

Run a Second Copy of Windows – Without Needing Another Computer!

This article shows you how to:

- ✓ Have a ‘virtual PC’ available for safe surfing, testing and experimenting
- ✓ Install any version of Windows in the free VirtualBox
- ✓ Set up and use your new virtual computer

Do you ever wish you had a spare PC handy, perhaps to surf the Internet safely, experiment with Windows, or try out new software away from your main PC? All you need is the free VirtualBox program and a copy of Windows to install, and your ‘extra PC’ is just a double-click away whenever you need to use it – running in its own window on your PC’s screen! In this article, I’ll explain the steps to follow to get this extra copy of Windows installed and ready to use.



• Introducing VirtualBox and ‘Virtual Machines’	V 300/2
• Step 1: Install the Free VirtualBox Software	V 300/5
• Step 2: Prepare Your First Virtual Machine	V 300/6
• Step 3: Install Windows on Your Virtual Machine	V 300/8
• Step 4: Gain Vital Features with the ‘Guest Additions’ ...	V 300/12
• Step 5: Extra Settings: Drag-and-Drop & Shared Clipboard	V 300/14
• Using Your New Virtual Machine	V 300/15

Introducing VirtualBox and 'Virtual Machines'

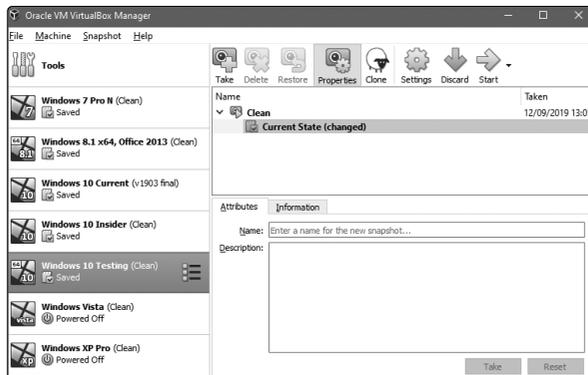
A second computer has various possibilities

A useful point about having a second computer is that you don't mind too much if something goes wrong with it. You won't keep your important documents on it, so if the worst happens to it, you can erase its hard drive and reinstall a fresh copy of Windows to start again. That means you can play fast-and-loose with it:

- Use it for testing new software to see whether it deserves a place on your main PC.
- Experiment with Windows, trying out various settings or discovering how things work, all without risking your day-to-day computer.
- Use it to browse the Internet, safe in the knowledge that a malware infection – although obviously unwelcome – wouldn't be a disaster.

A 'virtual' computer saves money and desk space!

The trouble is, you don't have the space for a second PC and you certainly don't fancy the expense of buying one! This is where a free program named VirtualBox steps in. Using VirtualBox, you can install extra copies of Windows which run in a window on your main PC's screen – so-called 'virtual machines'.



The screenshot on the previous page shows my own copy of VirtualBox, and you can see at the left that I have seven virtual machines (or VMs for short) running various versions of Windows. When I want to use one of these, I just double-click its name and it starts.

Have as many VMs as you like

You can see the result in the screenshot of my desktop below. I've just started my Windows 7 virtual machine, and it appears in a window on my desktop. You can see Windows 7's familiar taskbar at the bottom of the window and the Recycle Bin icon at the top-left: it's a completely normal Windows 7 desktop.

They run in a window on your desktop

In fact, it really is Windows 7, but rather than running on a separate PC, it's running in a window on my main PC. And just as if it were a separate PC, I can start programs on it in the usual way (I've started Windows Explorer in the screenshot below), I can use it to browse the Internet, I can download and install programs, and so on. But whatever I do happens only in this 'virtual' copy of Windows and doesn't affect my main PC.

Use a VM just like a real PC



The requirements for VirtualBox

Now, before we go any further, I should tell you a few extra things about VirtualBox and its requirements. First, you can only install VirtualBox in Windows 10, 8.1 or 7 and it must be a 64-bit edition – if you're still using Windows Vista or XP, or you use a 32-bit edition of Windows, you're out of luck. However, you can install absolutely any version of Windows on a virtual machine, and it can be either 64-bit or 32-bit. So, for example, perhaps your main PC is running Windows 8.1; you can create a virtual machine running Windows 10, or Windows 7, or even the ancient Windows 95. (In fact, you can install pretty much any operating system besides Windows, such as Linux, Solaris or Mac OS X.)

The more RAM you have, the better!

