

Study Unit 8

Introduction to Information Technology (IT) Support

Study Unit Outline

1. Introduction to IT Support
2. Managing Software and Hardware
3. Personal Computer Performance Maintenance and Diagnostics

Study Unit Duration

This Study Session requires a 2 hours of formal study time.

You may spend an additional 2-3 hours for revision

Introduction

This Study Unit will introduce the concept of Information Technology Support. Learners will clearly be able to define and identify computer software and as well as hardware, Explain and define Personal Computer Performance Maintenance and diagnostics. Further, they will know the essential skills of an IT Support Specialist, managing installation and uninstalling software application and backup and restoring in windows 10.

Learning Outcomes of Study Unit 8

After completing of this study unit, you should then be able to:

- 1.1 Describe the roles, tasks and tasks of IT Support
 - 1.2 Manage Software and Hardware Installations
 - 1.3 Diagnose and oversee the performance and maintenance of PC using Diagnostics tools
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8.1 Introduction to IT Support

What is Information Technology (IT)? To put it simply, IT is in essence the use of technologies, like smartphones, computers, and the internet, to store data and process it into useful information. Here, we mentioned digital technology because that is an important aspect of IT. Thus, to understand a great deal of this module, you will need a good grasp CS1.2 [Digital Technology - that was discussed in Study Units 1-3 of this course] as a pre-requisite module for this module.

So, the wide range of resources and jobs that are related to computing technologies within a society is basically refers to IT. And this field has a lot of different types of jobs, from hardware technicians who replace and repair components, to software engineers who ensure computers perform specific tasks, to desktop support personnel who make sure that end users can effectively use the software. But information technology is about people, not just computers and the Internet. IT support is all about that. Collaboration, sharing, and collaborating to build things together are all ways that IT is transforming the world. People and organizations that do not have access to information technology are at a disadvantage in today's society. IT skills are becoming increasingly important in everyday life, such as finding a job, obtaining an education, and examining your health.

8.1.1 Who is an IT Support Specialist?

An IT support specialist is professional ensures that a company's technology infrastructure is in good working order. This encompasses computer equipment management, installation, maintenance, troubleshooting, and office configuration. This course will expose you to the role of an organization's IT support expert. This should get you ready for a job in IT help desk support at the entry level.

Essential Skills in IT Support Specialist

In this course, you'll discover how to set up a user's desktop or workstation, as well as how to install the most often used computer programs. When something goes wrong, you'll learn how to fix it or troubleshoot it, as well as how to set up procedures to prevent such problems from occurring again. You'll learn how to connect with people in order to effectively assist them, in

addition to studying the technical parts of resolving a problem. These are the basic and essential skills of an IT Support specialist

To start with, let us learn some basic task on a PC, how to correctly turn on or off a computer system.

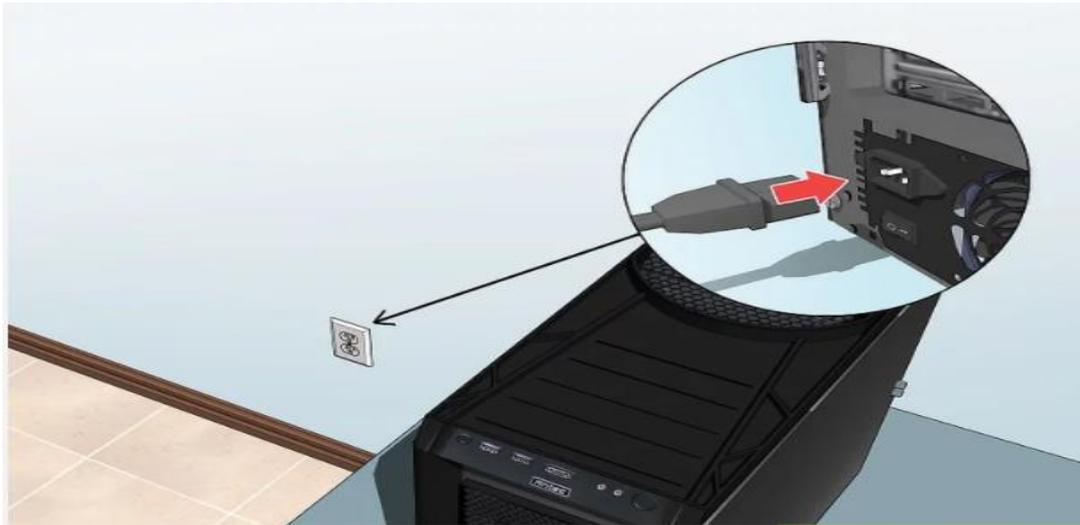
8.1.2 Basic Task on a Personal Computer

Turning on a computer: Using a user name and password to start a computer and log on safely

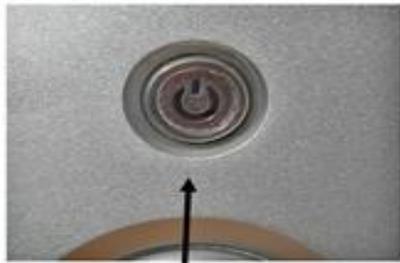
You need to ensure that the monitor and device are both plugged into a power source. in order to turn on a computer. Easy right, but often, people forget this move and come really worried that their systems have not switched on. And here are the correct steps of turning on your computer machine.

1. Make sure that the device (system unit) and visual display (monitor) are attached to a power source.





2. To turn the machine and the light on, press the on button.



This is a typical PC **on** button, on the front, in the middle of the tower



This is a typical laptop **on** button. Most laptops have the **on** button just above the keyboard but below the screen



3. When asked, enter a user name and a password.



4. After entering the right password, press the return key.

Logging off a computer correctly

Let's learn how to log off now that the computer system is switched on. Logging off is separate from the operating system being shut down. You only leave a user environment in the login screen environment when you log out of a computer system, where you can login with another user.

Here are the appropriate steps for a Personal Computer to log off:

1. To Log off a PC
2. Close all files and programs that are available.
3. Click the button for Windows or Start.

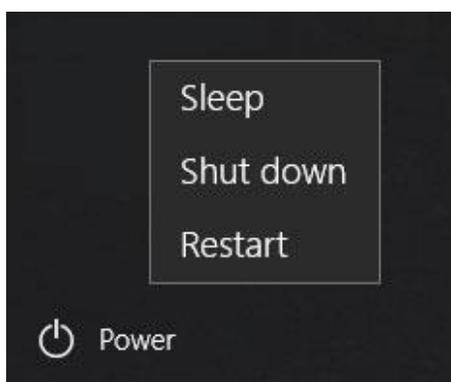


Figure 8.1: Shows the display on the monitor screen after clicking the window or start Button

4. Select the Power Button or select Shut Down.
5. Click Sign out or Log off

Putting your Computer on a Sleep Mode correctly

You may want to only stay away from your machine for a fleeting moment. And you don't want to turn it off or shut it off, you just want to switch it into sleep mode. In a few seconds, the sleep mode saves electricity and allows the machine to come alive again.

In order to allow a Personal Computer, go into sleep mode, here are the right steps:

1. Click the button for Windows or Start.
2. Select the Power Button or Sleep as shown in figure 8.1

Shut down a Personal Computer correctly

It is easy to shut down a computer, but often people do it the wrong way and therefore affect the files and programs that are accessible, and they can affect the operating system in very rare situations.

Here are the 3 quick steps to shut down the

1. Close all files and programs that are available. In the program browser, you can use the Close button or press Ctrl + X [for Windows].
2. Click the button for Windows or Start.
3. Click Power button and then choose the Shut Down button as shown in figure 8.1

Note: Sleep mode, unlike shutdown mode, does not require you to close files.

Correctly Restarting a computer

Now that we know how to shut down a machine, let's take a look at how to restart it. For a variety of factors, we may want to restart the machine. One common explanation is that a new software is installed and requires it, following a new update.

To do this:

- a. Close all files and programs that are available.
- a. Click the Windows Button to Start.
- b. From the Menu, press Restart as shown in figure 8.1

Note: You can also log off / sign off, shut down or restart a device using the Alt+F4 on your keyboard. After that, select from the drop-down menu and click the Return or Enter key as necessary.

8.2 Managing Software and Hardware

Software is any computer program that enables you to perform certain specific tasks on your computer. It directs the function of all the peripheral devices of the computer, including your

mouse, hard drive, monitor, and keyboard, etc. Without software, it would be impossible to operate the hardware.

The physical components of a computer, as well as related devices, are referred to as hardware. A perfect example of hardware is the screen on which you are viewing this page, without any hardware, your computer would not exist, and software could not be used

8.2.1 Installing and Uninstalling a Software Application

You will be faced with situations where users plan to install, upgrade or delete (i.e. uninstall) software programs in your position as IT Support.

Although we would first need to check whether a program or device exists to do this.

Installing a software: Mozilla Firefox

You must take the following steps to check whether or not a program is mounted on Windows before you install it. We call this verifying initial installation. For instance, let's say we intend to install Mozilla Firefox application, we do this following the following steps:

Step 1: At the end of the screen, in the left corner of taskbar, click the Start icon or hit the Window Key on the keyboard.

Step 2: Type "Programs and Features" Programs and Features (as shown in figure 8.7).

You can also use the right-click menu on the start or Windows icon, then at the top of the menu, click on "Programs and Functions." (See Figure 8.7)

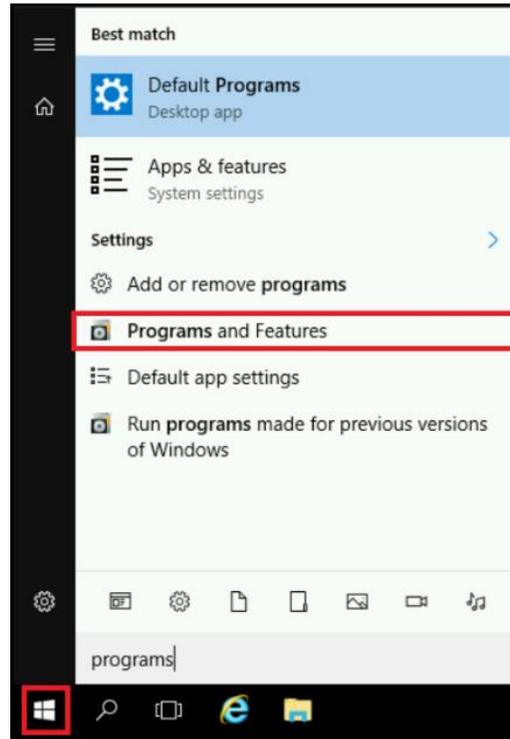


Figure 8.7: Shows a display after right-clicking on the window button

This will open the Control Panel of Programs and Features display, which will display a list of each program installed on the computer (see figure 8.8).

Name	Publisher	Installed On	Size	Version
GIMP 2.8.22	The GIMP Team	8/28/2017	291 MB	2.8.22
GooGet - googet		8/8/2017		2.9.3@2
GooGet - google-compute-engine-auto-updater		8/8/2017		1.2.1@1
GooGet - google-compute-engine-metadata-scripts		8/8/2017		4.1.6@1
GooGet - google-compute-engine-sysprep		8/8/2017		3.6.7@1
GooGet - google-compute-engine-vss		8/8/2017		1.1.0@4
GooGet - google-compute-engine-windows		8/8/2017		4.2.2@2
Google Cloud SDK	Google Inc.	8/8/2017		
VLC media player 2.0.1	VideoLAN	8/28/2017		2.0.1

Figure 8.8: Shows an opened control panel of Programs and Features

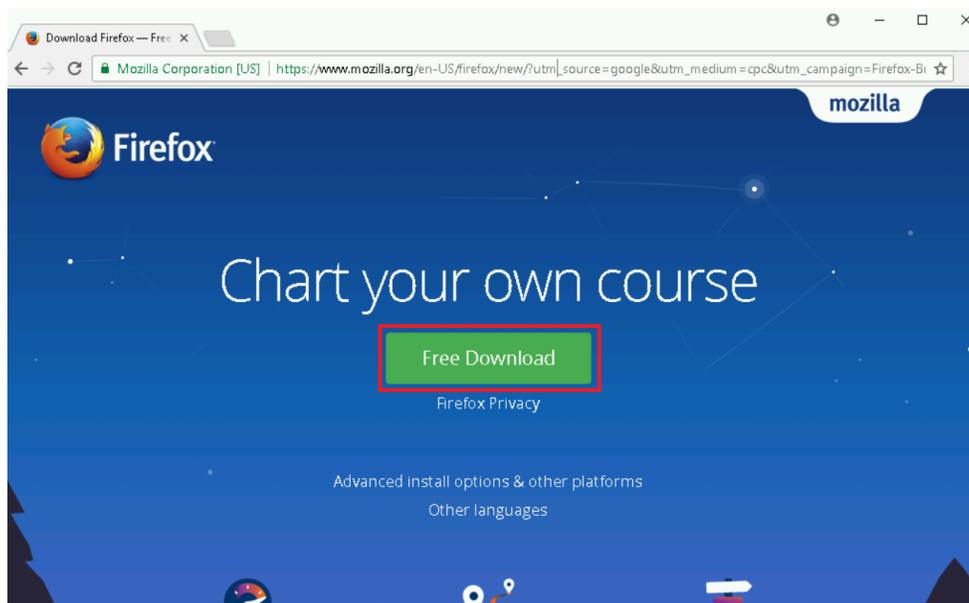
You can see that Mozilla app is not present by looking at this Window, so we know it is not actually installed. Similarly, we can see that both VLC and GIMP have been mounted already, so we are

able to continue. Notice that the version of VLC installed is 2.2.8; this is not the new version, so we are going to upgrade it later on.

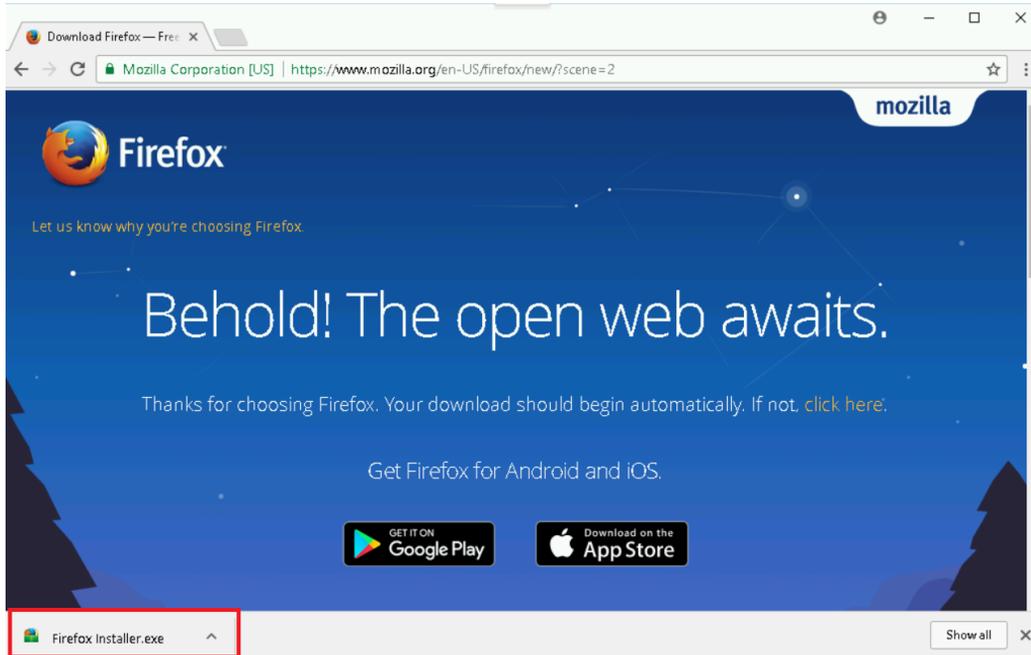
You need to then download the Windows installer from the Firefox website to install Firefox. To do this, on the desktop screen at the left side, double-click the Google Chrome icon and navigate to this url:

<https://www.mozilla.org/en-US/firefox/new/new/new/mozilla.org>

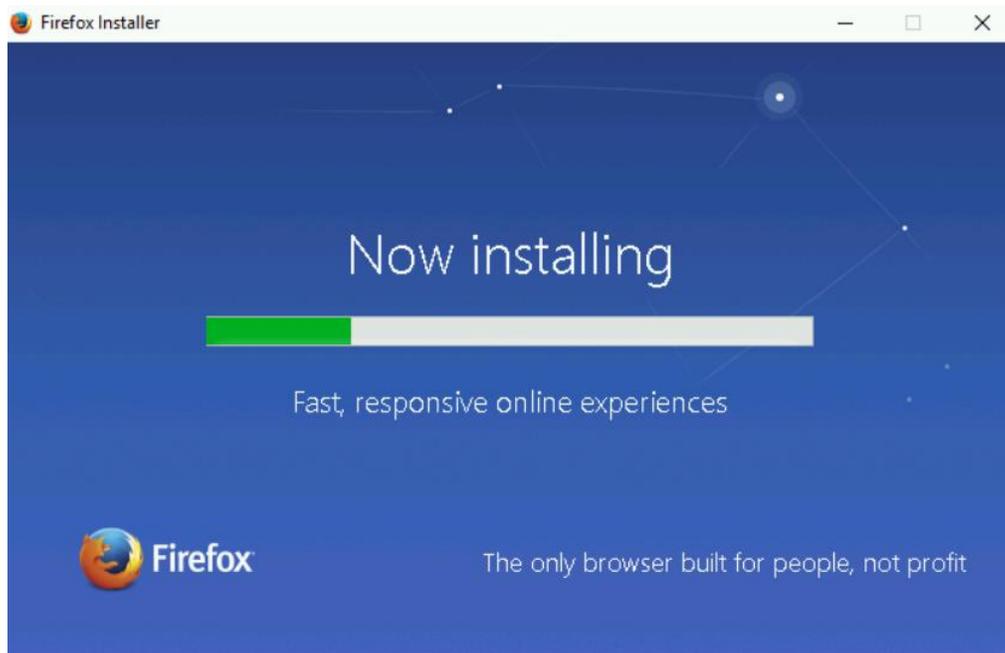
Click the "Download" icon from this site to download the installer.



Once the installation end, press the installer icon in the bottom-left side of the browser window.



This will open the installer and start the process of installation. If Windows asks if you would like to install it, press 'Yes' and the installer should open and begin.

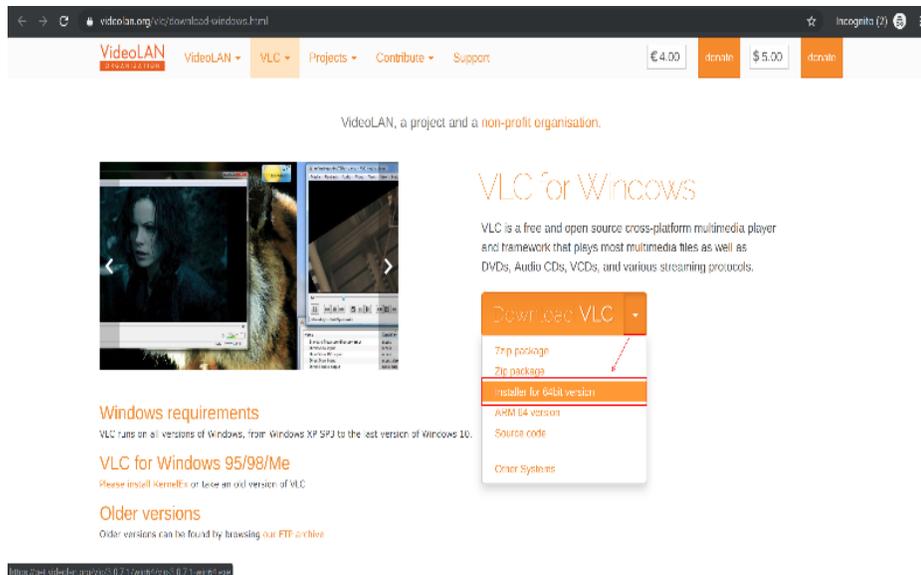


Regardless of any choices that arise during the installation process, click 'Next.' Wait for the end of this phase and Mozilla will be installed. A Firefox shortcut will be applied to your screen and you will be able to double-click it to access your newly updated tab.

