the following:

1   Do one of the following:

- Click the Parallels icon in the menu bar and choose **Configure.**

- Click **Actions** in the Parallels Desktop menu bar at the top of the screen and choose **Configure**.

2   Type a word or phrase in the search field. Any settings related to your search are highlighted.

Restore Virtual Machine Default Settings

When working with a virtual machine, you can change different virtual machine settings, such as an amount of memory, video memory, number of CPUs, sharing settings, etc. To restore default settings:

1   Do one of the following (the virtual machine must be shut down):

- In **Control Center**, right-click the virtual machine you want to configure and click **Configure**.

- If the virtual machine window is open, click **Actions** > **Configure**.

2   In the virtual machine configuration dialog, find the pane with the settings that you want to restore and click **Restore Defaults**.

Memory Usage Problems

The amount of Mac's 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 operating system. You can configure the guest OS memory amount in the **CPU & Memory** pane of 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 **Graphics** pane of the virtual machine configuration dialog.

- *Virtual Machine Monitor* is the module responsible for the guest operating system virtualization. It consumes memory to perform operations of guest virtual devices and performs 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.

Memory Overcommitment

If you have several virtual machines running simultaneously and you are trying to start one more virtual machine, you may come across the memory over commit. If so, Parallels Desktop informs you with the corresponding message. 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 so they consume less memory.

Windows Seems Slow

If Windows performance seems slow, try the following:

- **Quit applications and programs you aren't using:** If you run a number of memory-consuming applications and programs simultaneously, Windows performance may become slow. Quit any applications that you aren't using. You can also use Activity Monitor (located in the macOS Finder in Applications > Utilities) to see how much of your Mac's memory each application is using. That way, you'll have a better idea of which applications cause performance to degrade the most.

- **Change how much memory is allocated to Windows:** Parallels Desktop is set to allocate a certain amount of your Mac's available RAM memory to Windows and the rest to macOS. If too much memory is allocated to Windows, macOS may slow down, which in turn can cause Windows programs to slow down because they're running on top of macOS. If, on the other hand, too much memory is allocated to macOS, then macOS applications may run well but Windows programs might slow down.

  To optimize the performance of both Windows and macOS, set the memory allocated to Windows (p. 48) to be somewhere within the recommended range, indicated by the graphic under the memory slider in the **CPU & Memory** configuration panel.

- **Antivirus software may slow down your virtual machine:** Windows may become slower after you install antivirus software. To be protected, you have to sacrifice performance.

  Note: Do not install more than one Windows antivirus program.

- **Run fewer virtual machines at once:** If you are running multiple operating systems at once using Parallels Desktop, stop one or more of them to improve performance of the others.

- **Run Windows locally:** If you start Windows stored on an external storage device connected to your Mac (for example, an external USB disk drive), its performance will be lower than if it were stored on your Mac.

- **Tune Windows for speed:** To speed up Windows, select **Tune Windows for speed** in the **Optimization** pane.

- **Disable log messages:** If you select **Use detailed log messages** in the Advanced pane of Parallels Desktop Preferences, Parallels Desktop will start 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.

Pressing Ctrl+Alt+Del

As a Windows user, you might know that you can press the Ctrl+Alt+Del key combination to make available troubleshooting options, such as starting the Task Manager or changing a password.

To mimic pressing Ctrl+Alt+Del in Parallels Desktop:

- Press fn+Ctrl+Option+Del.

My Password Isn't Working

If Parallels Desktop doesn't accept your password, try the following:

- Be sure that Caps Lock is not on. If Caps Lock is on, an indicator appears in the password field. To turn Caps Lock off, press the Caps Lock key.
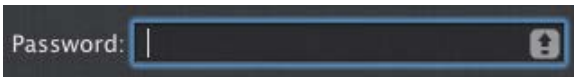
- Be sure that the keyboard is set to the correct language. If the keyboard is set to a language that doesn't belong to the group of Romance languages, an icon in the password field indicates the keyboard language setting.

My Virtual Machine Doesn't Boot

If your virtual machine doesn't boot correctly, most probably it's because there isn't any operating system installed. To install an operating system, do the following:

1 Prepare the OS installation media:

- If you have an OS installation disk, insert it into the DVD drive of your Mac.

- If you have a USB drive with the OS installation files, connect it to your Mac.

- If you have a disk image, copy it to your Mac.

2   Restart the virtual machine by doing one of the following:

- Click **Actions** > **Restart**.

- Click the Parallels icon ‖ in the menu bar and choose **Actions** > **Restart**.

3   And follow the onscreen instructions.

I'm Having Problems Connecting to the Internet

When you install Windows, it is automatically configured to share your Mac's Internet connection. For details on configuring Windows' network and Internet connection, see the section on connecting to the Internet or a network (p. 46).

I'm Having Problems with Antivirus Software

Because of the close integration between Parallels Desktop and macOS, some Parallels Desktop processes may be detected as malicious by antivirus software installed on your Mac.

To prevent the antivirus software from blocking Parallels Desktop processes, perform a full system scan using the antivirus software, and then if no viruses are detected, add the Parallels Desktop processes to the list of trusted processes. For information on how to do this, refer to your antivirus software Help.

> **Important:** The names of Parallels Desktop processes usually start with `prl` or `parallels`.