Next, you'll ideally need at least 4 GB of RAM in your PC. At the moment all your RAM is all devoted to running your main PC, of course, but when you start up a virtual machine, that VM needs memory too, and it will take a chunk of your PC's RAM. That could be as little as 500 MB if you're installing Windows XP in a VM, but something like Windows 10 ideally needs 2 GB to run well. In a nutshell, then, you need enough RAM that when you start your VM, both versions of Windows that are running will have enough RAM. (If you think you might install two VMs and run both at the same time, you'll need more RAM still, of course.)

Each VM takes up to 10 GB of disk space

You'll also need a reasonable chunk of free space on your hard drive. Although VirtualBox itself doesn't take up much space, the virtual machines you create do. Since a virtual machine contains a Windows installation, it will take about 6 – 10 GB for any of the recent Windows versions. (A virtual machine is essentially one very big file.)

You need a copy of Windows to install

Lastly, you'll need a way to install whatever version of Windows you want in a virtual machine. To install Windows 10, for instance, you'll need a Windows 10 installation DVD.

Ideally, too, you'll need a 25-character 'product key' to enter during the installation to prove this copy of Windows is properly licensed. Without this, depending on which version you're installing, either the installation won't proceed, or you'll find that Windows nags you about being 'non-genuine' and disables certain features.

An alternative to an installation DVD is something called an 'ISO file'. This is effectively a DVD packed into a file and can be used in much the same way as an installation DVD. If you'd like to install Windows 10, you can visit tinyurl.com/nwvexuv and click on **Download tool now** to download Microsoft's Media Creation Tool and select the option to create an ISO file that can be used to install Windows 10.



Step 1: Install the Free VirtualBox Software

The first job, which is quick and straightforward, is to download the VirtualBox software and install it on your PC. Start your favourite web browser and visit the URL below:

www.virtualbox.org

Click the huge **Download VirtualBox 6.0** button and, on the next page, **Windows hosts** to download the setup file for VirtualBox.

Run the program you've just downloaded and follow the steps through the setup program. There are no tricks or catches to beware of, just leave everything set as it is (although you might prefer to refuse the option of creating a shortcut to VirtualBox on the desktop in the third step).

At the end of the installation, you can choose whether or not you want to start VirtualBox now – we'll need it in a

**Download
VirtualBox...**

**...and install it
on your PC**

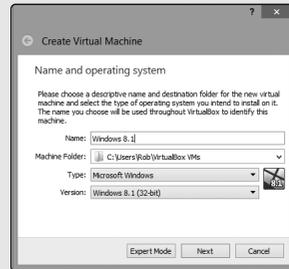
moment, of course. In future, whenever you want to use it, you'll find it listed on your Start menu or Start screen as 'Oracle VM VirtualBox'.

Step 2: Prepare Your First Virtual Machine

With VirtualBox installed, we're ready to start setting up your virtual machine. The first step of that is to create an empty VM with the correct settings for the version of Windows you're planning to install on it. Here's what to do:



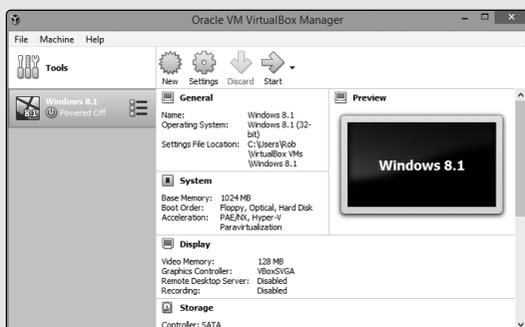
1. Start VirtualBox, if it isn't already running, then open the **Machine** menu top-left and choose **New**.
2. In the dialog that appears, start by typing a name for your new VM in the **Name** box. It makes sense to name it after the version of Windows you'll be installing.
3. The **Machine Folder** specifies where this VM will be saved on your PC, and there's no need to choose a different folder unless you really want to keep it elsewhere. (If you do, open the drop-down list and choose **Other** to select it.)
4. The **Type** should be left at **Microsoft Windows** unless you're installing some other operating system, such as Linux or Solaris.
5. Open the drop-down list labelled **Version** and choose the precise version of Windows you want to install, e.g 'Windows 8.1 (32-bit)' or 'Windows 10 (64-bit)'.