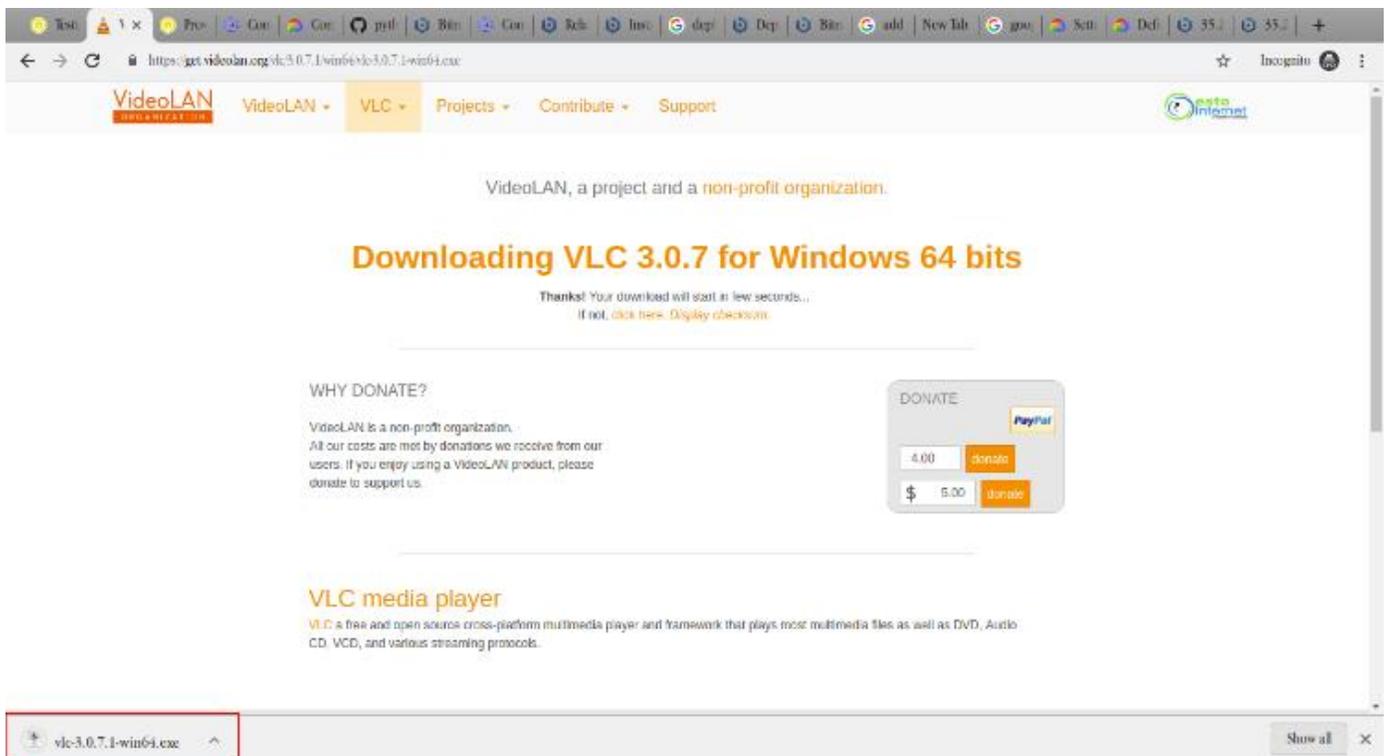
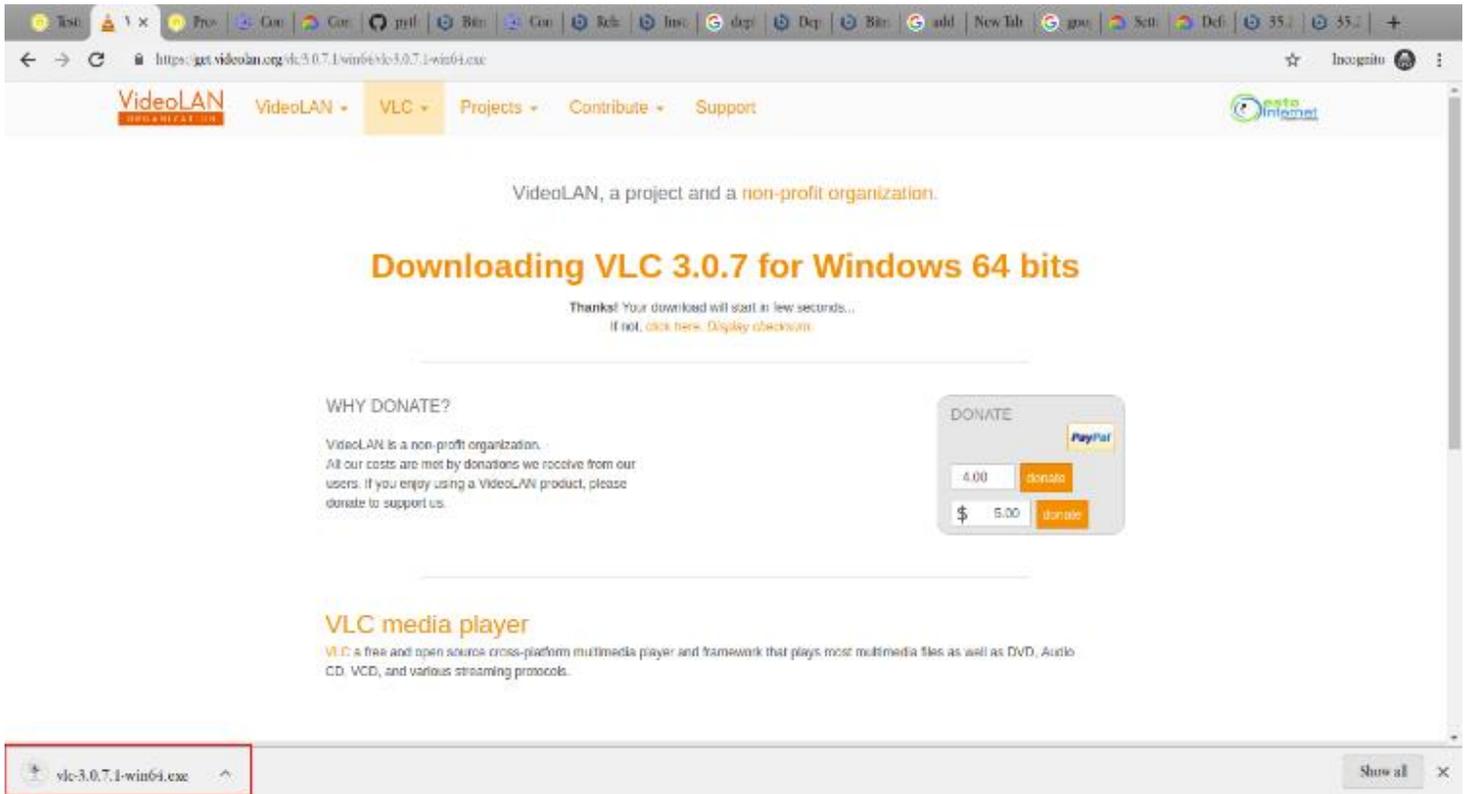
Congratulations! With Windows, you have now completed a "clean install" of applications. Simple enough, right? First, you can set up notifications for software that is already installed on your computer.

Updating a Software: VLC Media Player as Case Study

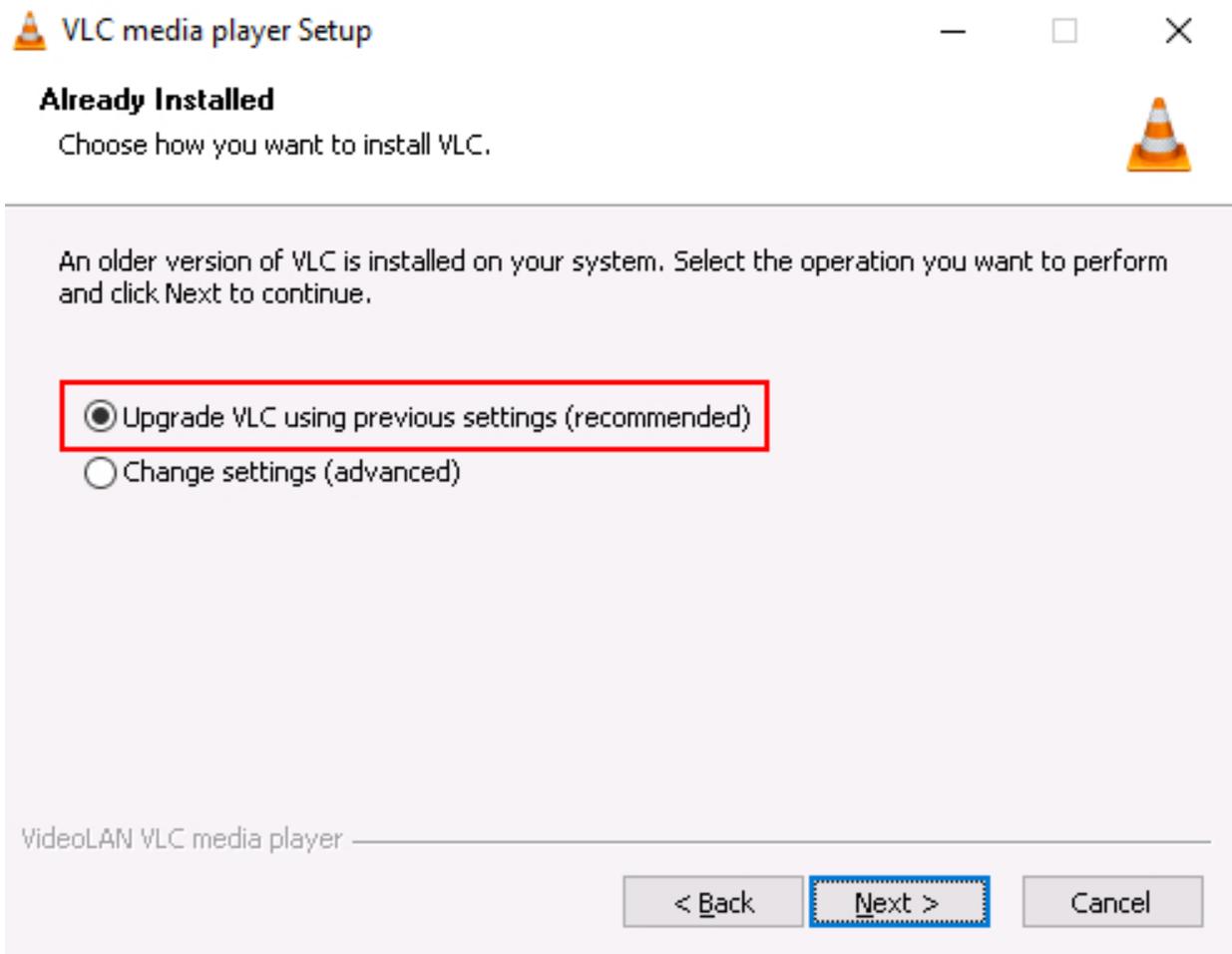
Let's say we found that an outdated version of VLC Media Player was already installed on the Windows that we are using. In this section, we're going to learn how to upgrade it on Windows. First, we will need to get an installer from VLC's website for the new edition. To download the installer, visit the URL below: <https://www.videolan.org/vlc/download-windows.html> Click the drop-down menu next to "Download VLC" and pick "Installer for 64bit version" and wait for the installer to finish installing.



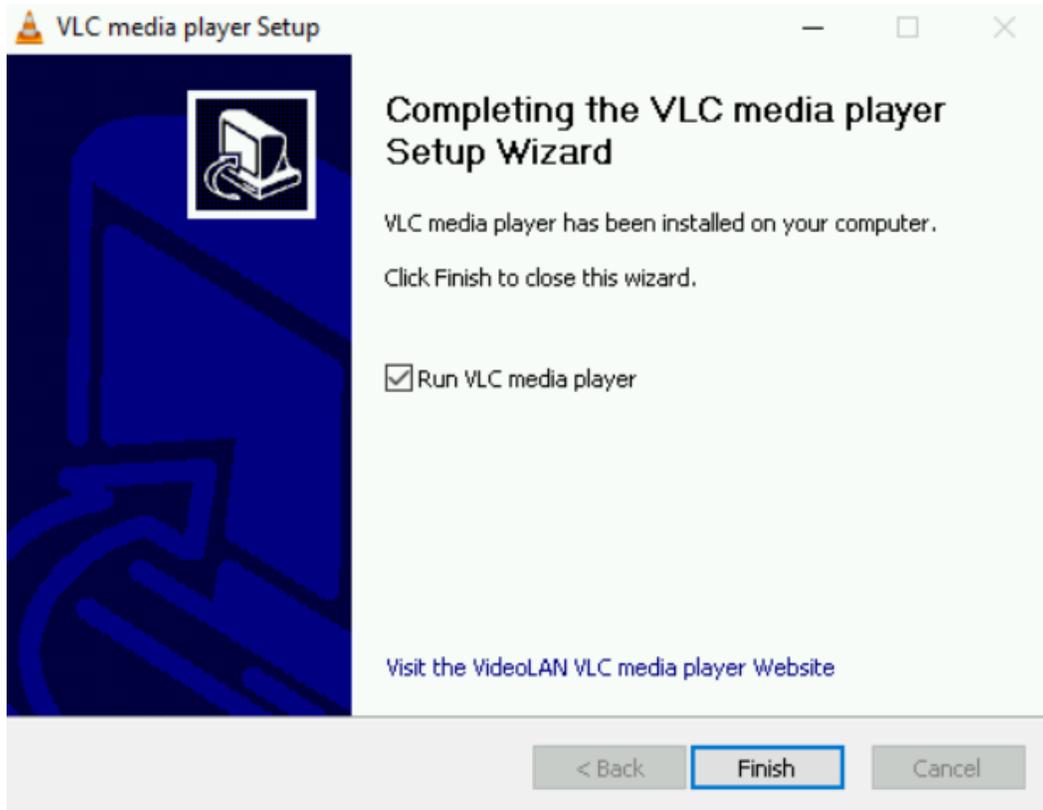
Upon completion, press the installer to open it (like you did for Firefox).



If the installer opens, select whatever language you're comfortable with, then press "Next" to begin the process. select "Upgrade VLC using previous settings(recommended)" and press "Next" A progress bar appears and continues the process of updating.

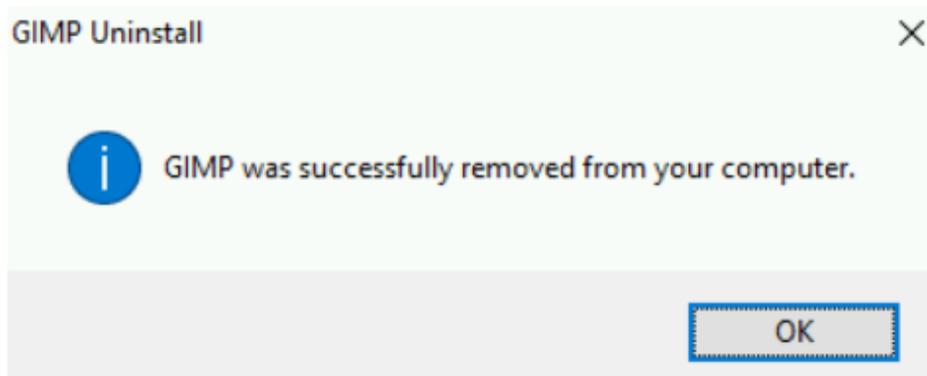


When the procedure is completed, a confirmation message will appear. Uncheck the option to run VLC, then to close the installer, press Finish.



Reopen the "Programs and Features" window and you can see that the new update is now available for VLC.

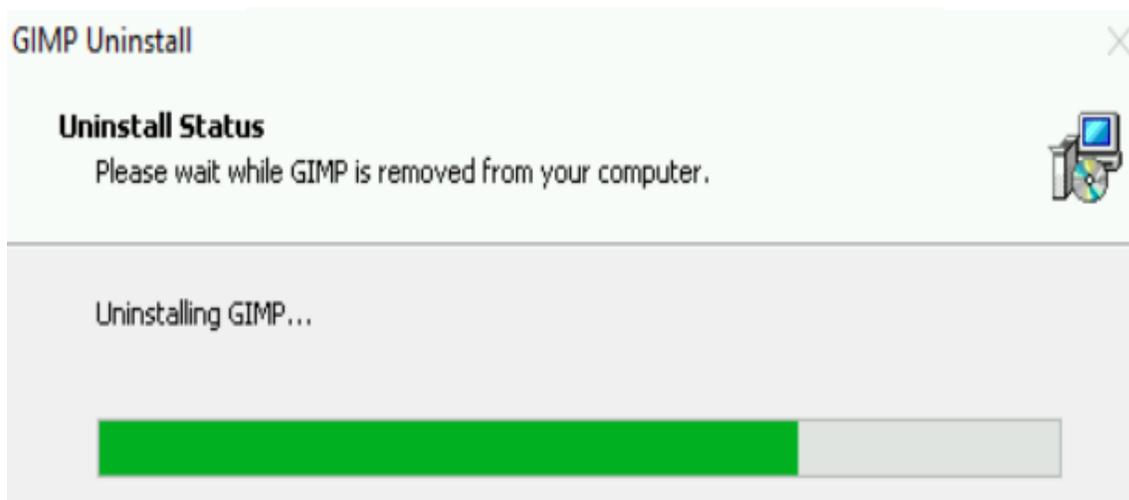
Name	Publisher	Installed On	Size	Version
 GIMP 2.10.12	The GIMP Team	7/23/2019	1.18 GB	2.10.12
 GooGet - googet		7/10/2019		2.16.5@1
 GooGet - google-compute-engine-auto-updater		7/10/2019		1.2.1@1
 GooGet - google-compute-engine-driver-gga		7/10/2019		1.1.1@7
 GooGet - google-compute-engine-driver-gvnic		7/10/2019		0.9.2@10
 GooGet - google-compute-engine-driver-netkvm		7/10/2019		16.1.2@11
 GooGet - google-compute-engine-driver-pvpanic		7/10/2019		16.1.2@11
 GooGet - google-compute-engine-driver-vioscsi		7/10/2019		16.1.2@11
 GooGet - google-compute-engine-metadata-scripts		7/10/2019		4.2.2@1
 GooGet - google-compute-engine-sysprep		7/10/2019		3.10.1@1
 GooGet - google-compute-engine-vss		7/10/2019		1.1.1@12
 GooGet - google-compute-engine-windows		7/10/2019		4.6.0@1
 Google Chrome	Google LLC	7/23/2019	56.4 MB	75.0.3770.142
 Google Cloud SDK	Google Inc.	7/10/2019		
 VLC media player	VideoLAN	7/23/2019		3.0.7.1



Uninstalling a software: GIMP

For different reasons, we will want to remove a program or application. We refer to this as uninstallation. It is quite easy to uninstall a program on Windows.

First, go back to "Programs and Features" and right-click the program that you want to uninstall (i.e. GIMP). There should be a single-item drop-down menu thus:



In the dropdown, press the "Uninstall" button. There will be a confirmation menu, asking if you are sure you want to continue. Click 'Yes' and the process of uninstallation will begin.

A validation menu will appear when this phase ends. It would be closed by clicking "OK" on that menu, and GIMP can no longer appear on the list of programs installed. This ends the step of uninstallation.

8.2.2 Assembling of Computer Hardware

Hardware, as previously said, is the physical component of computers that we can feel and touch. They are the parts that powers the software. Examples include CPU, Motherboard, RAM, drive

Component to Use

There are identical hardware components for any personal computer. Popular hardware components required for building a personal computer (PC) include:

Processor — Acts as the computer's 'brain.'

Motherboard — This serves as an interface between the components of your computer and the CPU.

RAM — Random Access Memory. More RAM will give you more "workspace" to improve the performance of your computer. Memory Random Access. To improve the output of your computer, more RAM would provide more "workspace" Think of RAM as a table: more RAM means more space on the table to do stuff. Having a smaller table is the same as having less RAM.

Hard drive — It stores data. You can purchase a standard hard disk, or if you want an incredibly fast drive, try going for solid state drive (SSD) which is pricier.

Power supply — All of your computer's individual components are powered by it. The power supply also serves as a link between your computer and the wall outlet into which it is plugged.

Graphics Card - Used on your computer to make pictures. You can acquire a dedicated graphics card if you plan to play games or use your machine for heavy editing and don't have a built-in graphics processing unit (GPU).

Cooling device - Maintains a comfortable temperature within the case. Standard PCs should be fine with a basic cooler, with gaming and editing PCs requiring additional cooling.

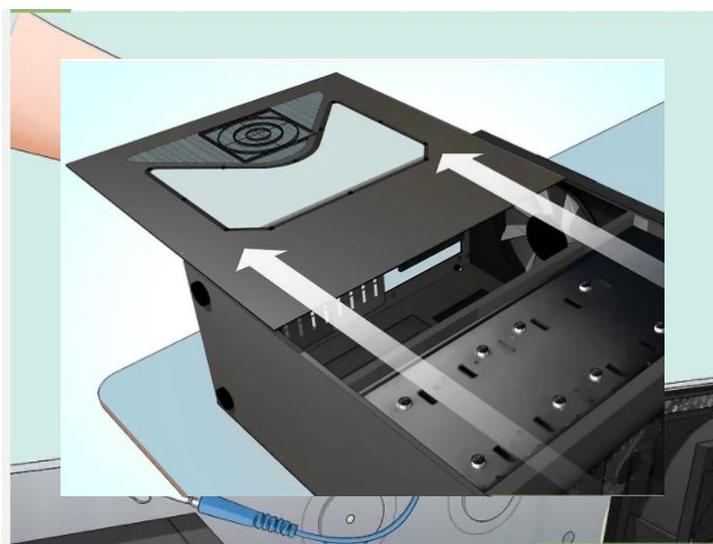
Assembling a computer

Step 1: Get grounded.

Use an antistatic wrist-strap wire to prevent electrostatic discharge (ESD), which can be harmful to gadget electronics. Contact a massive metal body and discharge yourself as an alternative.

Step 2: Get the case open.

To do so, unscrew (or move it into towards the back of the case) by the side plate.



Step 3: Power Supply Mount.

Some cases come with the power supply already equipped, while others require you to purchase the power supply separately and install it yourself. Ascertain that the power supply is oriented correctly and that the power supply fan is not obstructed in any way.

The power supply is usually located near the top or bottom of the case. You can figure out where the power supply should go by looking for a missing part on the rear of the box.

Step 4: Connect the motherboard to the components.

Because the casing can limiting when it comes to connecting these components, It is usually easier to perform before mounting the motherboard: Connect the following components in the following order:

- Connect the CPU to the motherboard by looking for a processor port on the motherboard's surface. An indicator on the CPU and motherboard can show the correct orientation. In other cases, you'll need to apply thermal paste to the CPU, followed by a heat sink and a CPU fan, as we'll see momentarily.
- By locating the RAM slots and correctly mounting the RAM, mount the RAM to the motherboard (only fits one way).
 - Power supply should be mounted to the power connectors on the motherboard.
 - Find (but do not attach) the hard drive SATA port of the motherboard. You are going to use this later to connect the hard drive to the motherboard

Step 5: Apply thermal paste to the processor if necessary.

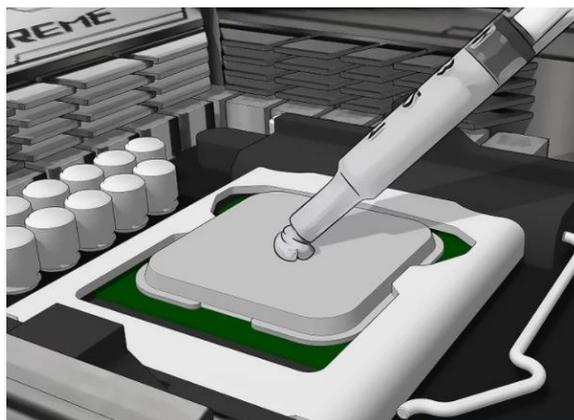
Put a small dot (around the size of a grain of rice or a pea) of thermal paste on the CPU. Adding too much thermal paste will create a mess, such as getting paste into the motherboard socket, which may short circuit components and decrease the motherboard's value if you plan to sell it later.



Some processors that come with heat sinks do not need thermal paste because the heat sink already has thermal paste applied by the factory. Check the bottom of the heat sink unit before applying paste to the processor.

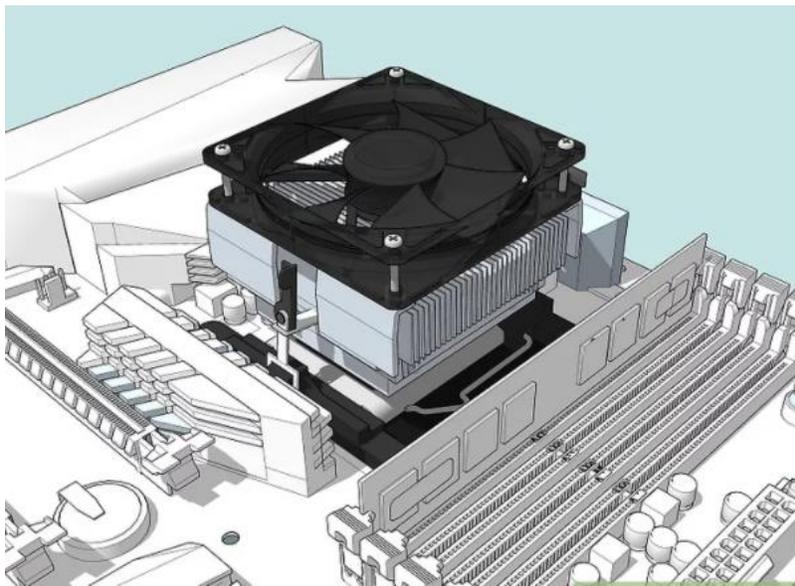
Step 6: Connect the heat sink.

This varies depending on the heat sink, so see your processor's documentation. The majority of stock coolers are clipped into the motherboard and are directly connected to the processor.



Aftermarket heat sinks may include brackets that must be mounted to the motherboard.

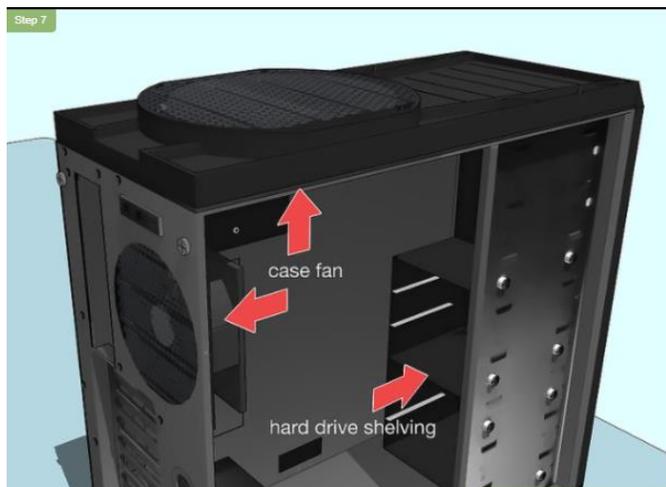
If your processor already has a heat sink, you can skip this step.