The F8 Key Isn't Working Correctly

In macOS, the F8 key and Ctrl+arrow key combination are reserved for triggering Spaces (a feature that lets you organize your windows on multiple desktops). Because of this, the F8 key and Ctrl+arrow key may not function correctly with Windows programs.

If you are experiencing this problem, change the **Spaces** hotkeys settings. See Mac Help for more information. From the Finder, choose **Help** > **Mac Help** or **Help** > **Help Center** and search for "Spaces."

Checking the Build Number

To check the version and build number of the Parallels Desktop software you are using, do one of the following:

- Click the Parallels icon ‖ in the menu bar and choose **About Parallels Desktop.**

- If the Parallels Desktop menu bar is visible at the top of the screen, choose **Parallels Desktop** > **About Parallels Desktop**.

A window appears showing the build number.

Send Technical Data to Parallels

To help improve the quality of Parallels Desktop, you can send technical data to Parallels.

If Windows is forced to shut down because of an error, Parallels Desktop automatically opens a **Send Technical Data** form. If you notice unusual behavior in Parallels Desktop, you can also send technical data manually.

To send technical data:

1   Do one of the following:

- Click the Parallels icon ‖ in the menu bar and choose **Help** > **Send Technical Data**.

- Click **Help** in the Parallels Desktop menu bar at the top of the screen and choose **Send Technical Data**.

2   Describe what you were doing when the problem occurred, and fill out the form.

> **Note:** You can review the problem report components that will be sent to the Parallels support team and deselect some of them in the **Technical Data Report Details** window, if desired. To open this window, click **See Details**.

If Parallels Desktop auto-generates a technical data report, the report window contains the **Send a solution to me when available** option. After the report is sent, Parallels engineers start investigating the problem. When they find any workaround or get any news about the reported issue, you will be notified by email.

3   Click **Send Report**.

Parallels team uses error reports to improve the product quality but doesn't respond to them.

Get Support

If you have any question or problem with Parallels Desktop, you can find an answer or solution in the following places:

- Parallels Desktop knowledgebase articles;
- Parallels forums;
- Parallels Desktop documentation;
- Parallels Facebook and Twitter;
- contact the Parallels support team (phone, email, chat).

To get more info about the items mentioned above, visit the Parallels support center:

1   Do one of the following:

- Click the Parallels icon ‖ in the menu bar and choose **Help** > **Support Center**.
- Click **Help** in the Parallels Desktop menu bar at the top of the screen and choose **Support Center**.

Glossary

This glossary defines terms and spells out abbreviations used in Parallels Desktop documentation. References to terms defined elsewhere in the glossary appear in *italics*.

Administrator. A user with administrative privileges.

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.

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 new format. Disks of virtual machines that were created or used in Parallels hardware virtualization products starting from version 3.0.

Expanding format. A virtual hard disk format. An expanding virtual hard disk image file resides on your host computer and is small initially. Its size grows as you add applications and data to the *virtual machine*.

FireWire connection. A wired connection that enables a high-speed data transmission between computers.

Guest operating system (guest OS*).* An operating system installed inside your virtual machine.

Host computer: The computer that is used to run virtual machines. In case of Parallels Desktop for Mac, it is your Mac.

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.

Modality. One of the view modes you can use to work with Windows. In Modality mode, the Windows desktop appears in a window and scales in size as you resize the window. Also, you can set this window to always stay on top of other windows, and you can adjust its transparency level so you can see through it when you're working with other applications.

OS. Operating system.

Parallels Desktop for Mac. An application that enables you to create, manage, and use *virtual machines* on your Mac.

Parallels Tools. A set of Parallels utilities that ensures a high level of integration between the *primary* and the *guest* operating systems.

Plain format. A virtual hard disk format. A plain virtual hard disk image file resides on the *host computer* and has a fixed size that cannot be changed.

Preboot Execution Environment (PXE). An environment to boot computers using a network interface independently of available data storage devices (like hard disks) or installed operating systems.

Primary operating system (primary OS). Operating system that controls the I/O devices of the computer and that is loaded when the physical computer is turned on. It is the operating system of the physical computer where the Parallels Desktop application is installed.

Processor. The central processing unit, or *CPU*. It is an internal part of the computer.

PVS file. A virtual machine *configuration file* that contains information about the virtual machine resources, devices and other settings.

Shared networking. Virtual machine network connection mode that allows the *virtual machine* to use the *host computer* network connections. In this mode, the virtual machine is invisible to other computers on the network the host computer belongs to.

Shortcut. A user-defined key or combination of keys that provides quick access to applications and commands. See also *Hot key*.

Snapshot. A copy of the virtual machine state at a particular point of time. The files related to snapshots are stored in a special subfolder in the virtual machine's folder.

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 macOS and GNU/Linux operating systems, a utility that enables you to access the command line.

Third-party virtual machine. A virtual machine created in a third-party virtualization product.

Virtual hard disk (virtual disk). A file that emulates the virtual machine's hard disk.

Virtual Machine. The computer emulated using Parallels Desktop. A virtual machine has its own virtual hardware and requires an operating system to control its hardware. The installed operating system and its applications are isolated inside the virtual machine and share physical hardware resources of the *host computer*.

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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