6. Click the Next button to move to the next step.
7. In this step you choose how much of your PC's RAM you want to devote to this VM when it's running. VirtualBox has already set this to the recommended amount for the version of Windows you've just specified, but you can choose less if your PC is short of RAM (and you're willing to put up with your VM perhaps running a bit sluggishly), or more if you have plenty of RAM and you want to ensure your VM runs well. You can change the figure by dragging the slider, but a better approach is to type a different figure into the box to the right. (Note that the figure is in megabytes, and 1024 megabytes is 1 gigabyte.) Having done this, click Next.
8. In the next step, make sure **Create a virtual hard disk now** is selected and click **Create**. The step that follows offers a choice of 'Hard disk file types' and the selected option, VDI, is fine – leave that selected and click Next.
9. In the next step, leave **Dynamically allocated** selected and click Next. The following step confirms the folder in which your VM's virtual hard disk will be saved and its initial size. This is all fine as it is, so click **Create**.

How much of your RAM can this VM use?

Create a virtual hard disk



Finished

10. That takes you back to the main VirtualBox window, pictured on the previous page, where you'll see your new VM listed at the left. It's shown as 'Powered Off' because it isn't currently running. This VM is currently selected in that list on the left (because it's the only item in the list) and as a result you can see its various settings in the main section of the window on the right.

Step 3: Install Windows on Your Virtual Machine

You're ready to install Windows

That's got an empty virtual machine created, and it's ready for you to install a copy of Windows in it. Let's get on with that now. Grab your Windows installation DVD (or, if you're installing from an ISO file, make sure you know where it is) and follow these steps:

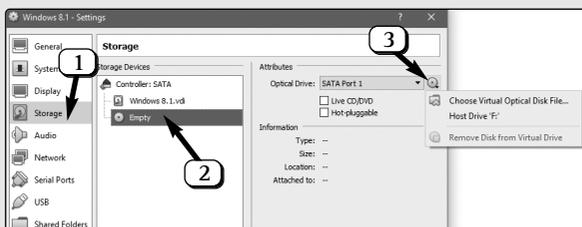


Tell VirtualBox to load your DVD (or ISO file)

1. If you're installing from a DVD, insert that disc into your PC's DVD drive. (If you see a pop-up asking what you want to do with this disk, close or ignore it.)
2. With your new VM selected at the left of the VirtualBox window, open the **Machine** menu at the top and choose **Settings**.
3. This opens the Settings dialog for your new VM. At the left of the dialog, click on **Storage** **(1)**.
4. In the middle section of the window, click the blue DVD icon with the word **Empty** beside it **(2)**.
5. Over to the far-right of the window you'll now see another blue DVD icon **(3)**. Click that icon and a menu opens:
 - If you're installing Windows from a DVD, choose **Host Drive 'F:'** (or whatever drive letter your DVD

drive has been assigned), telling VirtualBox to use the disc you've inserted in your DVD drive.

- If you're installing Windows from an ISO file, select **Choose Virtual Optical Disk File**. In the standard dialog that appears, browse to and select your ISO file and click **Open**.



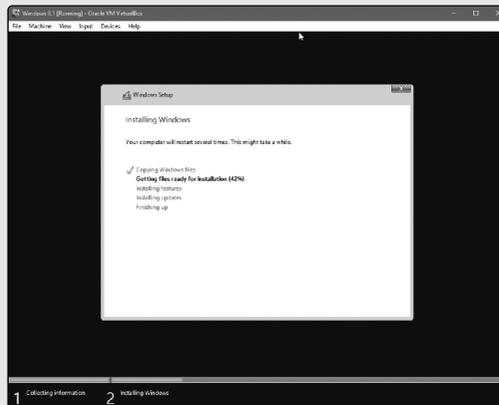
6. Click **OK** to confirm the changes and close this Settings dialog. What we've just done is to insert a disc into your 'virtual computer' – either telling it to use the DVD in your real PC or to use your ISO file. Now, just like any real PC, when we start your VM it will 'see' that disc and offer to install Windows from it.
7. Now we're ready to start your virtual machine and install Windows. Double-click your VM at the left of the window (or, if you prefer, choose **Machine > Start > Normal Start**).
8. A window will open containing your VM as it starts running and you'll briefly see the VirtualBox logo filling it. When that disappears, keep watch for the words **Press any key to boot from CD or DVD** in white at the top of the window: if you see those, tap any key at all on your keyboard.
9. You should see signs that your Windows installation DVD (or ISO) is starting – a Windows logo, or a 'Loading' progress bar or something similar – and you're on your way.