Step 7: Prepare your case.

You may need to knock the plates out of the back of the case in order to put the pieces into the correct places. Because your case contains separate shelving units for your hard drive, mount the devices using the provided screws.

You may need to install and wire your case's fans before you can add some components. If that's the case, follow your scenario's fan assembly instructions.



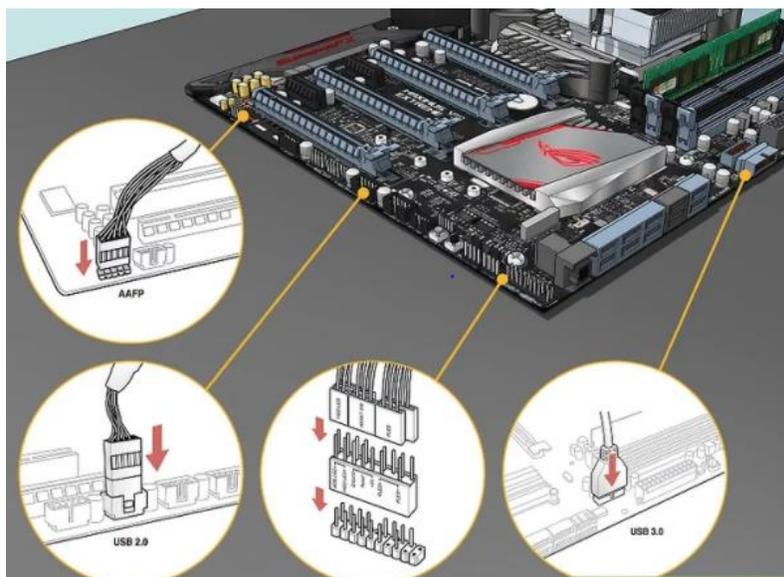
Step 8: Secure the motherboard.

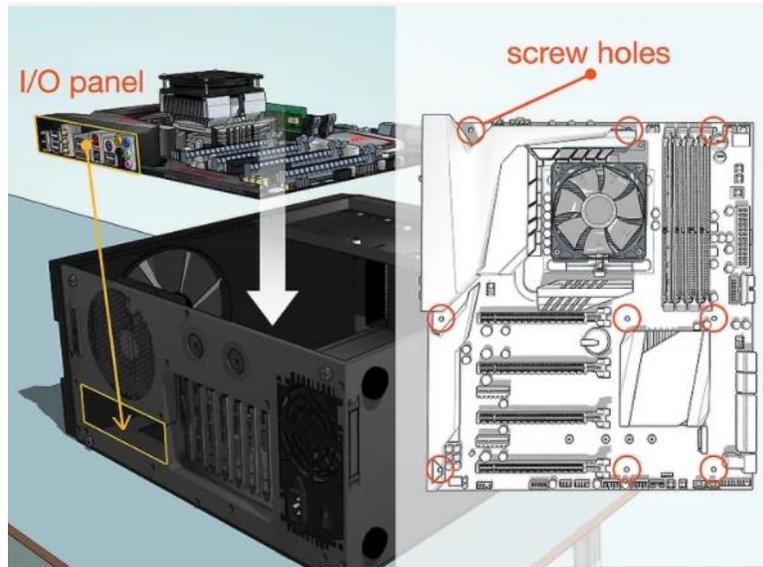
Install the motherboard in the case and press it against the back plate until the standoffs are in place. All of the rear ports in the I/O back plate should fit into the apertures. To secure the motherboard to the standoffs via the shielded screw holes on the motherboard, use the screws given

Step 9: Plug the connectors into the shell.

These look to be assembled on the motherboard at the front of the case. The sequence in which these are connected will be determined by which is the most basic. Check that the USB ports, control and reset switches, LED power and hard drive lamps, and audio cables are all in working order. The location of these cables on your motherboard will be shown in your motherboard instructions.

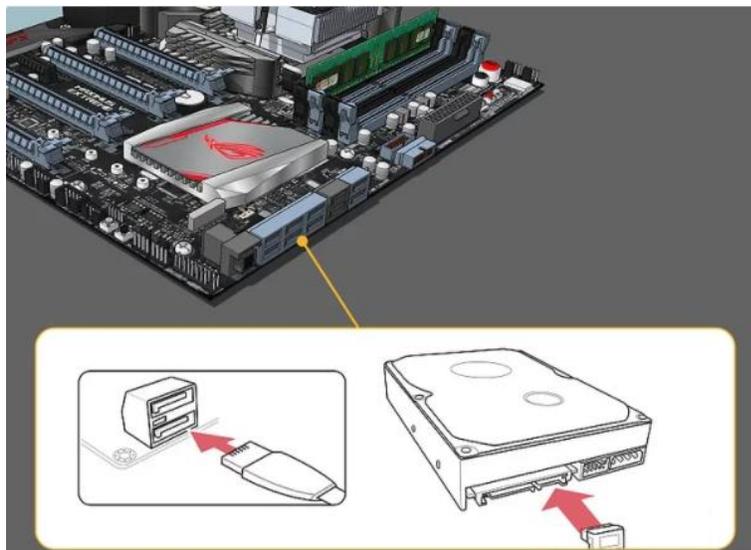
These wires usually only have one route to connect to the motherboard. Don't want to force something to match.





Step 10: Get your hard disk mounted.

Depending on the situation, this method can differ somewhat, however, it is commonly done as



follows.

- Delete all the case's front panels (usually install them at the top of the case if you are mounting an optical drive).
- Insert the hard disk into its designated slot (again, usually near the top of the case).
- Tighten any screws that are required to secure the drive in place.
- Insert the hard drive's SATA cable into the motherboard's SATA slot.

Step 11: Attach the power supply to any components required.

If the power supply has not already been wired to components that require power, make sure it is connected to the following locations:

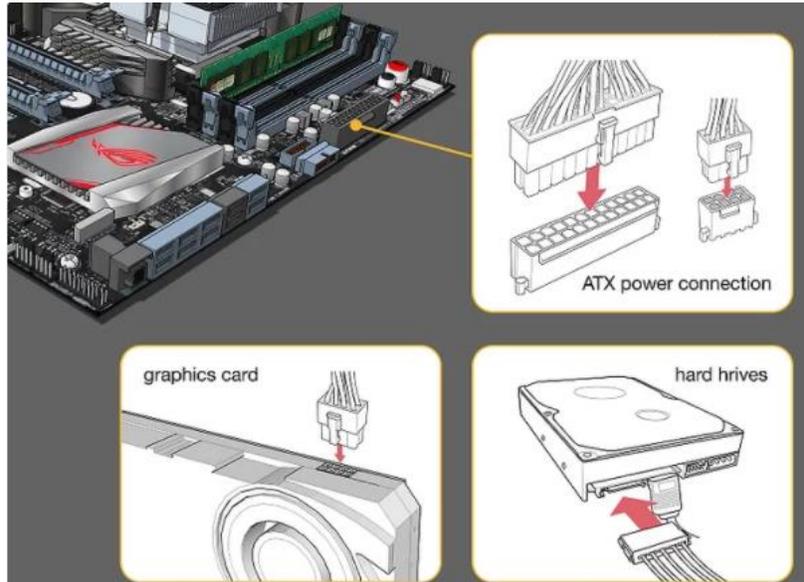
- a) Motherboard
- b) Graphics card (s)
- c) Hard-drive (s)

Step 12: Finish the assembly of your machine.

If the separate internal parts for your device have been mounted and wired, all that's left is to make sure none of the wires are in the way of airflow and close the case. You'll want to start by installing a cooling system if you haven't already. In order to do so, see the cooling system's installation manuals.

A plate that can be slid back into position or screwed to the case's side. would be available in many cases.

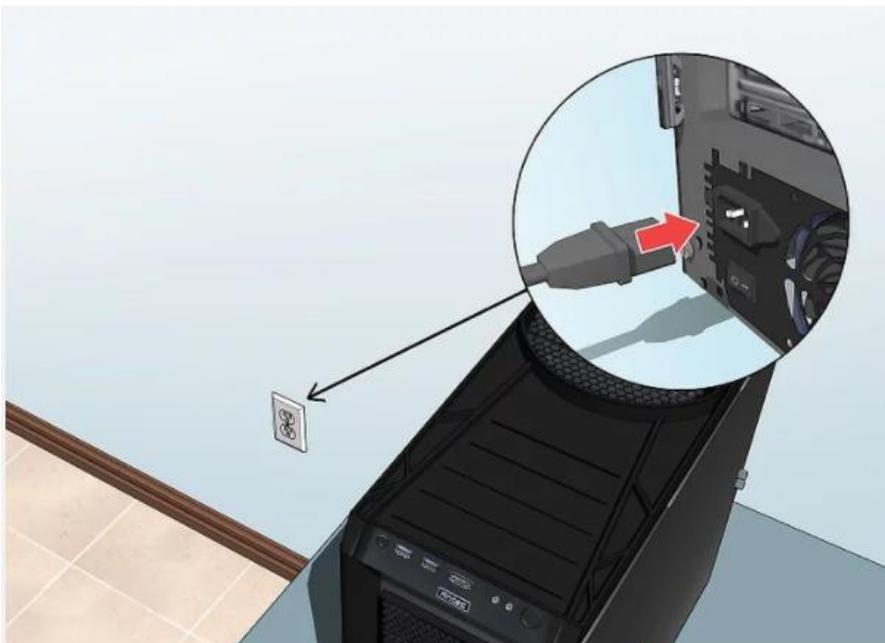




Step 13: Testing the Computer

Connect an outlet to your machine. Using the power chord that came with your power source, plug your device into a wall socket or power strip.

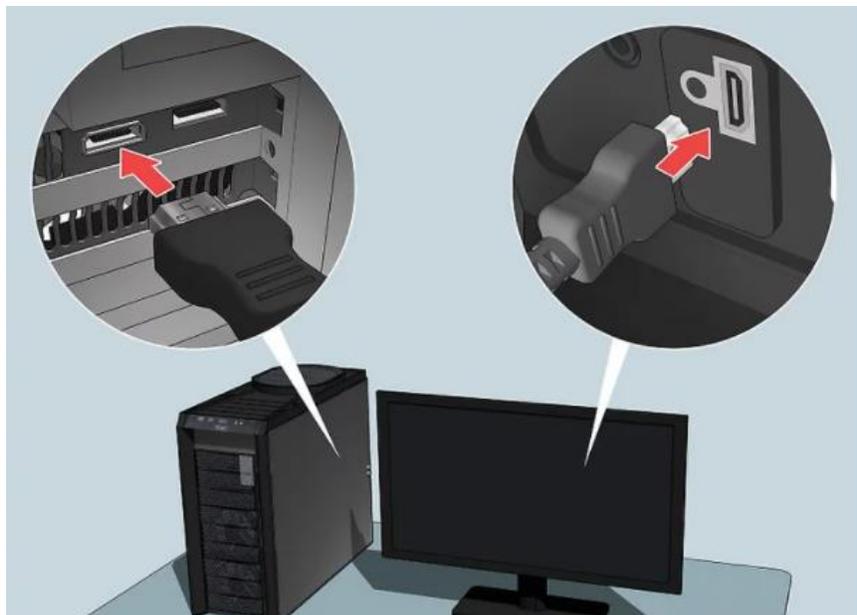
You may need to connect the power supply input to the electrical cord on the rear of your computer's case first.



Step 14: Connect your PC to a monitor.

The display of the graphics card is normally located at the bottom of the case, although for other motherboards, this port may be located on the right or left side of the case.

A DisplayPort or HDMI port is normally the output here.

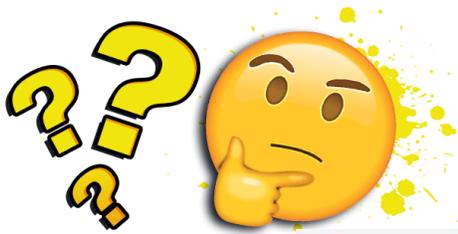


Step 15: Turn on your computer.

Click the Power button for the device on the front or back of the box. Your system should start up if everything is properly linked



Connect it from the power supply if you have complications during the boot process or if your machine fails to operate, reopen the case and check the connections again.



QUIZ:

Identify the missing parts:



Answer: _____

8.2.3 Three Common Troubleshooting on Hardware

The Blue Screen

After turning on a computer and you notice, you are seeing blue screen messages. Chances are one of your RAM is not well connected or faulty. So, kindly attempt to check it, correct or replace it. If problem persists, discuss with a system administrator or certified and experienced A+ technician

Long Beep Sound

This is sound is also usually from the RAM, it may refer to bad RAM or incorrect RAM.

“Non-system disk or disk error, replace and strike any key when ready” **Error.**

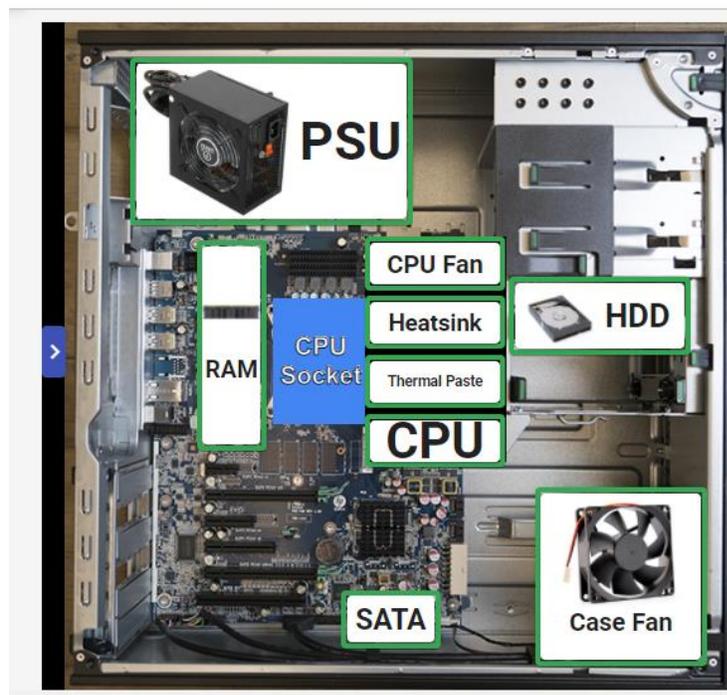
When you see the error *“Non-system disk or disk error, replace and strike any key when ready”*, you are almost certain the hard disk is not well connected or bad.

Date and Time Always Reset

When you experience a reset of data and time anytime you login, despite you changing it to the current time. This is probably a CMOS battery problem; you should replace it.

8.2.4 Printer Management

Printers are some of the common devices that an IT support will need to know how to handle. So, basic knowledge of printer management such as installing, uninstalling and testing a printer is required.



Install a printer

- Click the Start button.
- Click Devices and Printers.
- Simply Click add a printer.
- Adhere to the wizard's directions.

Uninstall a printer from your computer

- ✓ Click the Start button.
- ✓ Click on Devices and Printers
- ✓ Select the printer.
- ✓ Remove the device by right-clicking and selecting Remove device.
- ✓ To confirm removal, click yes.

Print a test page

- Right-click a printer.
- Click on printer properties.
- Click Print Test Page on the General tab.
- Click the OK button.

Set the default printer from an installed printer list

- Click on the Start button.
- Open Devices and Printers by clicking on it.
- Selecting a printer you want to set the default printer.
- Right-click on the printer and select Set as Default Printer.

Print a document from a word processing application

- Click the File button, in an open document.
- Select Print.
- Click Print.

8.3 Personal Computer Performance Maintenance and Diagnostics

Checking Personal Computer performance and diagnosing issues on a Personal Computer (PC) are some of the activities a specialist in IT support would face. If your PC suffers from slow boot

times, device failures, or other machine issues, you will need to know what software or tools to use to fix this condition.

8.3.1 Internal or Inbuilt Tools for PC Maintenance and Diagnostics

Task Manager

If your PC slows down or your apps stop working, use Task Manager in Windows 10 to locate and kill the programs that are causing the problem. Task Manager is a powerful tool included with Windows 10 that provides a number of tabs for tracking your computer's operating applications, processes, and services. However, you may find yourself utilizing the Processes tab more than anything else since it allows you to quickly observe how machine resources are used and may be quite useful for troubleshooting programs or determining why your computer is running slowly. In this section, we'll show you how to utilize Task Manager to find processes and to keep your computer at top speeds by stop these processes that use large amount of system resources,

How to handle high-resource operations using Task Manager

Opening Task Manager

If you wish to utilize Task Manager to examine and stop high-resource utilization programs, you must first learn how to access the tool. The Task Manager may be accessed in a variety of ways:

- On the Taskbar, right-click and click Task Manager.
- Go to Start, run a task management scan, and then hit Finish.
- Use the Ctrl + Shift + Esc keyboard shortcut.
- Press Task Manager on your keyboard using the shortcut Ctrl+Alt+Del.

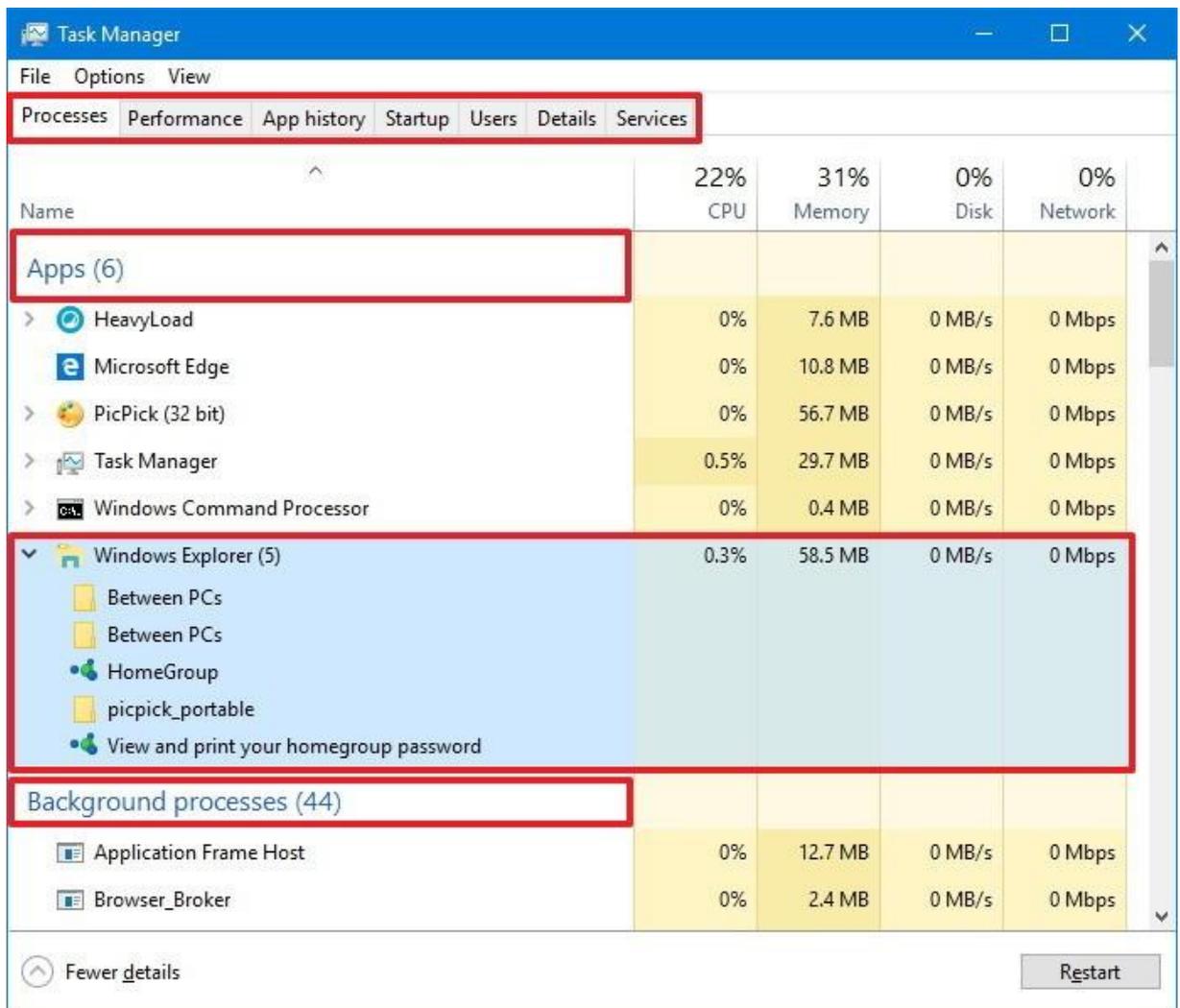
Use the Windows key+X keyboard shortcut to enter the power-user menu, then press Task Manager.

It's likely that the Task Manager will open in compact mode, which lists only running apps, when you first start it. Press the More Info button to open Task Manager in advanced mode.

- Task Manager advanced mode (left), Task Manager compact mode (right) (right)

Understanding the Processes tab

You can see a variety of tabs when you are in advanced mode, including "Performance", "App history", "Startup", "Users", "Details", "Services" and the "Processes" tab, the one we are interested in. The Processes tab is usually the first place you go to see which system is consuming your machine's resources. This tab presents all operating processes in a single view, organized by 'Apps,' 'Context processes,' and 'Windows Processes.' On Windows 10, you can also locate many instances or other systems within the same framework, allowing you to better understand how they're controlled and how they use the machine's tools.

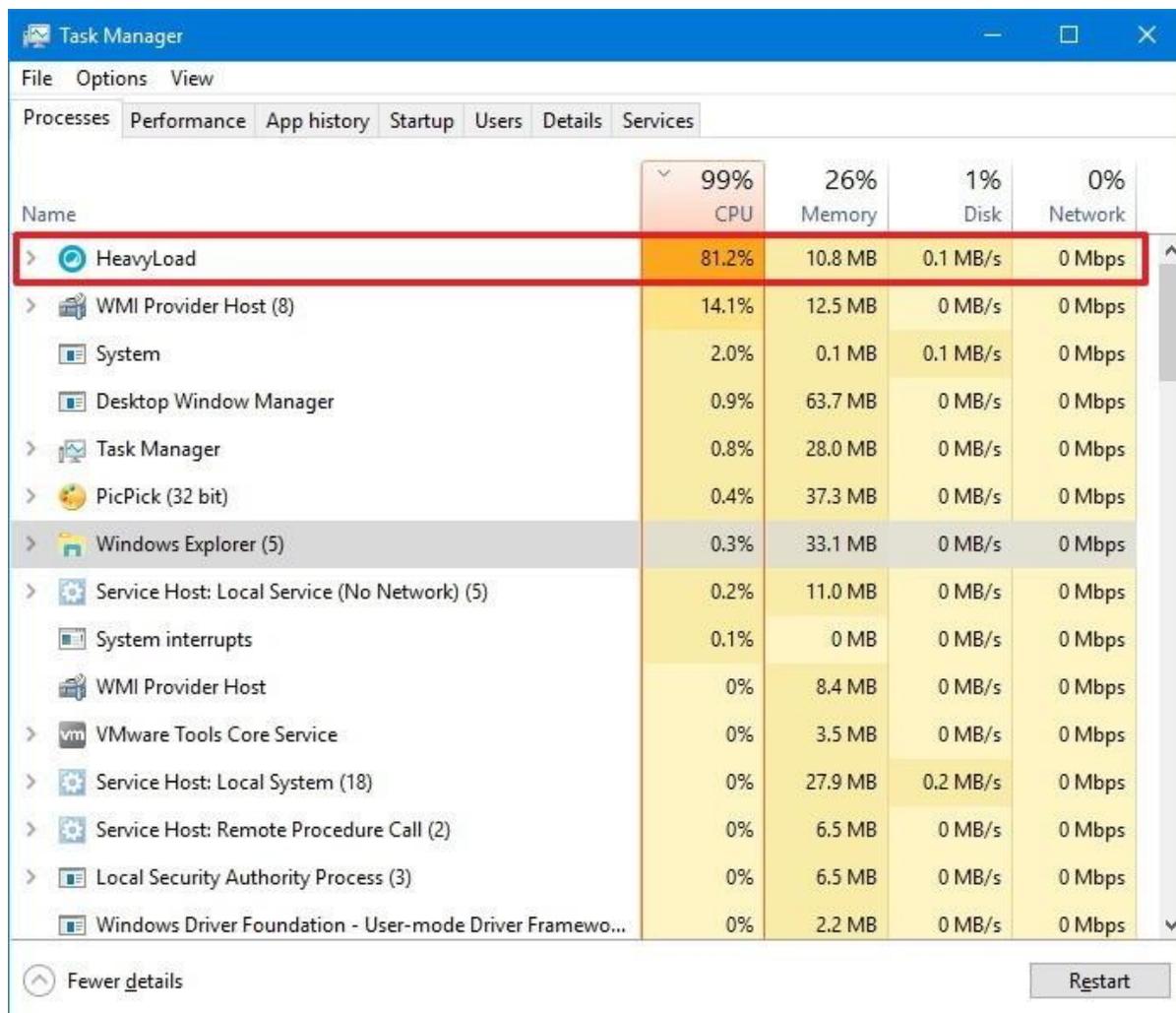


Name	22% CPU	31% Memory	0% Disk	0% Network
Apps (6)				
HeavyLoad	0%	7.6 MB	0 MB/s	0 Mbps
Microsoft Edge	0%	10.8 MB	0 MB/s	0 Mbps
PicPick (32 bit)	0%	56.7 MB	0 MB/s	0 Mbps
Task Manager	0.5%	29.7 MB	0 MB/s	0 Mbps
Windows Command Processor	0%	0.4 MB	0 MB/s	0 Mbps
Windows Explorer (5)				
Between PCs	0.3%	58.5 MB	0 MB/s	0 Mbps
Between PCs				
HomeGroup				
picpick_portable				
View and print your homegroup password				
Background processes (44)				
Application Frame Host	0%	12.7 MB	0 MB/s	0 Mbps
Browser_Broker	0%	2.4 MB	0 MB/s	0 Mbps

By pressing the chevron-right icon or right-clicking the object and choosing Expand, you can still expand a category to see all the operations. Typically, when you open multiple tabs on your web browser or multiple File Explorer windows, you can see classes for Windows operations, such as

Identifying processes with high-resource usage

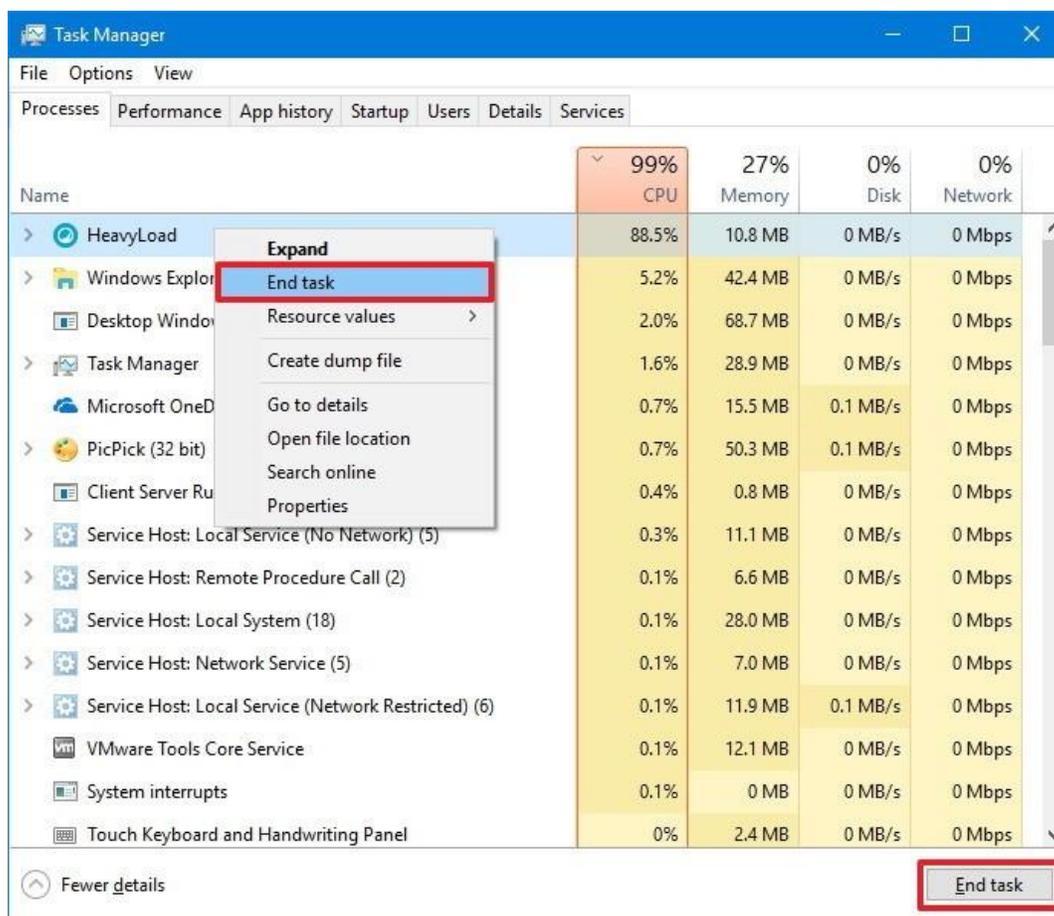
If an application isn't responding, a page takes a long time to load, or the device fan starts to get loud, you may quickly utilize Task Manager to troubleshoot the problem. The proportion of total resource utilization for the CPU, RAM, hard drive, and network should be the first item you look at in the Processes tab. You may filter the list by selecting column names and putting the ones with the most capital letters at the top. If you spotted one of these services running quickly, you may have recognized the issue (90 percent or higher).



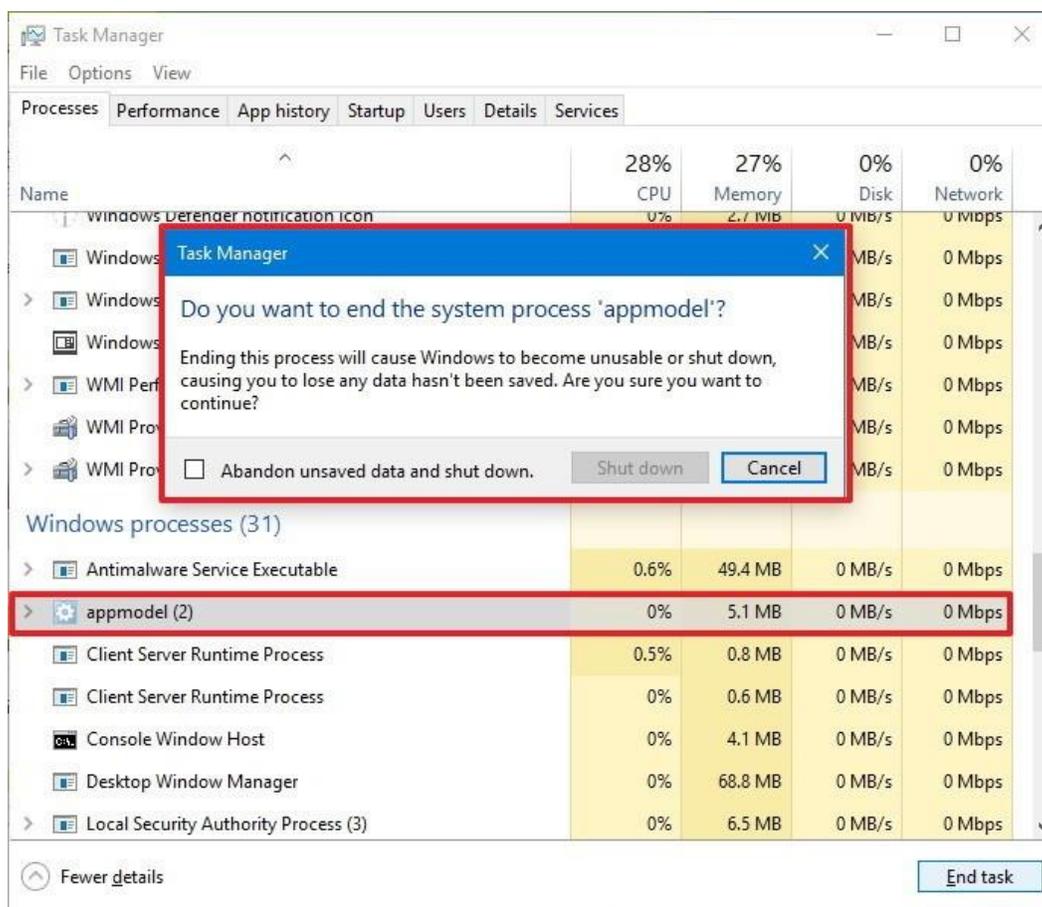
Name	99% CPU	26% Memory	1% Disk	0% Network
> HeavyLoad	81.2%	10.8 MB	0.1 MB/s	0 Mbps
> WMI Provider Host (8)	14.1%	12.5 MB	0 MB/s	0 Mbps
System	2.0%	0.1 MB	0.1 MB/s	0 Mbps
Desktop Window Manager	0.9%	63.7 MB	0 MB/s	0 Mbps
> Task Manager	0.8%	28.0 MB	0 MB/s	0 Mbps
> PicPick (32 bit)	0.4%	37.3 MB	0 MB/s	0 Mbps
> Windows Explorer (5)	0.3%	33.1 MB	0 MB/s	0 Mbps
> Service Host: Local Service (No Network) (5)	0.2%	11.0 MB	0 MB/s	0 Mbps
System interrupts	0.1%	0 MB	0 MB/s	0 Mbps
WMI Provider Host	0%	8.4 MB	0 MB/s	0 Mbps
> VMware Tools Core Service	0%	3.5 MB	0 MB/s	0 Mbps
> Service Host: Local System (18)	0%	27.9 MB	0.2 MB/s	0 Mbps
> Service Host: Remote Procedure Call (2)	0%	6.5 MB	0 MB/s	0 Mbps
> Local Security Authority Process (3)	0%	6.5 MB	0 MB/s	0 Mbps
Windows Driver Foundation - User-mode Driver Framewo...	0%	2.2 MB	0 MB/s	0 Mbps

The Task Manager frequently uses colors to depict processes that consume the greatest resources. As a technique continues to consume more energy, the colour begins to change from a light to a dark shade of orange, making it easier to identify which one is causing the problem.

Usually, the overall CPU consumption should be less than 30 percent when you are not constantly using software and your computer is not operating on something specific, such as repair. Applications and processes that are running even when you aren't using them consume memory on your device, and as you use or launch additional applications, your utilization may increase. Memory is usually not an issue until you run out of it, at which point your system will start using virtual memory, slowing down your PC. For the most part, the overall memory consumption should be below 60 percent, based on the device settings. If you don't copy files or make images, the utilization of the disk can be below 5%.



While utilizing the Task Manager to halt a process would most likely stabilize your computer, closing a process can totally kill a program or crash your computer, and you will lose any unsaved data. Before terminating a process, it's usually a good idea to preserve your data if at all feasible. If you're not sure how the process you're trying to stop impacts your PC, right-click it and choose Search online. This process launches your web browser and displays a search result with more procedure details. Windows 10 is also smart enough to notify you when a critical machine function that might harm your device is about to stop.

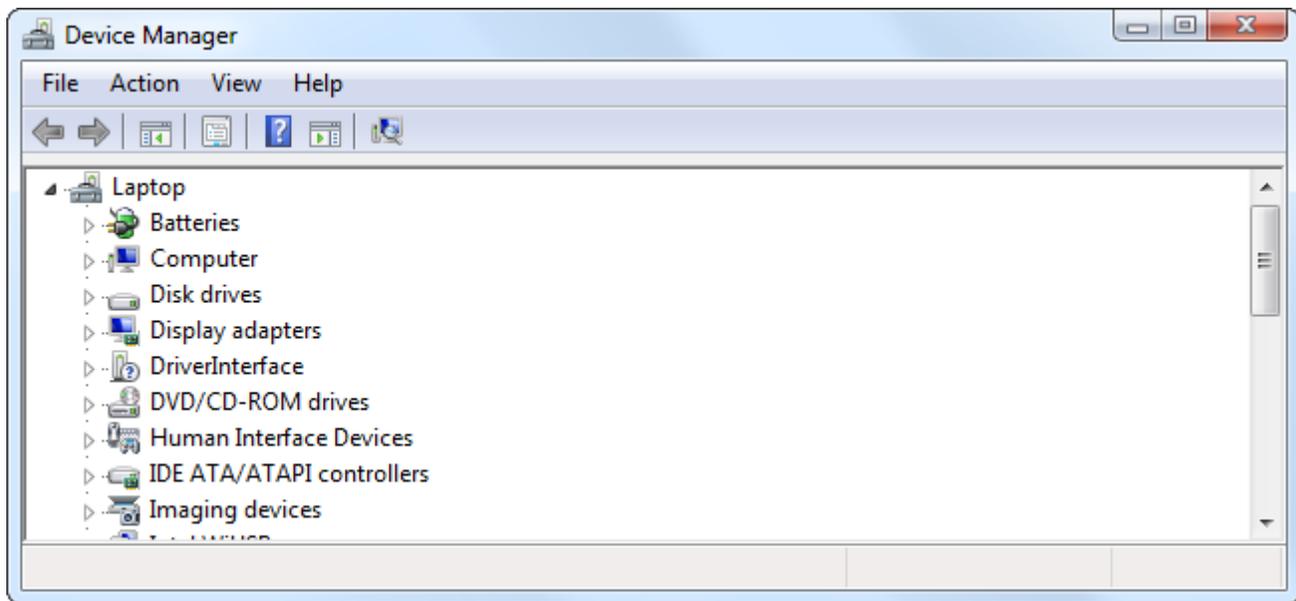


Wrapping up stuff

While there are many other ways of troubleshooting the performance of the system, Task Manager makes it simple to see why your computer is lagging or if a program isn't responding and take immediate action. You may use Task Manager to stop a non-responsive program in compact mode,

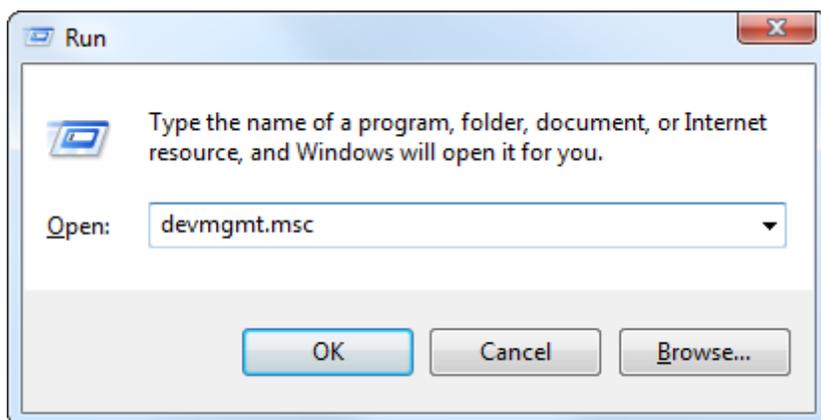
but the advanced view provides additional information about the processes running in Windows 10.

Device Manager - How to Troubleshoot with the Windows Device Manager



The Windows Device Manager is an important troubleshooting tool. It displays all of your installed hardware and lets you to identify which ones are having problems, change their drivers, and even deactivate certain pieces of hardware.

You should only use the Device Manager when diagnosing your computer's hardware and managing its drivers, but it is a crucial system tool that you should know how to use.



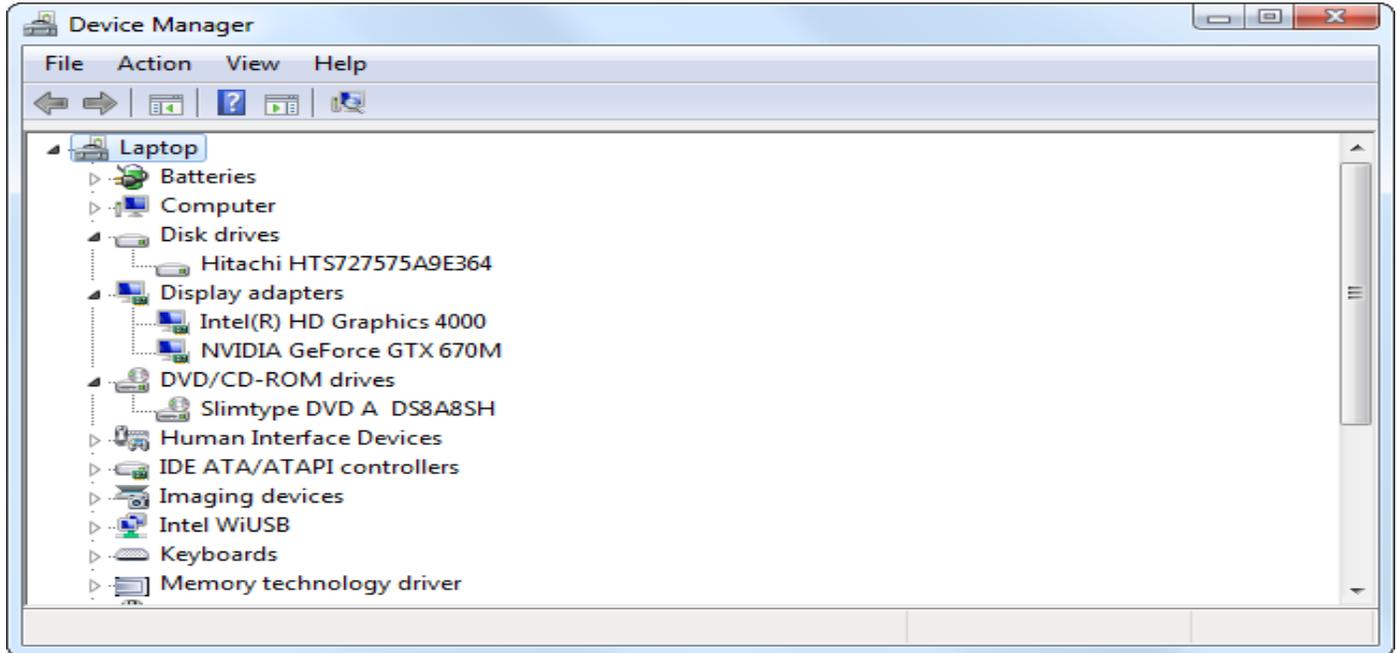
Launching the Device Manager

The quickest method to access the Device Manager on any version of Windows is to use Windows Key + R, type devmgmt.msc, and hit Enter.

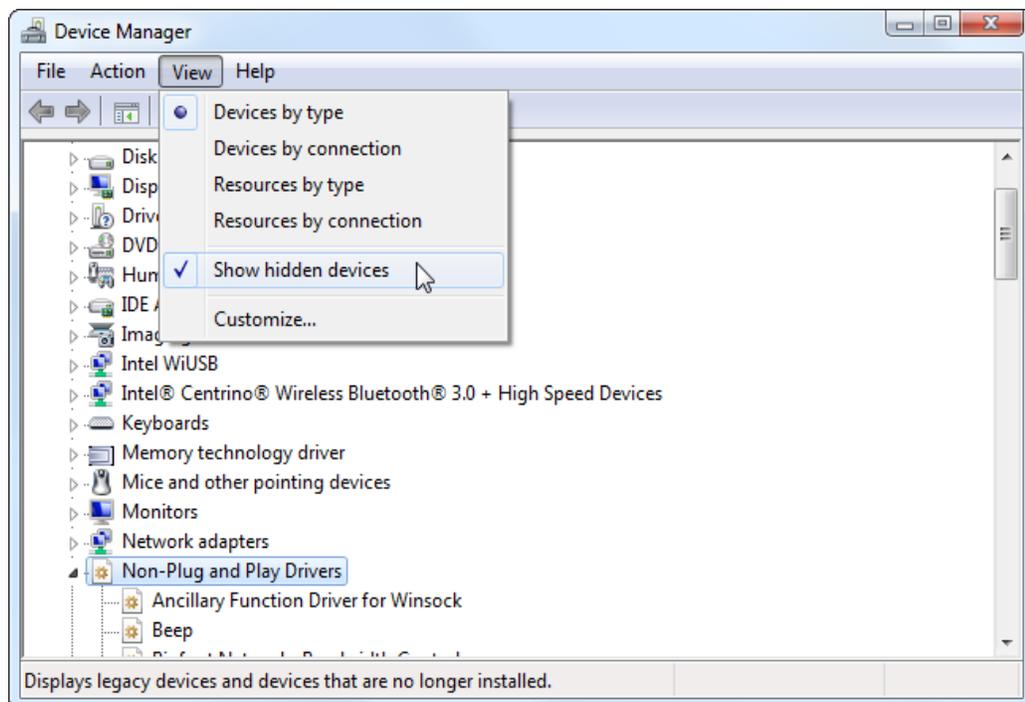
You can also open System Manager by right-clicking in the bottom-left corner of your screen on Windows 10 or 8. On Windows 7, go to Control Panel, choose Hardware and Music, and then System Manager under Hardware and Printers.

Viewing the Hardware You've Installed

By default, the Device Manager displays a list of your installed hardware, sorted by type. These sorts will be expanded to see what kind of hardware you've plugged-in on your PC. If you ever forget the precise model number of your video card, hard disk, or DVD drive, you can quickly discover it in the Device manager.