**Start your
virtual machine**

**Boot from
the DVD**

Start the Windows installation

- From here, I can't tell you precisely what to expect, since the installation routine varies from one version of Windows to another. However, at an early stage you should be asked to choose your language and your time and currency format, both of which should be **English (United Kingdom)** if possible, and your keyboard layout which should be **United Kingdom**. You'll see an option to 'Install now' (or something similar), and that's certainly what you want to do.
- You'll probably be prompted to enter your 25-character product key for Windows, and you may well arrive at a choice between 'Upgrade' and 'Custom', in which case you want to choose **Custom** (since your VM's hard disk is currently empty and has nothing to upgrade from!). You'll then be asked where you want to install Windows, and there should be only one option to choose, noted as 'Drive 0 Unallocated Space' with a total size of 40 GB.
- Now the installation starts, and it's just a matter of sitting back and waiting for this stage to complete.



From this point onwards, you might find that your mouse pointer seems to be stuck inside this VM window: if you try to drag it out it just gets stuck at the edge. The solution (which we'll be able to fix later on) is to tap the **Ctrl** key at the right-hand side of your keyboard. VirtualBox refers to this as the 'Host key' and it releases the mouse pointer to let you move it anywhere on your screen.



13. During the installation, your VM will restart once or twice. When it does, just leave it to get on with it: don't press any keys or click anything.
14. After perhaps 10 to 20 minutes you'll find yourself in the final stages of the Windows installation, when it asks you to choose some preferences. There's nothing complicated here (these are the general, friendly options you see when you buy a new PC and switch it on for the first time), but again they vary from one version of Windows to another so I can't tell you exactly what to expect. Along the way, however, you'll certainly be prompted to either sign into Windows with a Microsoft account or (in Windows 7 and earlier) set up a username and password for your PC. If you're installing Windows 10 or 8.1, I recommend signing into it with the same Microsoft account you use on your main PC.
15. You'll know when the installation is complete because you'll be prompted to sign into your Windows account and/or you'll arrive at your new desktop. Congratulations – you now have a working virtual machine!
16. There's one last little job to do. The DVD (or ISO) is still 'inserted' in this VM and we don't want to leave it there, so open the **Devices** menu at the top of the

**Choose your
Windows
preferences**

**You arrive at
your desktop**

Eject the DVD

VM window, move to **Optical Drives** and choose **Remove disk from virtual drive**. Having done that, you can now eject the DVD from your PC's drive, if that's what you were using. If you were using an ISO file, you could delete that, but you might like to hang onto it in case you need to use it again in future – something depends on whether you can afford the 2–3 GB it occupies.

Step 4: Gain Vital Features with the 'Guest Additions'

A program that adds features to the VM

While your new VM is running, there's one more thing we want to do, and that's to install something called the 'Guest Additions'. Effectively we'll be installing a program on this 'virtual PC' which adds some vital extra features to your VM.

The most important feature is one I mentioned earlier. You may be finding that your mouse gets stuck inside the VM's window until you press the right (**Ctrl**) key, and these Additions put an end to that: your mouse will behave the same way inside this VM window that it does inside any other.

Besides that, it allows you to enable two useful features we'll set up a little later, Drag-and-Drop and Shared Clipboard, and it lets you resize your VM window by dragging its corner, just as you resize any other window.



The Guest Additions are only available for VMs running Windows XP, Windows 2000 and later. If you've installed an earlier version of Windows, such as Windows 98, I'm afraid you'll have to live without their benefits.

To get these Guest Additions installed, here's what to do:

1. At the top of the VM window, open the Devices menu and choose Insert Guest Additions CD image. As you might guess, this is an ISO file that behaves like a CD, and this step ‘inserts’ it into your virtual PC’s CD drive, which causes it to start running.
2. After a few seconds you’ll probably see a pop-up asking what you want to do with this disk (although, as usual, what you’ll see depends on which version of Windows you’ve installed in your VM). Click that pop-up and choose the option:
Run VBoxWindowsAdditions.exe.



Run the installer for the ‘Guest Additions’

Bear in mind that your VM runs more slowly than your main PC, so things take somewhat longer to happen. If this pop-up doesn’t appear after a minute, or something goes wrong, you can press  +  to open File Explorer (aka Windows Explorer in Windows 7 and earlier), make your way to **This PC** or **Computer** or **My Computer**, and double-click the **CD drive** icon to start the installation.



3. Confirm the User Account Control prompt (assuming you’ve installed Windows Vista or later), and then it’s a simple matter of clicking **Next** twice followed by **Install**. You may see dialogs asking if you want to install certain items, and your answer should always be ‘Yes’ or ‘Install’.
4. At the end of the installation, your VM will need to be restarted, so make sure the **Reboot now** option is selected before clicking **Finish**, then wait while your VM restarts (after which you’ll have to sign into its copy of Windows again, of course).