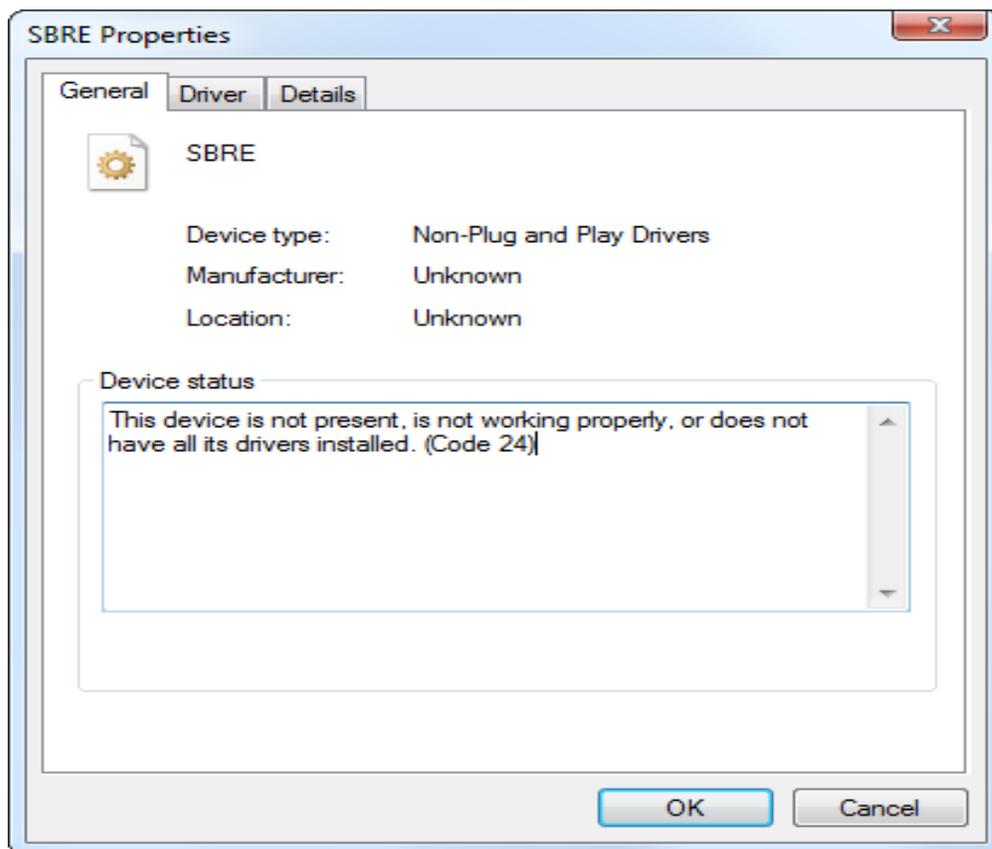
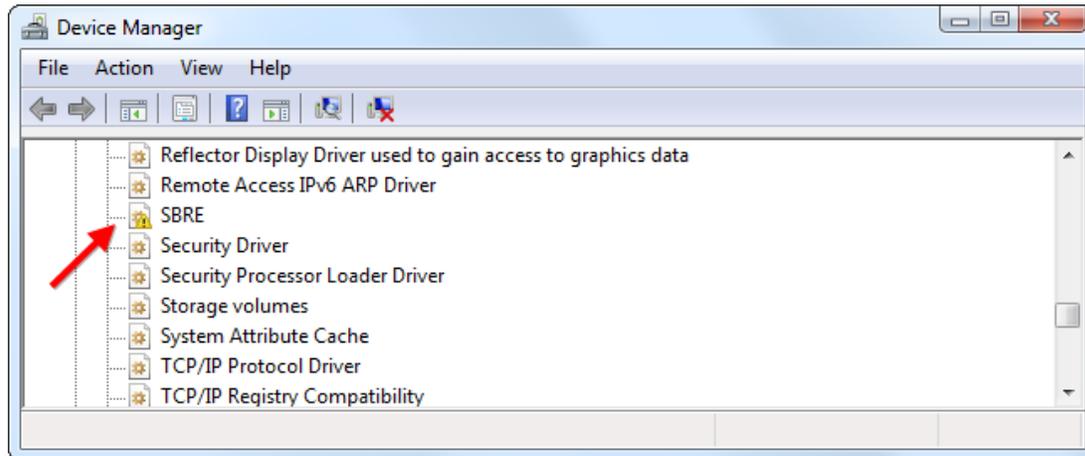


Not all hardware devices are included in this list by default. By selecting Display Hidden Machines from the View menu, you may see them. This will show you a list of "non-plug and play" drivers, such as low-level device drivers included with Windows and drivers installed by third-party programs.



Identifying devices that do not work properly

Look for a yellow triangle with an exclamation point over the computer symbol to identify computers that aren't working properly, most likely due to driver problems.drivers.

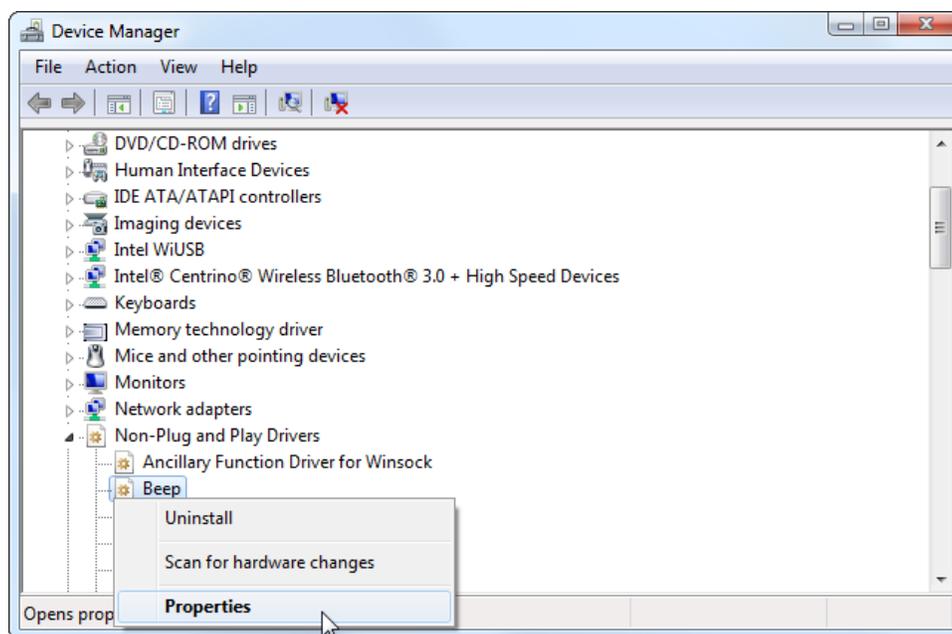


To get additional information about the problem, right-click your device and select Properties. It might be a driver problem, a device resource conflict, or something else entirely. If a driver is the problem, you should usually pick a new driver from the Properties dialog's Driver tab.

Disable a Device

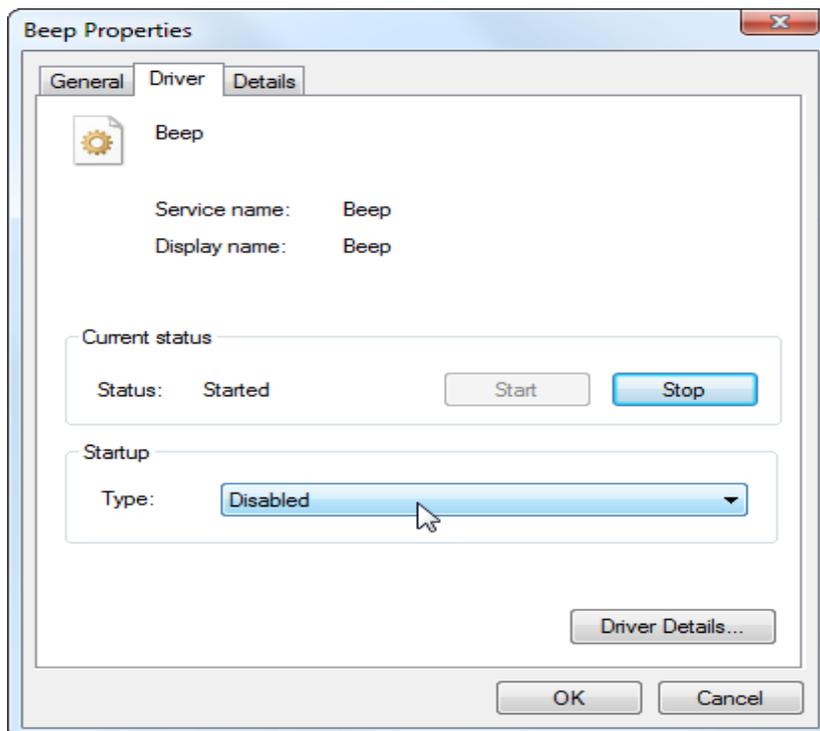
Let's imagine you wish to turn off a device altogether. Perhaps your laptop's touchpad is failing and sending phantom events, which cause the mouse pointer to move when you don't want it to. Perhaps you never use your laptop's webcam and want to disable it at the system level to ensure that no virus can use it to spy on you. You may deactivate specific hardware devices from the Device Manager for whatever reason.

For example, let's imagine we don't like the annoying system beeps emanating from our computer. The speaker on your computer's motherboard is the source of these noises.



To disable them, go to the View menu and select Show Hidden Devices. Expand the Non-Plug and Play Drivers area, then right-click the Beep driver and choose Properties.

Select Disabled Startup Type from the Driver tab. Beeps will no longer be heard from within Windows. (Note that you can typically disable most sorts of hardware devices by right-clicking them and selecting Disable.)



This setting just affects Windows, so you'll hear a beep when it boots up. This is a troubleshooting feature that lets your motherboard to beep at you if there are difficulties.

Managing Drivers of a Device

The properties window for a device provides information and options that are particular to that device's hardware. Though you shouldn't need to look at much of the information or options on this page.

The Driver settings are the most important for troubleshooting. Select the Driver tab after right-clicking a device and selecting Properties. You'll see details about the presently installed driver as well as control buttons.

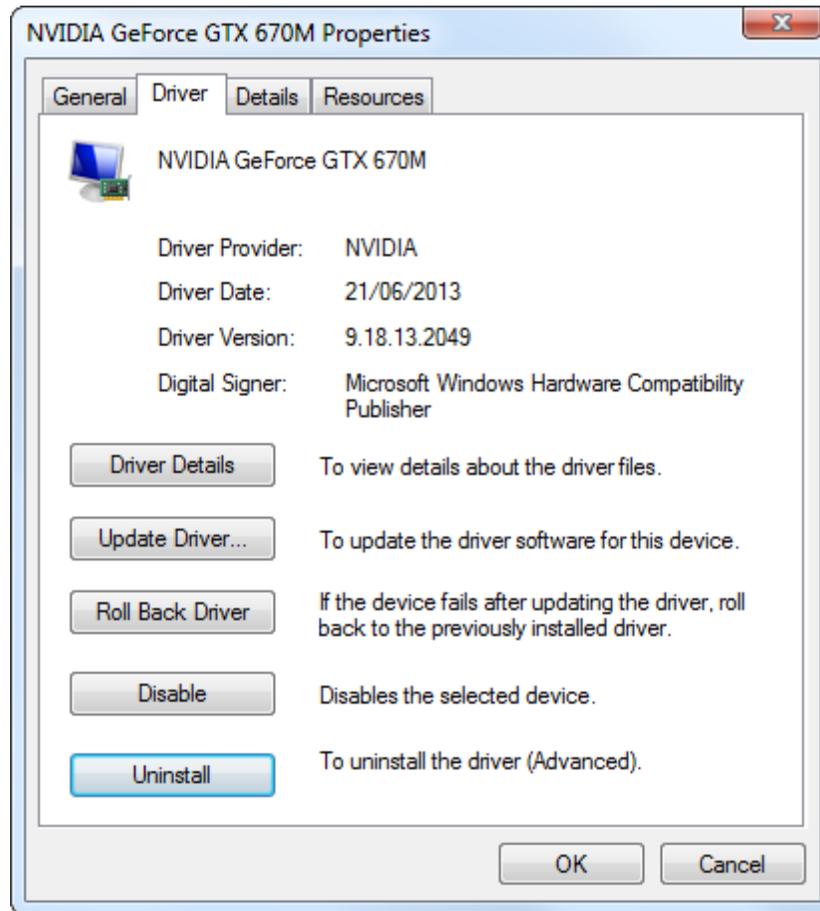
Driver Details: View information about the exact location of the device's driver files on your system. This isn't a necessary choice.

Update Driver: Install an updated driver. Just as when installing devices regularly, Windows allows you to search online for an updated driver or manually choose a driver that has been downloaded to your system. If the driver is old and obsolete, looking for an updated driver may help. You'll pick a custom, downloadable driver for a device from here if you choose to do it manually.

Roll Back the Driver: Revert to the device's old driver by rolling back the driver. If the hardware isn't operating properly after you've upgraded the driver to a new version, you should downgrade the driver. You might look for the previous driver and install it manually.

Disable: Disable the device, which means it won't operate in Windows until you activate it again.

Uninstall: Remove the device's related drivers from your computer. Because this does not destroy all driver files, uninstalling drivers through your Control Panel, if possible, is a safer approach. After that, you'll need to restart your computer. This is only acceptable if you want to remove those drivers from your system and start again with the program and its drivers.



You are often warned of resource conflicts by the Device Manager, but only rarely on modern systems do you see resource conflicts. The details above can cover about all that you would like to do with Windows System Manager.

Windows Defender

How to use Built-in Windows Antivirus on Windows 10



Windows 10 comes with a built-in real-time antivirus called Windows Antivirus, which is actually quite good. It keeps all Windows users secure from viruses and other harmful programs by running in the background dynamically. This is how it works.

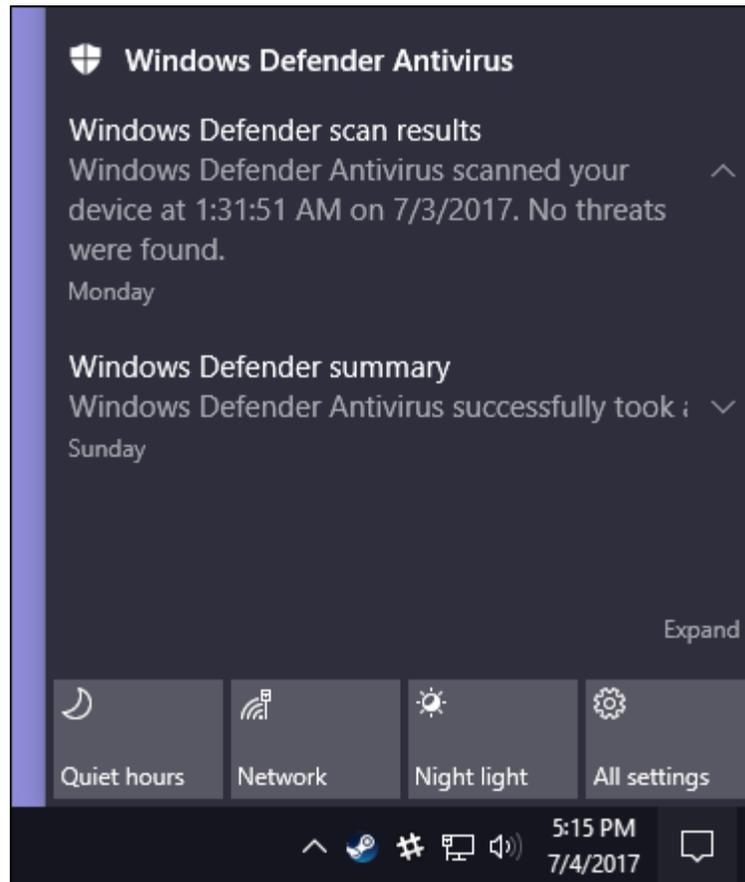
Beginning with Windows 10 Creators Update, the Windows Defender interface has been improved slightly, and it has been merged into the current Windows Defender Security Hub, which also provides access to security-related resources such as family safety, firewall settings, device status and health reports, and browser security controls. If you haven't yet switched to the Creators Update, you should still be able to follow along rather well. What is Windows Defender for Windows?

Microsoft Security Basics was a standalone antivirus program that was available for Windows XP, Vista, and 7. With Windows 8, the program was cleaned up a bit, bundled with Windows, and renamed Windows Protector. And, if it's a mixed bag at all, it's very sweet. Other antivirus software, such as Bit Defender and Kaspersky, do protect against other benchmark malware, which is accurate.

Despite this, Windows Defender has several advantages. It's by far the least intrusive program, doing as much as it can in the background and without constantly bothering you. Windows Protector is also better than any other antivirus tool in dealing with web browsers and other applications, respecting their security and privacy settings.

It's up to you to decide what you want to use, but Windows Defender is a good choice (and has overcome most of its problems from a few years back). However, in addition to the antivirus program you desire, we recommend that you download and install an anti-malware app such as Malwarebytes.

Taking advantage of Windows Defender by using its features such as automated scans and updates, Windows Defender works in the background, inspecting files as they're downloaded and moving them from hard drives, even before you view them, similar to most antivirus apps.

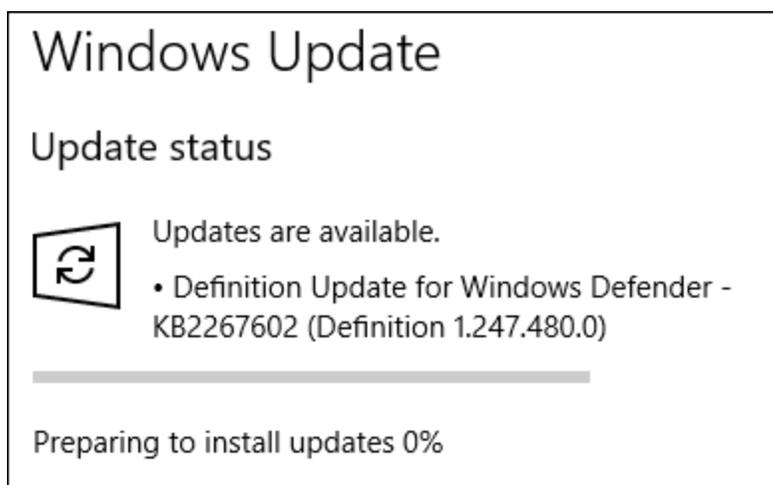


You just should not have to worry at all about Windows Defender. Only when it detects ransomware can it show up to warn you. It won't even ask you what you want to do with the harmful software it finds; instead, it will clean everything up and quarantine the files right away.

You will normally view the specifics of the last scan by accessing the Action Center in Windows 10 to let you know when a scan has been completed.

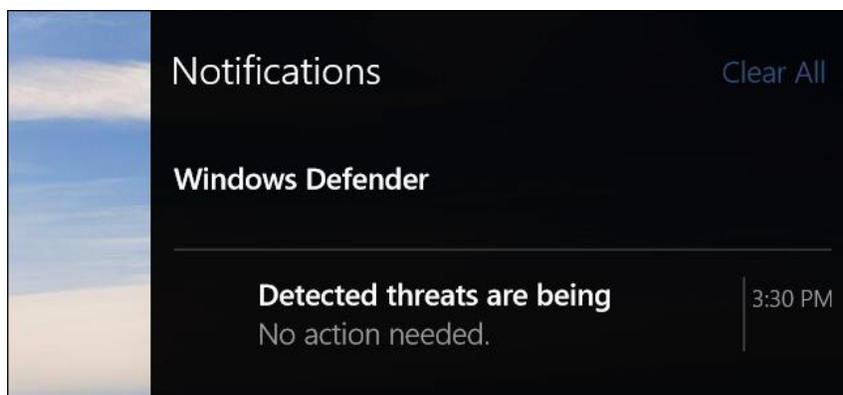
If Windows Protector detects a threat, you'll get a notification informing you that an action is being taken to mitigate the risk, and that you don't need to do anything.

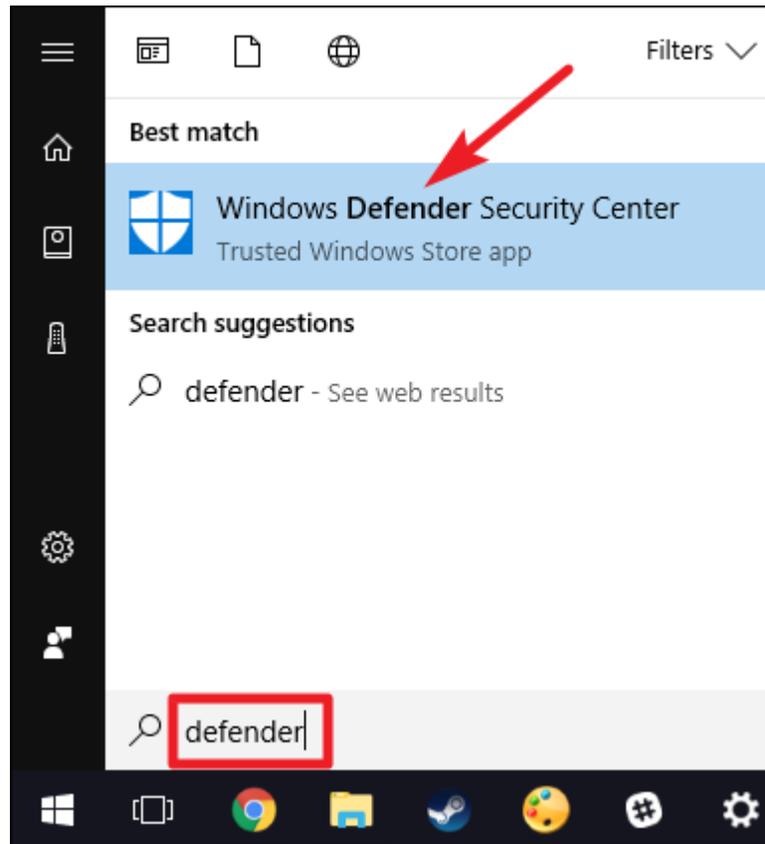
Upgrades of antivirus arrives through Windows Update and are installed similarly to other software updates. This type of upgrade does not result in a system reset. Don't worry about this method of updating Windows Defender because it runs in the background quietly and effortlessly.



View Your Scan History and Quarantined Malware

You can check Windows Defender's scan history at any moment, and you can even check it if you're informed it's blocked malware. Simply click Start, type "Defender," and select "Windows Defender Security Center" to launch the Windows Defender Security Center."

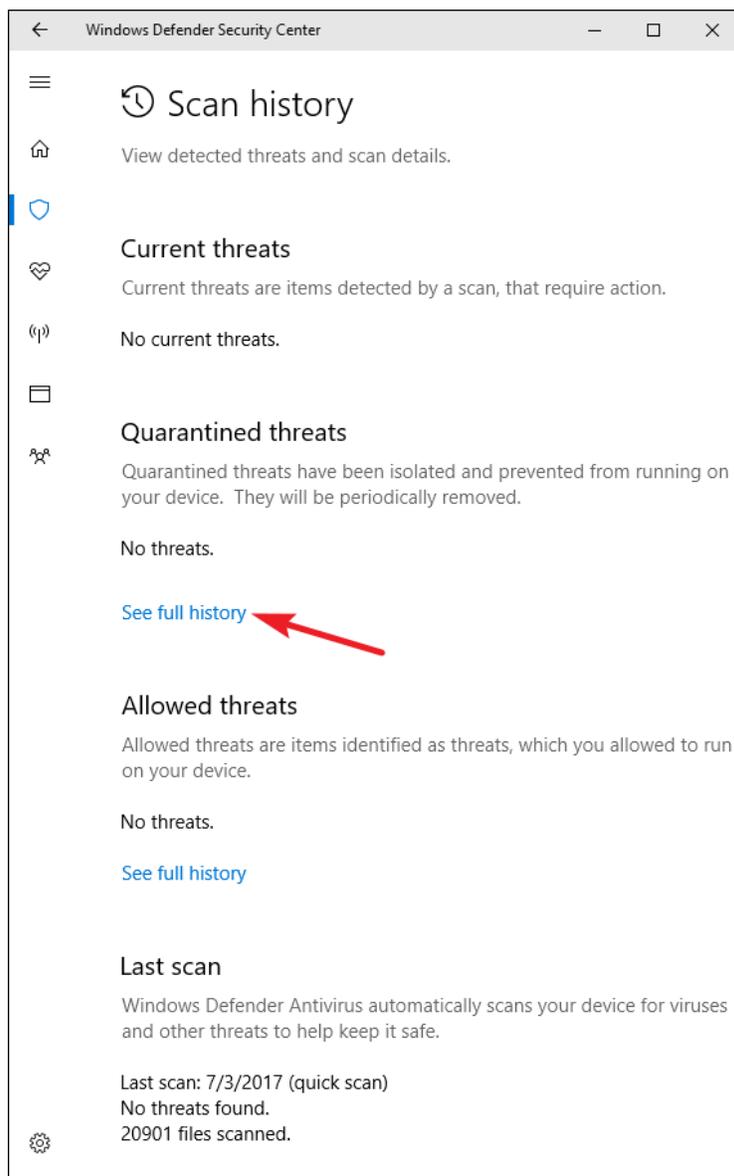




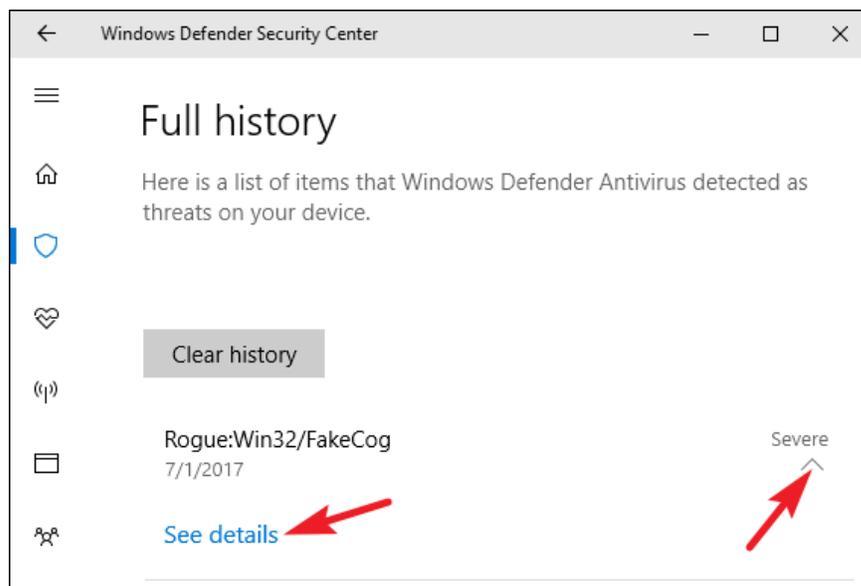
Switch to the "Windows Defender" tab (the shield icon), select the "Scan History" in the Windows Defender Security Center window.



The "Scan history" screen displays all of the most recent threats, as well as the results of the most recent scan. Simply click the option "Obtain complete history" in that section to see a detailed list of quarantined threats.



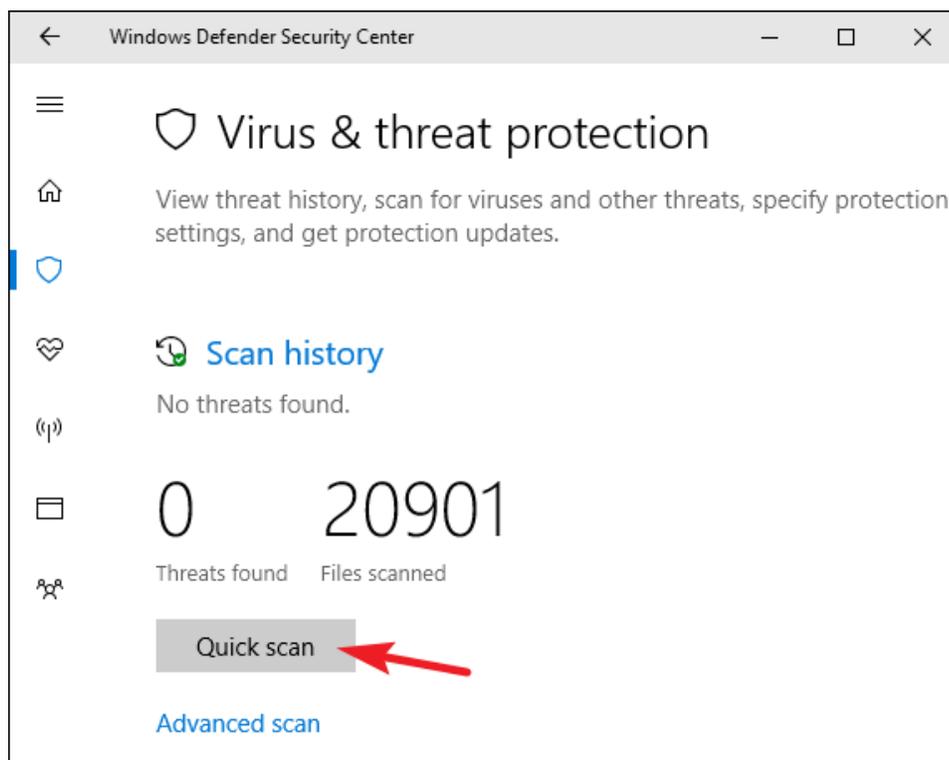
Here you may see all of the threats that Windows Defender has quarantined. To learn more about the threats, click the right-hand arrow. To learn much information, click the "See details" icon that appears when a threat is detected.



There's nothing else you need to do here, but if you didn't have Windows Defender remove the threat when it was discovered, you'll be given the choice to do so now. You can also restore the item from quarantine, but only if you're certain the malware detected was a false positive. Allowing it to run if you aren't entirely certain is not a good idea.

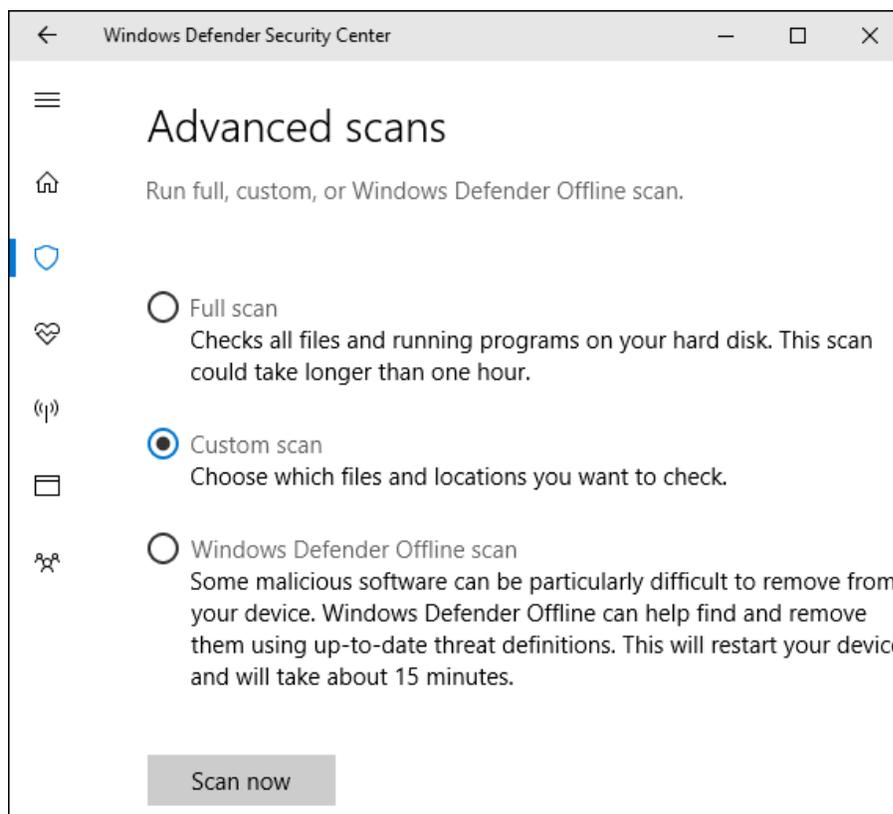
Perform a Manual Scan

By pressing the "Quick Scan" button on the main "Windows Defender" screen, you may also have Windows Defender perform a quick manual search. Typically, you won't need to meddle with this because Windows Defender provides real-time security and even does routine automatic checks. If you merely want to be safe, perhaps you've altered your virus descriptions, a quick scan is almost useless.



You may also perform three other types of scans by pressing the "Advanced Scan" icon on that interface:

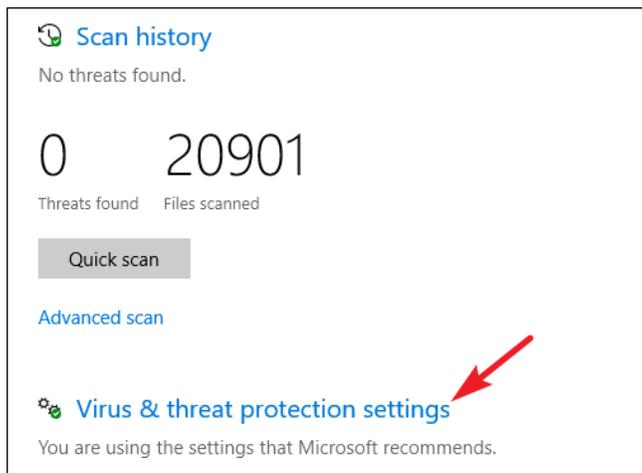
- **Full scan:** The fast scan only scans the memory and typical locations. A full scan is performed on any file or running program. It can easily take an hour or more, so do it now if you don't intend to use your computer much.
- **Custom scan:** You can choose a specific folder to scan with a custom scan. Right-click every folder on your computer and select "Windows Defender Scan" from the context menu.
- **Windows Defender Offline scan:** Malware is difficult to remove while Windows is operating. Before Windows loads on the PC, Windows restarts and runs a scan if you choose an offline scan.



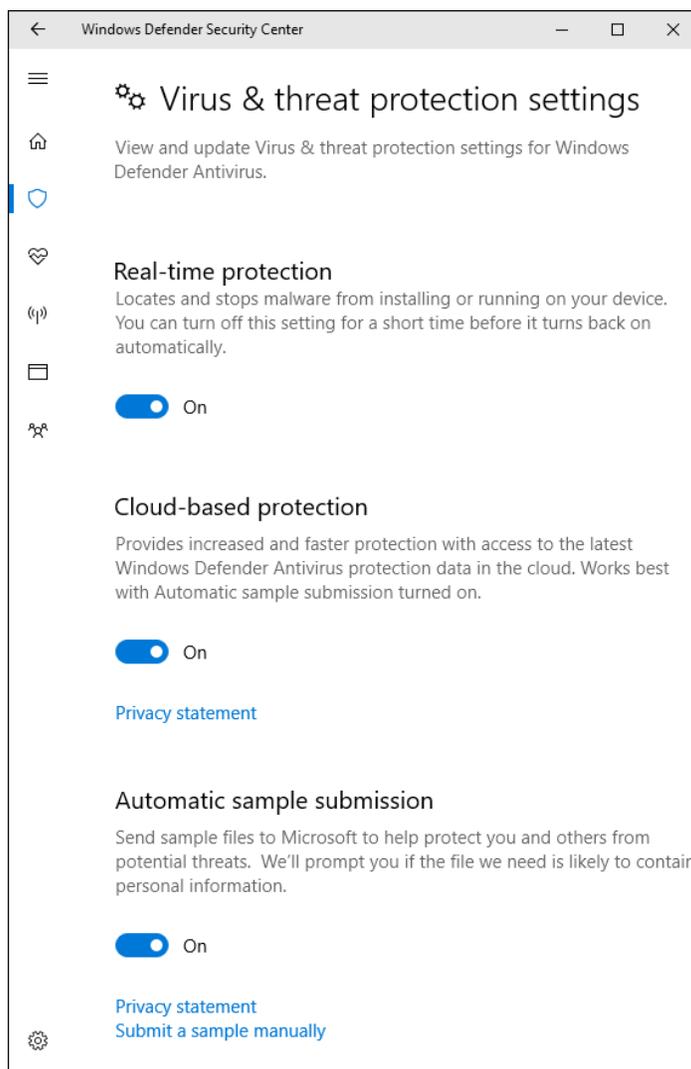
Configure Virus and Threat Protection Settings

Real-time security, cloud-based protection, and sample submission are all enabled by default in Windows Defender. Real-time security means that Windows Defender identifies malware in real time by scanning the device. You can temporarily disable this for performance reasons, but Windows Defender will automatically re-enable real-time security to keep you protected later. Through cloud-based security and sample submission, Windows Defender will share information about threats and the individual malware files it finds with Microsoft.

Click the "Virus & Threat Protection Settings" icon on the "Windows Defender" tab to allow or disable either of these settings.

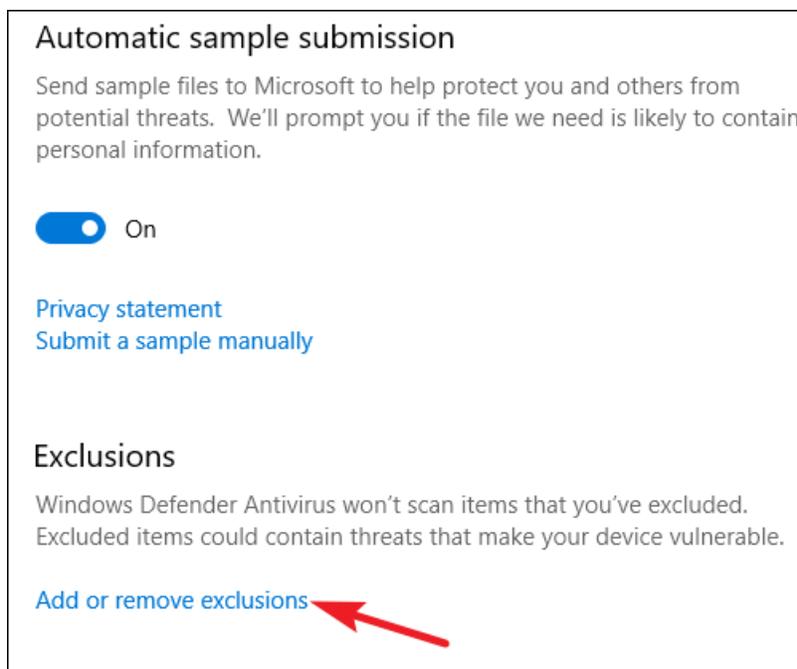


Then, on your computer, toggle the settings that appear.



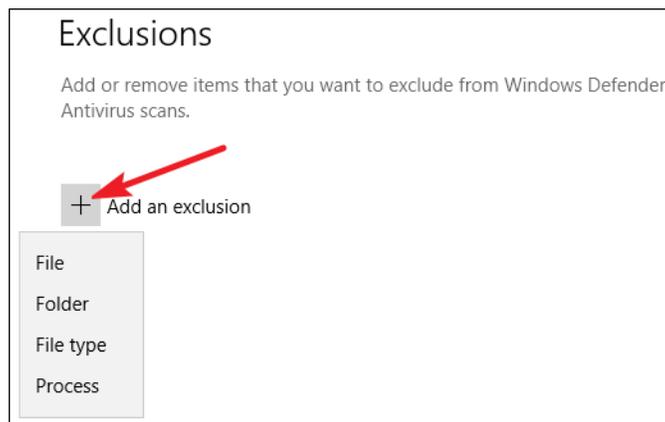
Configure Exclusions for certain directories or data

If you scroll down to the very bottom of the same "Virus & Threat Protection Settings" menu, you can put exclusions on directories, folders, file types, or processes that you don't want Windows Defender to scan. Simply click the 'Add or remove exclusions' link.'



When you add exclusions to an antivirus, it will speed things up if it scans it and finds a certain software that you know is safe. If you use virtual machines, you'll want to exclude such large files from the scanning process. You don't want your editing to be slowed down by scanning if you have a large photo or video library that you know is safe.

To create an exclusion, click the "Add Exclusion" button, select the type of exclusion from the drop-down menu, and then select anything you wish to remove from the Windows Defender choice.



Just remember to utilize exclusions sparingly and wisely. Each exclusion you set reduces your PC's protection by a small amount, as it tells Windows Defender not to search in those places.

What if You Have Another Antivirus?

When you install another antivirus product, Windows 10 automatically disables Windows Defender. If another antivirus app is installed, Windows Defender will stop running real-time scanning, which means the other app will not interfere with it. You may also use Windows Defender to perform a manual search as a backup to your chosen antivirus program or when you're not connected to the internet.

If another antivirus program is ever uninstalled, Windows Defender will immediately reset and take over, giving antivirus protection once more.

However, certain anti-malware products, such as Malwarebytes, can be installed with Windows Protector and can give real-time security for free.

Whatever antivirus software you choose, it'd be wonderful if at least a basic built-in antiviral security was included with every new Windows installation from here on.

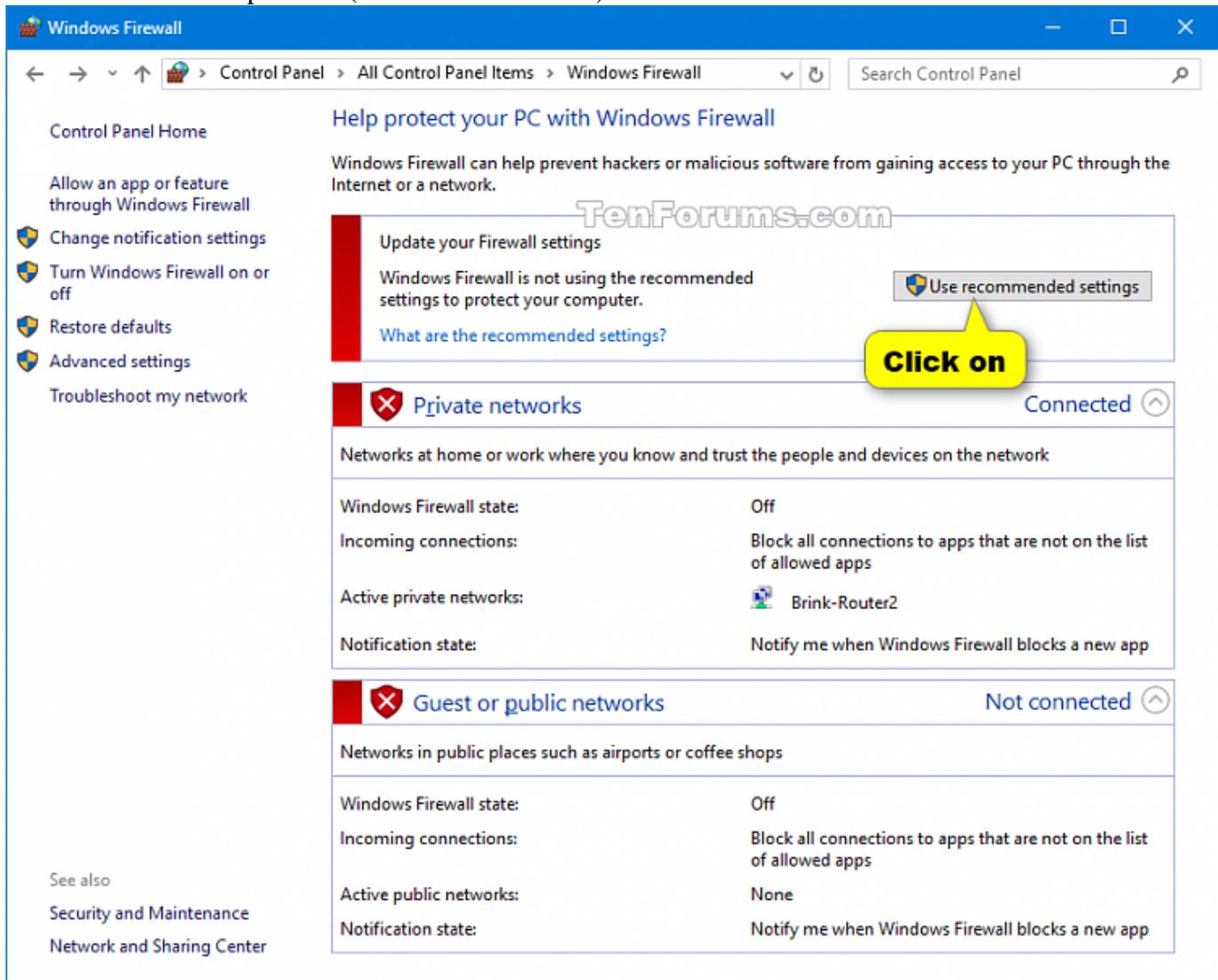
Although it isn't perfect, Windows Defender does a good job, isn't overly intrusive, and may be sufficient when used in conjunction with other steady computing and surfing activities.

Firewall: Turning Microsoft Defender Firewall On or Off.

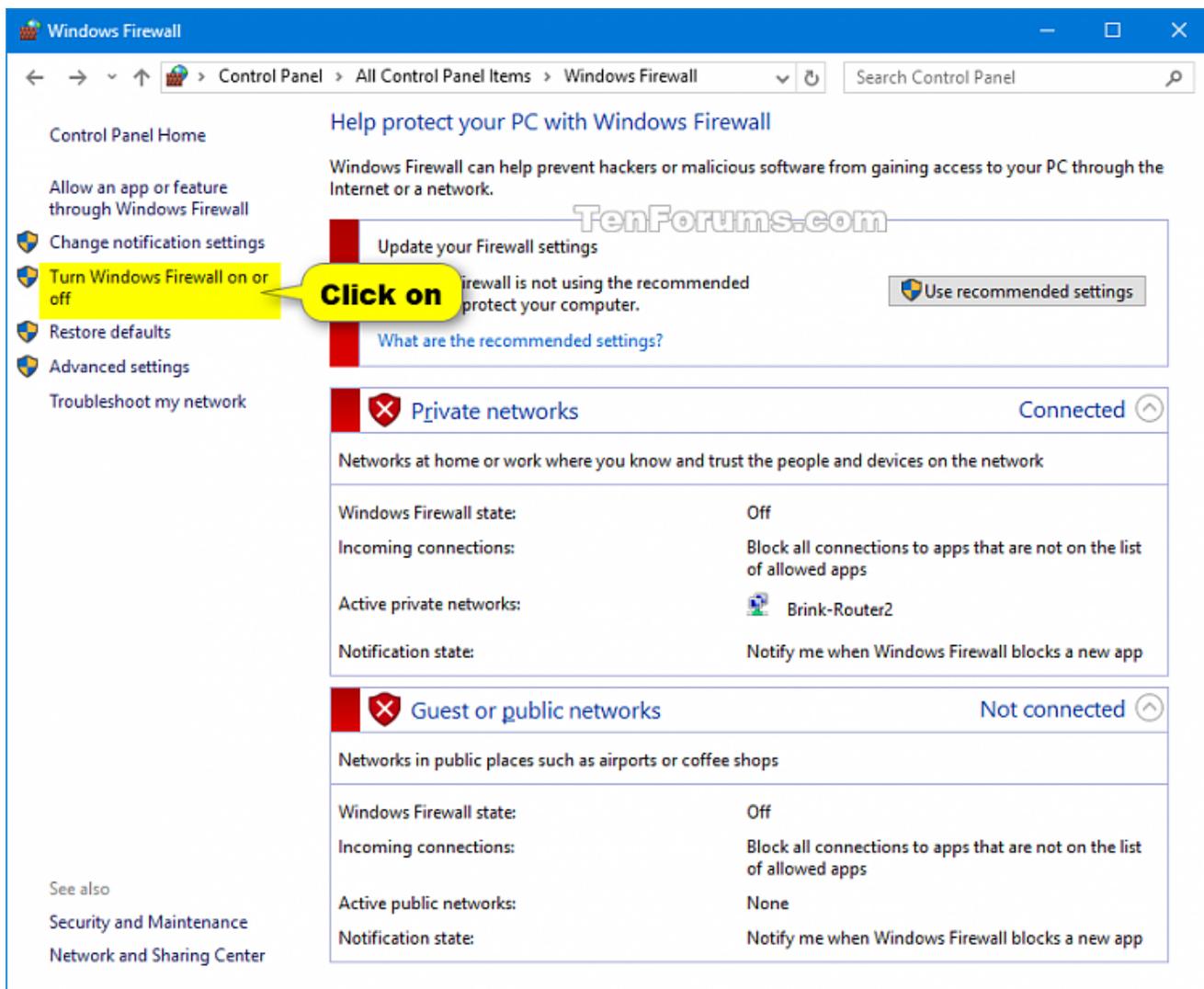
Even if you already have a firewall installed, the Microsoft Defender Firewall must be enabled. This protects you from unauthorized access. Turn on Microsoft Defender Firewall in the Control Panel.