Restart your virtual PC...

...and eject the CD you were just using

5. Once again, the virtual CD containing those Guest Additions is still inserted into our VM's CD drive, so eject that: open the **Devices** menu, move to **Optical Drives**, choose **Remove disk from virtual drive**.
6. That's got this stage finished, and you'll find that your mouse now moves freely in and out of your virtual machine's window.

Step 5: Extra Settings: Drag-and-Drop & Shared Clipboard

Two useful features

Now we reach an optional stage, but it's one I recommend. It's to switch on two useful features for your VM:

- **Drag-and-drop**: this will let you drag files and folders between your main PC and your VM to copy them from one to the other.
- **Shared clipboard**: your VM will share the clipboard of your main PC, meaning that you could copy some text to the clipboard on your main PC and then paste it into a window in your VM, or vice versa.

To switch on either or both of these features, follow these steps:

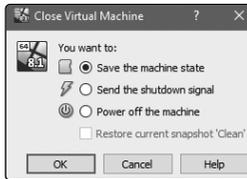


1. At the top of your VM's window, open the **Machine** menu and choose **Settings**.
2. Make sure **General** is selected at the left of the **Settings** dialog, then click the **Advanced** tab in the right-hand section.
3. Here you'll see the two items we're concerned with: **Shared Clipboard** and **Drag'n'Drop**. For each one you want to enable, open the drop-down list and choose **Bidirectional**.
4. Finally, click **OK**.

Using Your New Virtual Machine

All done – you’ve got your virtual machine installed and set up, and it’s currently running in a window in front of you. Now let’s fill in some of the gaps in your knowledge about actually using it.

First, when you’ve finished using it for now, what do you do? Simply click the **x** in its top-right corner as you quite likely do when you’ve finished using other windows. With your VM, however, it doesn’t close immediately. Instead it shows a dialog asking what you want to do and giving you three options:



- **Save the machine state:** this is the recommended option. It closes your VM but saves its current state (much like putting it to sleep), so that next time you start it you’ll be straight back to where you were. It will be listed as ‘Saved’ in the main VirtualBox window.
- **Send the shutdown signal:** this shuts down Windows in your VM and then closes the window, so that next time you use the VM you’ll have to wait for Windows to start up again and sign in. It will be listed as ‘Powered Off’ in the main VirtualBox window.
- **Power off the machine:** don’t use this unless you have to! It effectively ‘cuts the power’ to your VM, closing it without giving Windows the chance to shut down.

Whichever you choose, your VM is no longer running (and thus no longer using any of your main PC’s memory or processing power). You can then close the main VirtualBox window.

When you want to start the VM again, start VirtualBox and double-click your VM’s name (or select it and choose **Machine > Start > Normal Start**).

Your VM is ready to use

How to close it when you’ve finished

Recommended: put it to sleep

Shut it down and turn it off

Force it to close (if you must!)

Start it again when you need it

Create as many VMs as you need

You can create as many of these VMs as you like: the only sacrifice is the disk space (perhaps 10 GB) that each occupies on your hard drive. However, if you do have several VMs, remember that each one you start is taking its assigned portion of memory from your main PC, so you may not have enough RAM to start more than one at a time.

You can delete one if it goes wrong

One of the great things about VMs, as I mentioned earlier, is that you can use them to do potentially risky things – trying out new software or visiting websites. That’s because you can always dump a VM and recreate it if necessary: it takes some time (as you know, because you’ve just done it!) but it’s possible. To delete a VM, right-click its entry in the main VirtualBox window, choose **Remove**, then choose **Delete all files**.



One extra thing worth knowing about VirtualBox is that new versions are released every so often. When this happens you’ll see a pop-up message: click the link to download it, then run the program you’ve downloaded to upgrade, much as you did on page 5. Doing this doesn’t affect your virtual machine(s) in any way.

As you might have gathered from looking at the program, there’s an awful lot more you could learn about VirtualBox (although nothing you really must know). For example, it has a ‘snapshots’ feature which lets you save the state of a VM, allowing you to restore that state at any time in the future (thus dumping its current state): you might create a snapshot of a VM at an early stage to avoid having to delete it if it ever gets messed up.

Learn more in VirtualBox’s user manual

VirtualBox comes with a comprehensive user manual in which you can learn anything more you want to know. In the main window, press the **(F1)** key or choose **Help > Contents**.