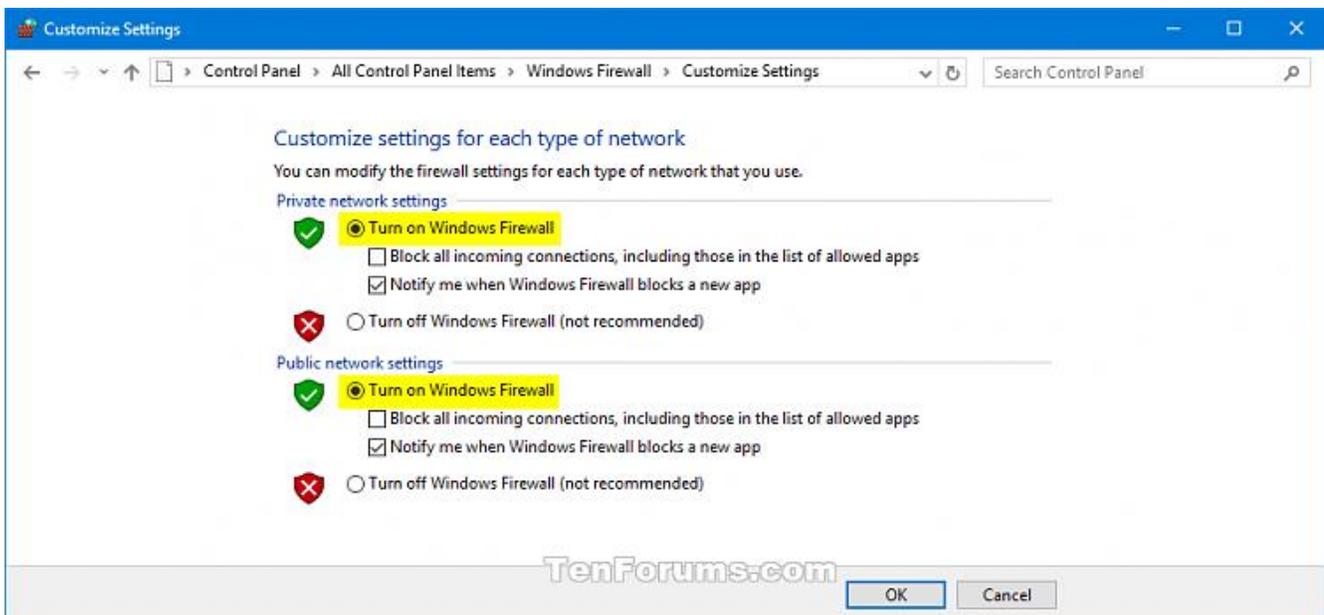
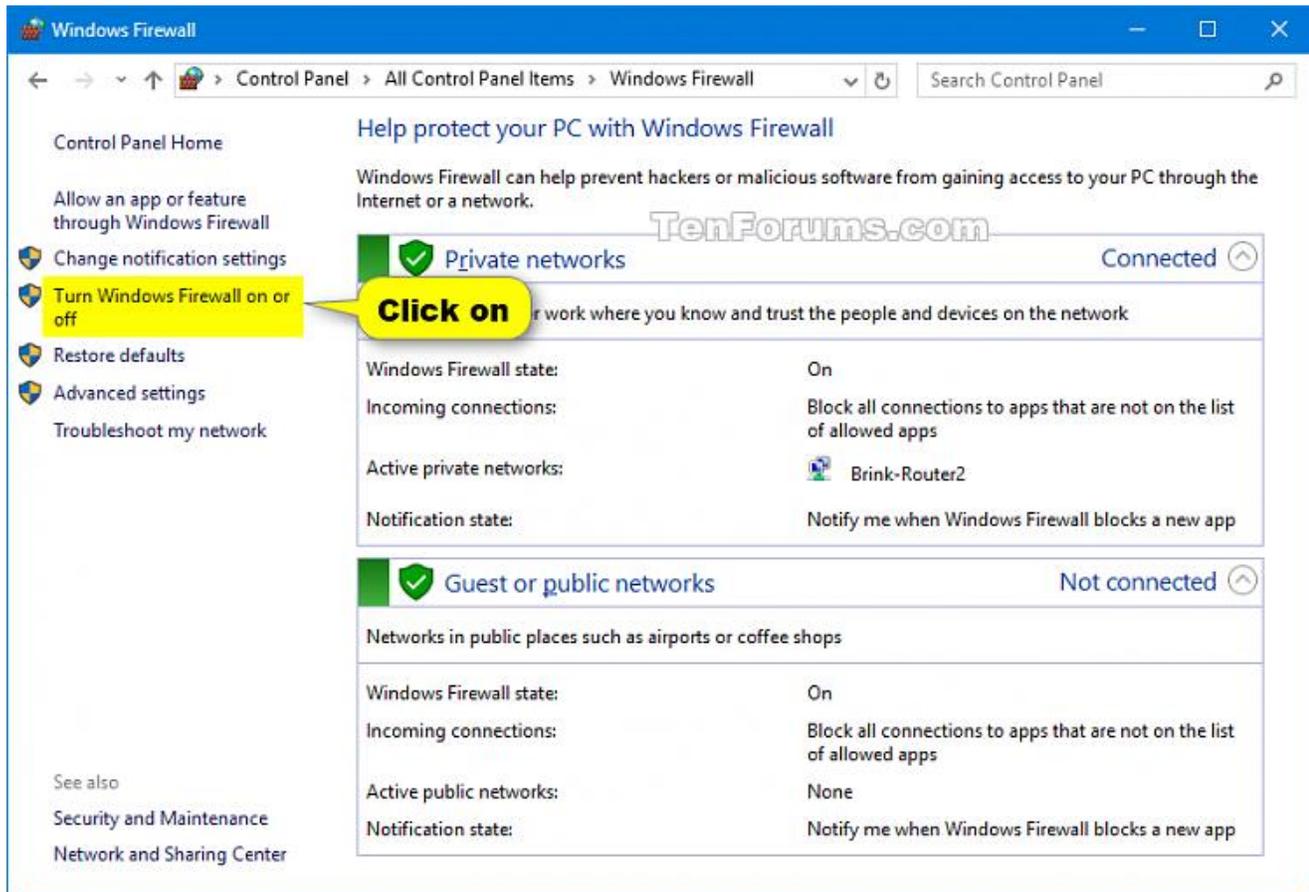
In the Control Panel, turn on the Microsoft Defender Firewall.

1. In the Control Panel, click the Windows Defender Firewall button (view icons).
2. To enable the Windows Firewall, proceed to steps 3 and 4 below.
3. Click/tap on the Use recommended settings button to turn on Windows Firewall for all network profiles. (see screenshot below)



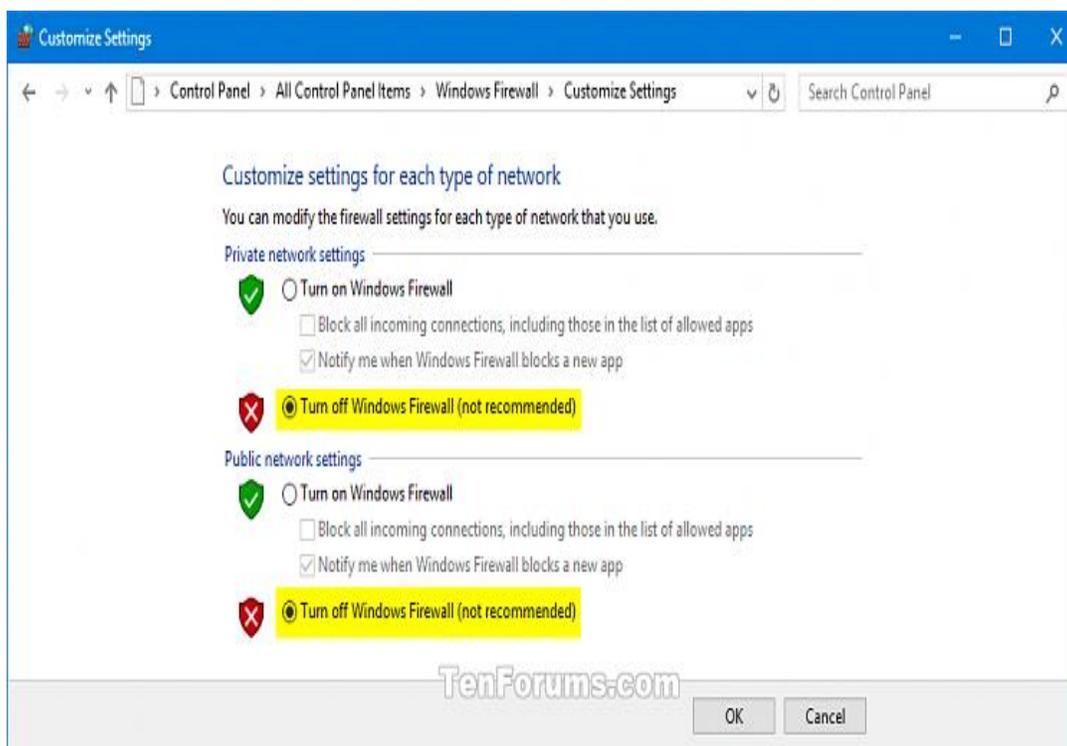
4. Select Turn on Windows Defender Firewall from the left-hand menu. (See the image below)
 - A) Select (dot) Enable the Windows Defender Firewall for each network profile (domain, private, or public) and click/tap Yes (see screenshot below)





How to Turn off or deactivate Microsoft Defender Firewall from the Control Panel.

1. Click or press the Windows Defender Firewall icon in the Control Panel (see icons).
2. Select the Switch Windows Defender Firewall on or off link on the left side. (as seen in the screenshot)
3. Select (dot) Click/tap Yes to turn off the Windows Defender Firewall for each network profile (domain, private, or public).

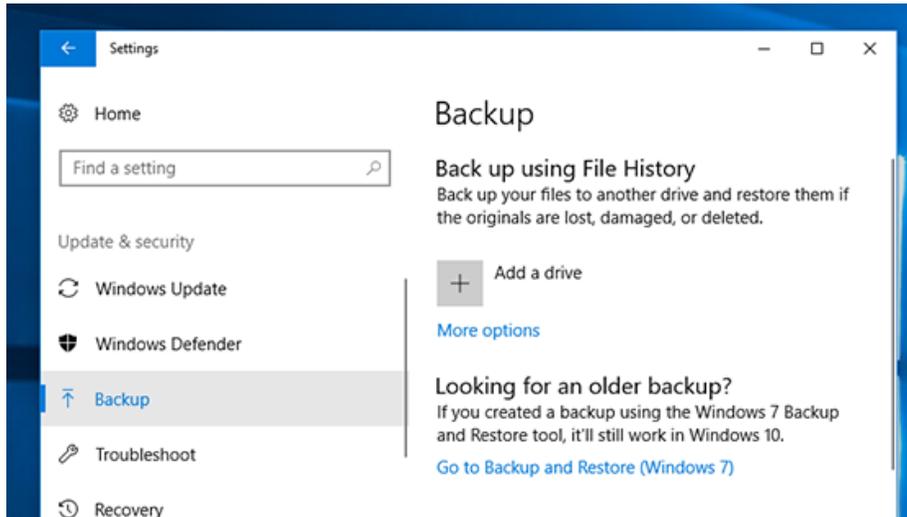


8.3.2 Windows 10 Backup and Restore

How Do You Back Up Your Computer Using File History?

File History can be used to back up to an external storage device or a remote location.

Click Start > Settings > Update & Security > Backup > Add a Drive, and then choose your backup location, either as external drive or on the network.



How to Restore your files with File History?

If you've lost an important file or folder that you've backed up, use these steps to recover it:

1. Type Recover Files into the taskbar search box, then click File History to restore your files.
2. Find the file you want, then use the arrows to see all of its previous versions.
3. If you found the version you want, select Restore to save the update to its original location.

Right-click on Restore, select Restore to, and then select a new place if you want to save it somewhere else.

Looking for backups created with earlier versions of Windows.

If you backed up files or created device image backups with Backup and Restore in prior versions of Windows, the old backup is still available in Windows 10.

In the taskbar's search box, type control panel. After that, select Control Panel > System and Security > Restore and Backup (Windows 7).

How do to utilize System Restore On Windows 10

System Restore allows you to reverse system changes that could cause bugs, and we explain how to use the feature on Windows 10 In this unit, we will explain how to use Windows 10 features. When system modifications are detected, System Restore on Windows 10 creates a snapshot of the current running state of the machine as a "restore point."

If a serious error occurs after installing a system upgrade, software driver, or program, or after incorrectly changing system settings with a registry or other method, you can restore the system to a previous point in time to fix the problem without destroying your files by using one of the available restore points. While this is a helpful recovery function. For some reason, System Restore is turned off by default, so you'll have to enable it before Windows 10 can create restore points automatically or manually. In this section, we'll show you how to set up System Restore and how to recover from issues that are interfering with your computer's performance level.

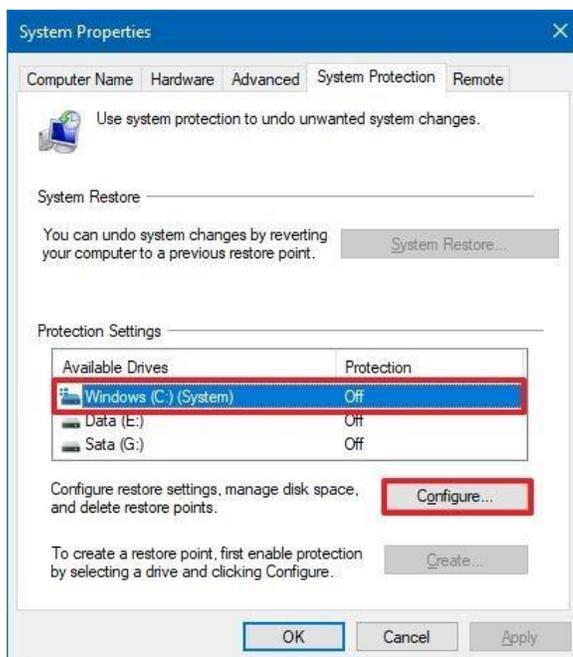
- **How to enable System Restore in Windows 10**
- **How to establish a System Restore point in Windows 10**
- **How to use System Restore to recover data in Windows 10**

How to enable System Restore on Windows 10

The System Restore function in Windows 10 is disabled by default, and you must explicitly activate it using the Control Panel.

To enable System, Restore, use these steps:

1. Open the Start command.
2. Look for the phrase "create a restore point.", and to open the System Properties tab, click on the top result.
3. Select the main "System" drive under the "Protection Settings" area.
4. Select Configure.



5. Choose the **Turn on system protection** choice.

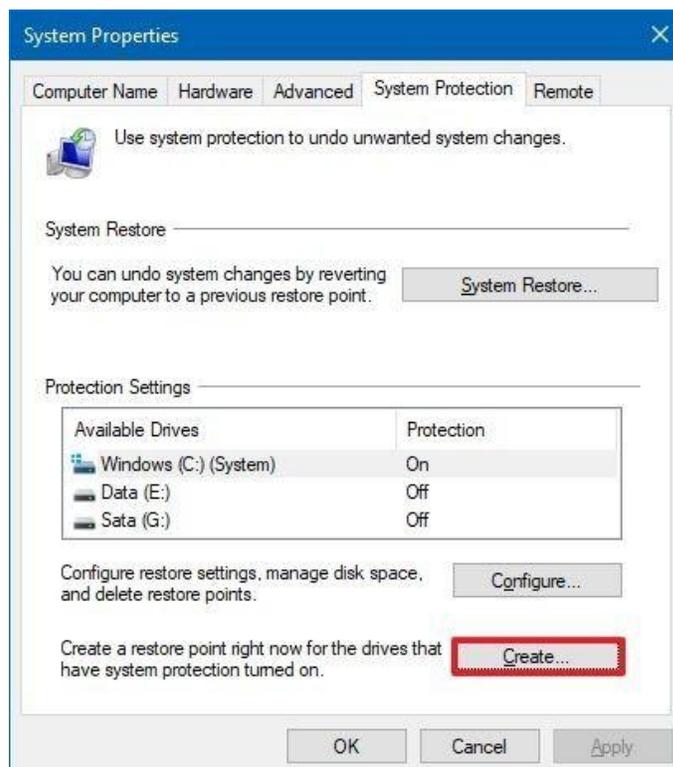
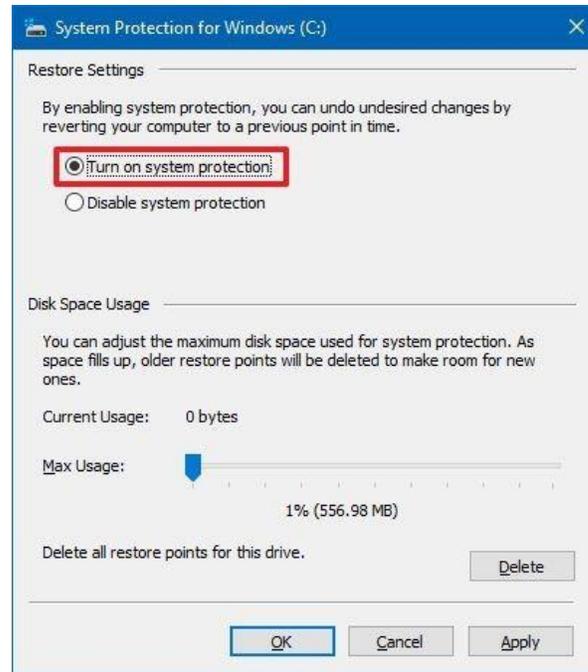
Quick tip: Windows 10 can automatically manage space, but you can also use the slider under the 'Disk Space Usage' segment to determine the amount of storage to be set aside for the recovery function. You'll also notice a Delete option, which may be used to delete all restore points, which is useful for freeing up space or resuming the application.

6. Click on the Apply button.
7. Click the OK button.
8. Click **OK** button.

Once you've completed the steps above, Windows 10 will generate a restore point whenever it installs a new update or makes particular system changes.

System Restore isn't a feature that can be switched on or off at the system level. You'll have to repeat the steps for each storage device if you wish to safeguard more drives with System Restore. However, keep in mind that this feature allows you to undo changes. It is not a replacement for a backup system.

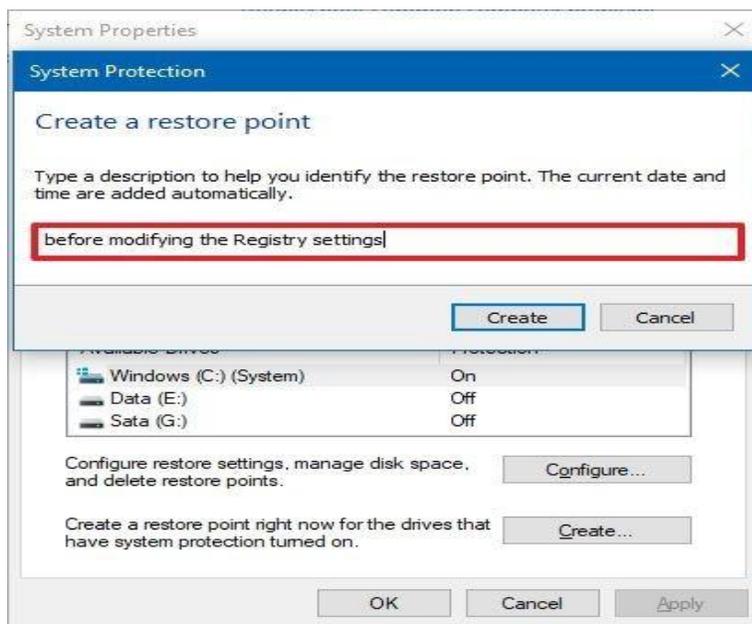
How to create a System Restore point on Windows 10



If allowed, When System Restore detects system changes, it will immediately enable a checkpoint. If you change the system settings, however, you should always build a restore point manually.

Follow these instructions to manually establish a restore point on Windows 10:

1. Press the **start** button.
2. Open the System Properties page by searching for **Create a restore point** and clicking the top result. **Start**
3. Under the "Protection Settings" section, click the **Create** button.
4. **Before changing the Registry settings**, for example, give the restore point a descriptive name.



5. Click the button **for Create**.
6. Click the button for **Close**.
7. Click the button for **OK**.
8. Click the **Close** button.

You will have a way to reverse modifications after you complete the measures if something goes wrong after installing a new system driver or software, or after updating the register.

How to use System Restore in Windows 10 to recover data

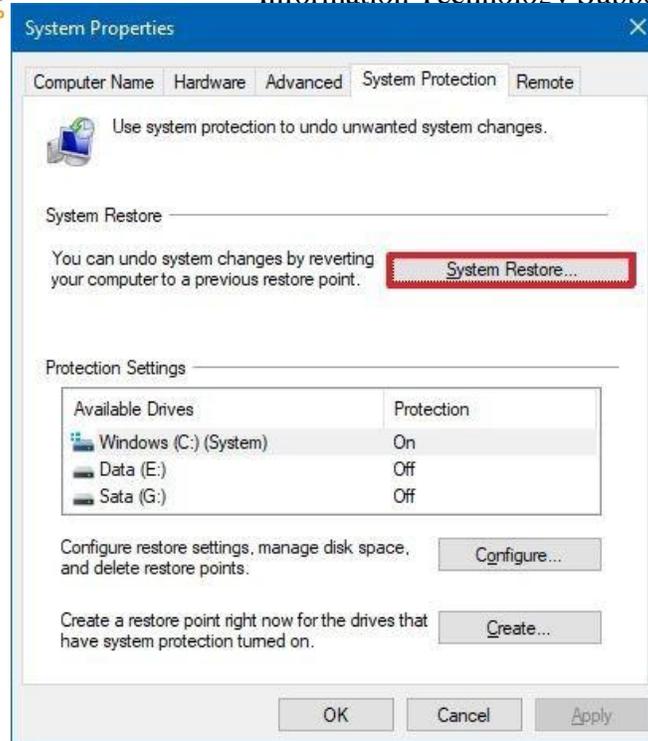
If something goes wrong after altering device settings on Windows 10, you can revert the changes by restoring to an earlier restore point. You can accomplish this action from the desktop or the advanced starting settings if the system does not boot.

Revert System changes from the desktop

If you still have access to a computer, you can take necessary actions to restore changes using the system. Restore:

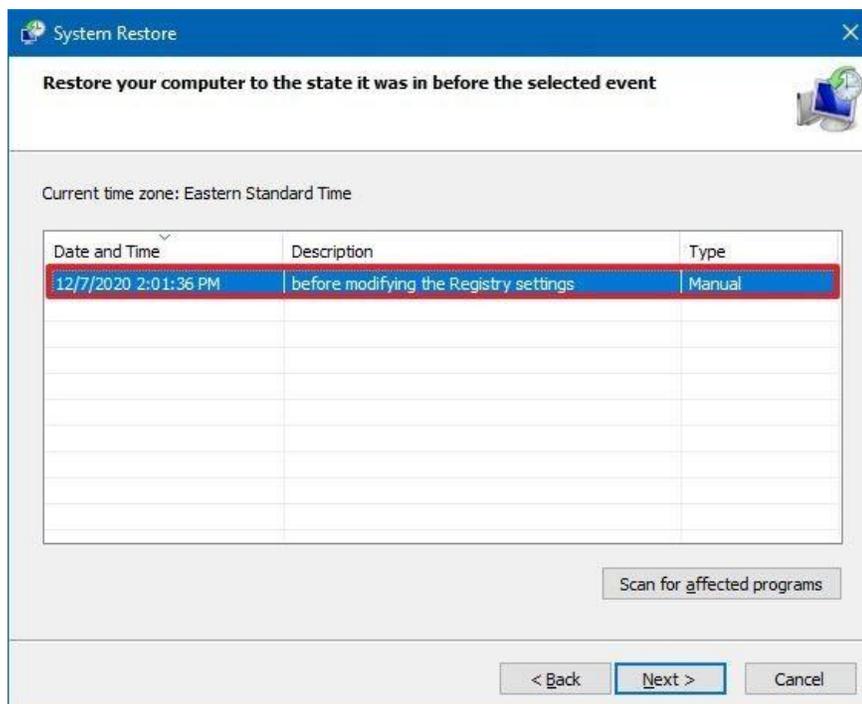
- Open the **Start** Menu.
- Go to the System Properties page by searching for Create a restore point and clicking the first result.
- Select System Restore.

Note: If an option is grayed out, it signifies that it is not available.

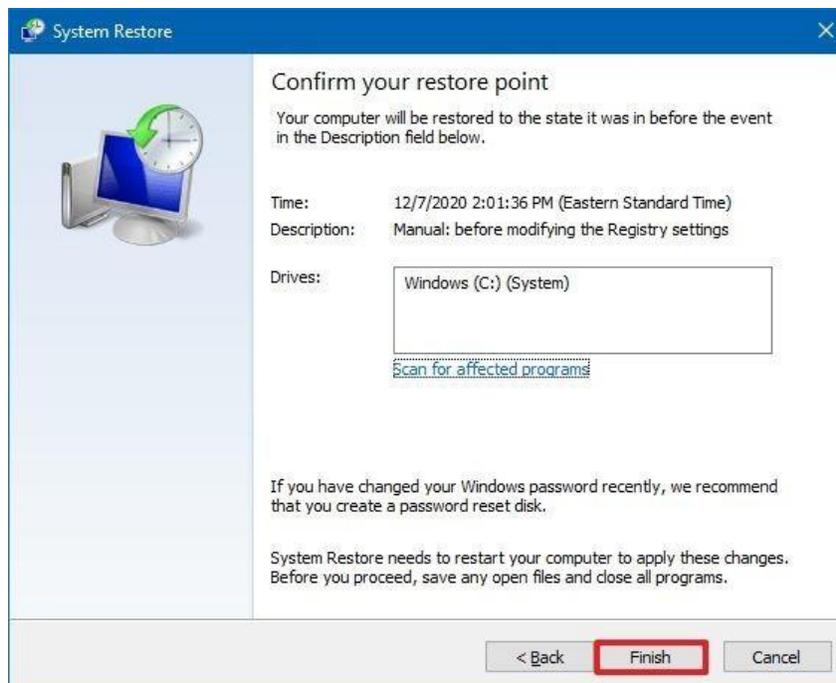


Quick note: If an option is grayed out, it signifies that there is no usable restore point on the system

- Press the **Next** button.



1. To revert modifications, pick a restore point.
2. To validate the applications that would be deleted since they were added after the restore point was created. Click the **Scan for affected programs**.
3. To close the window, Click the **Close** button.
4. Click on the **Next** button.
5. Click **Finish** button.



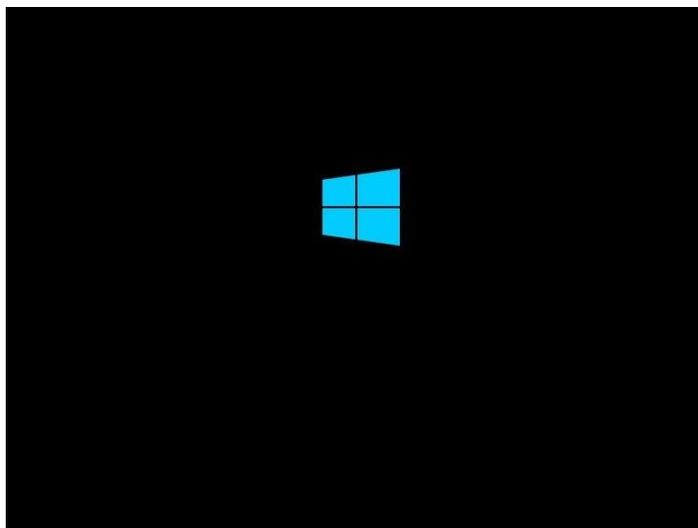
System Restore will return the system to its previous good working state after you complete the steps.

Undo system changes from Advanced startup

If the device does not boot to reach the desktop, you can use Advanced Startup Settings to undo system changes using the System Restore function.

Access Advanced startup

Enter the Advanced Startup Environment to use System Restore using the following instructions below:



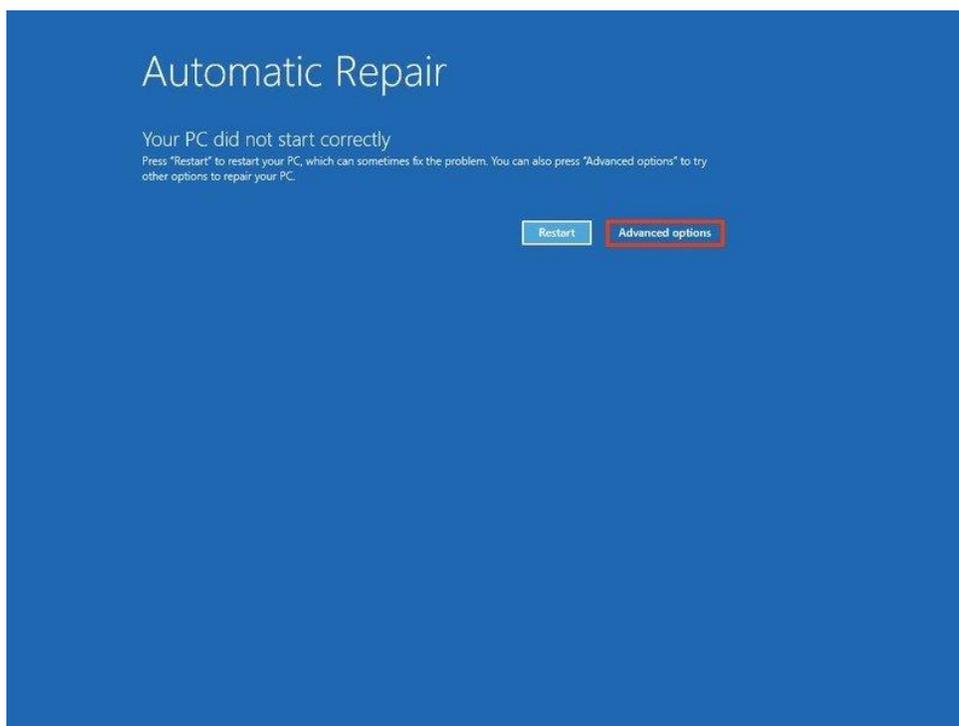
1. Power on the Personal Computer.
2. As soon as the Windows logo shows on the screen, press the power button to interrupt the boot sequence.

Figure: Shows the window logo

3. Repeat two more times for steps No. 1 and 2. (Or before the unit boots into the experience of recovery. After you've completed the instructions, you'll utilize System Restore to undo the changes you've made to the system.

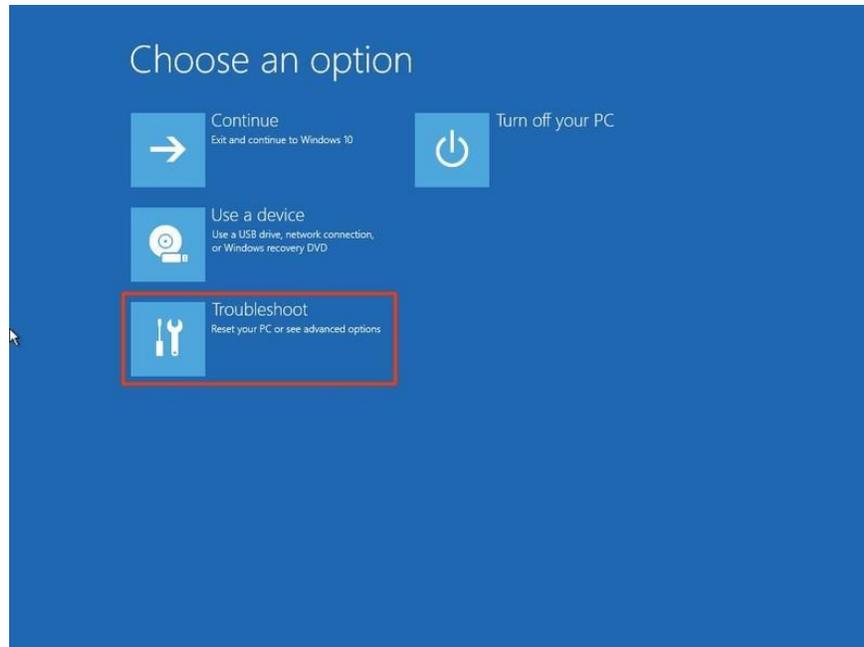
ALTERNATIVELY, if you are unable to reach the recovery environment using the instructions above, start your computer with Windows 10 installation media and hit the Next button. Once in the Windows Setup experience, choose Restore Your Computer in the bottom-left corner, and then follow the steps below.

Using System Restore to undo changes



In these instruction, you'll do a System Restore from the Advanced Startup Environment:

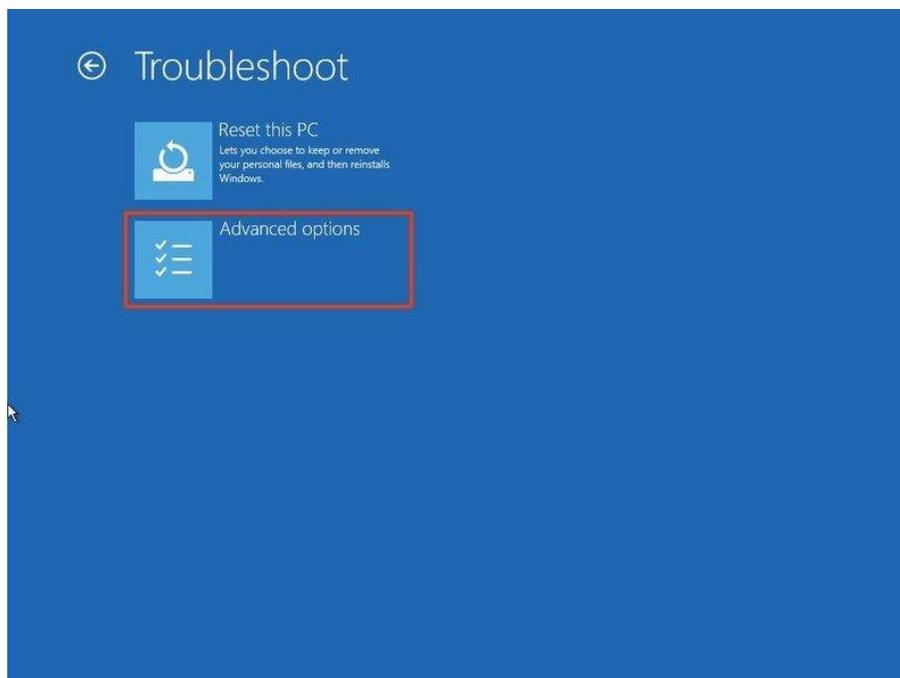
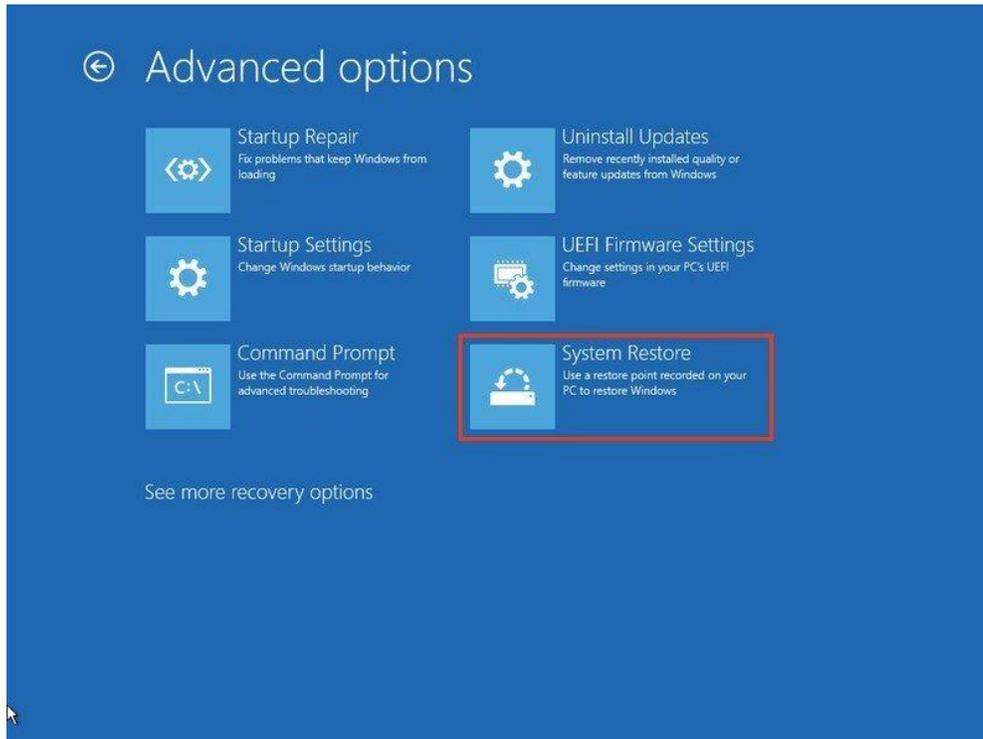
1. Click the button **for Advanced options**.



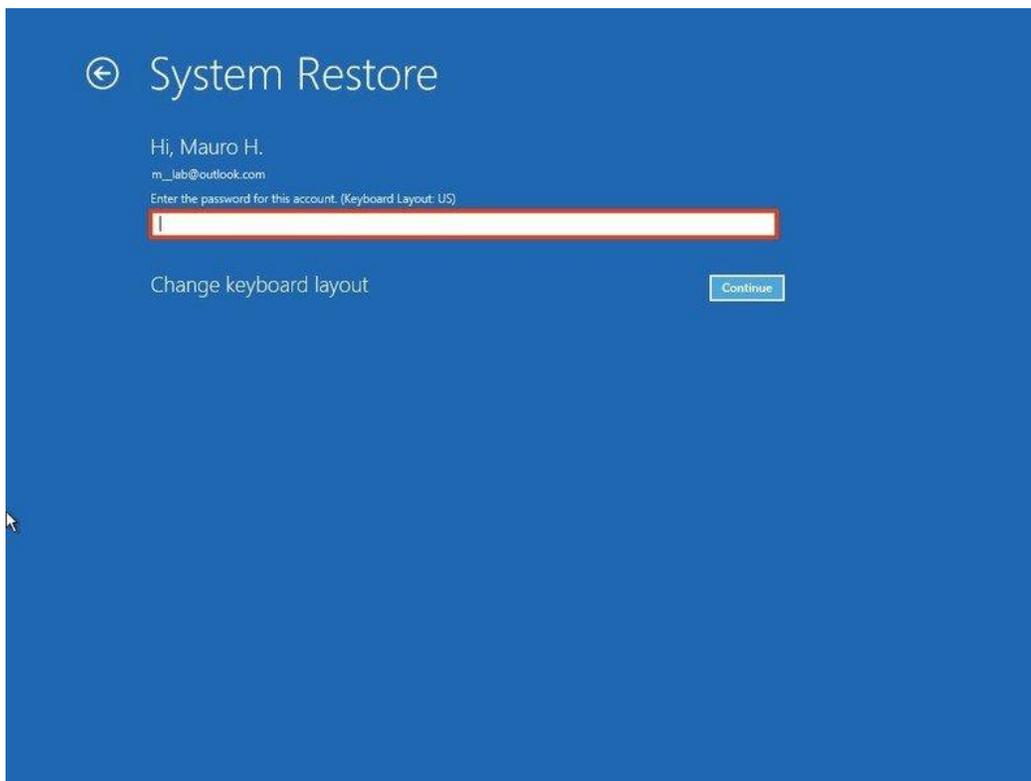
2. Click on the button for **Troubleshoot**.

3. Click on **Advanced options** button.

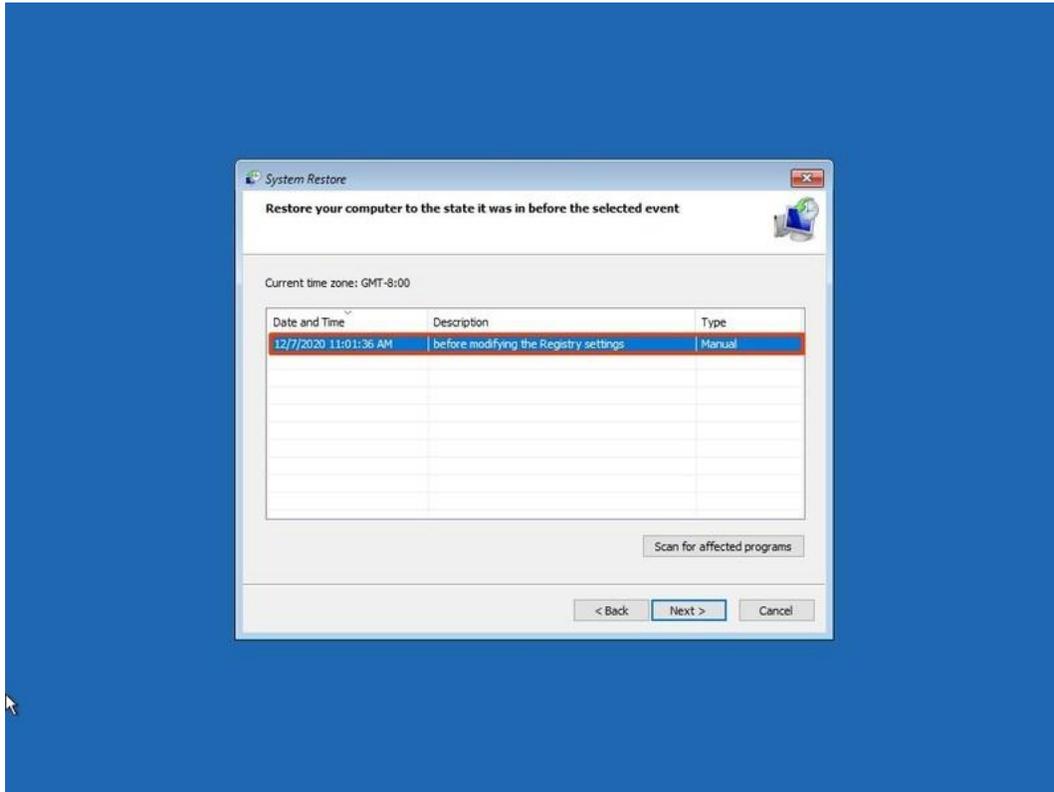
4. Click on **System Restore**.



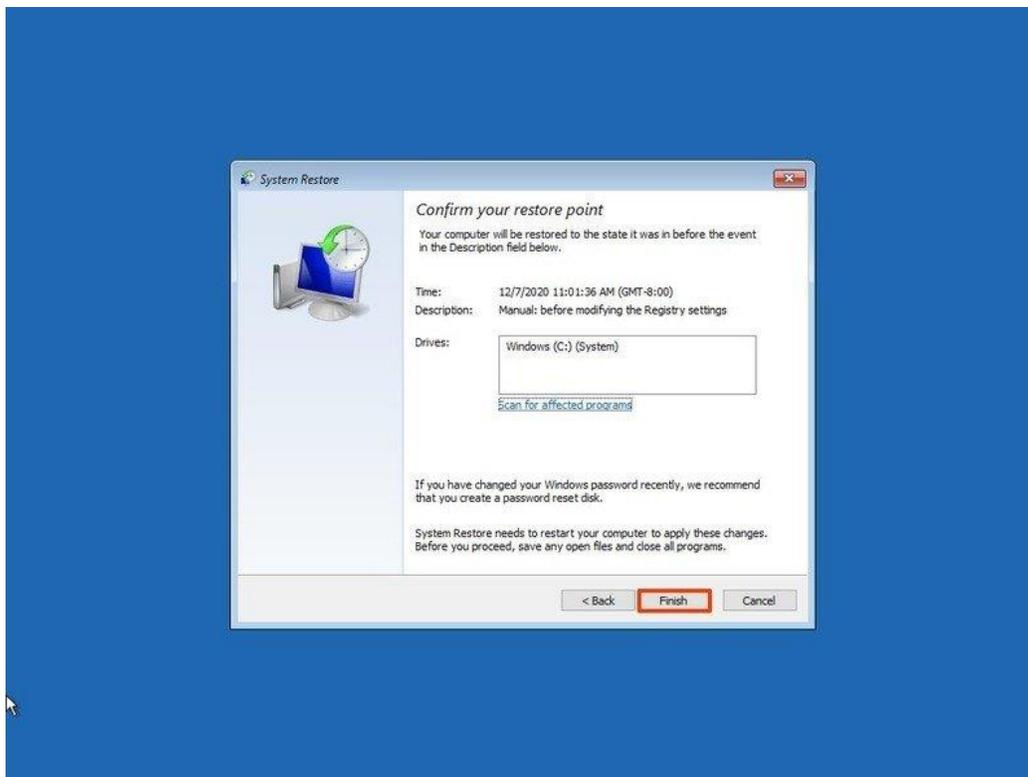
5. Select your account for Windows 10.
6. Check the password for the account.



7. Click the button **Continue** button
8. Click on the **Next** button to continue.



9. To undo changes or modifications, choose a restore point.
10. To validate the applications that would be deleted when added after the restore point was created. Click the **Scan for affected programs** button.
11. Click the button **Close**.
12. Click the button **Next**.
13. Click the button **Finish**.



The modifications that caused the issue will be removed if you complete the instructions, with the previous snapshot returning the system to a known operational state.

This guide focuses on Windows 10, but because this is a legacy feature, you can also learn how to apply same methods to Windows 8.1 or Windows 7.

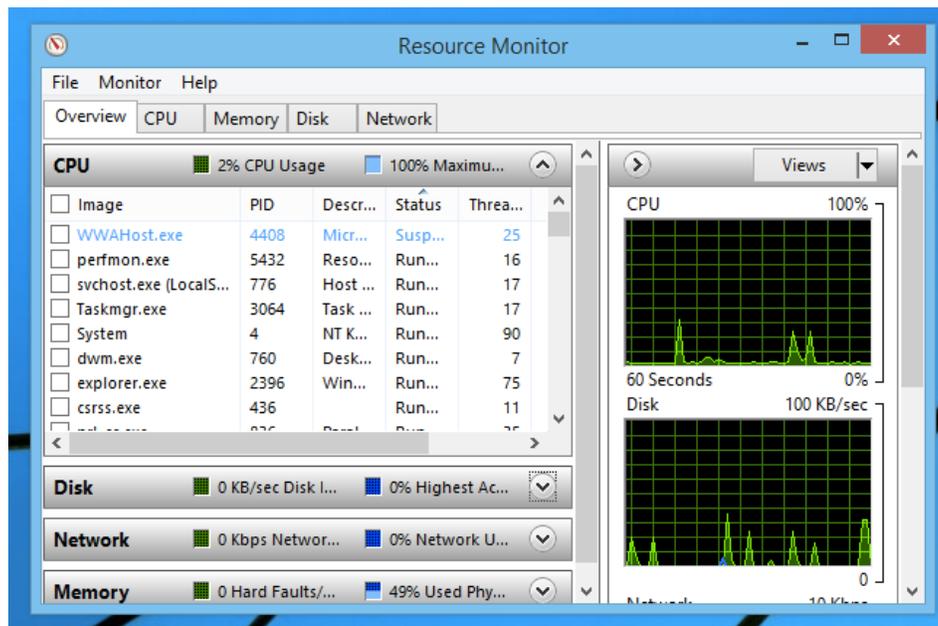
While System Restore is a useful feature for swiftly recovering from configuration difficulties, it is not intended to replace a backup solution or the option to restore the computer to its factory default settings.

8.3.3 Resource Monitor

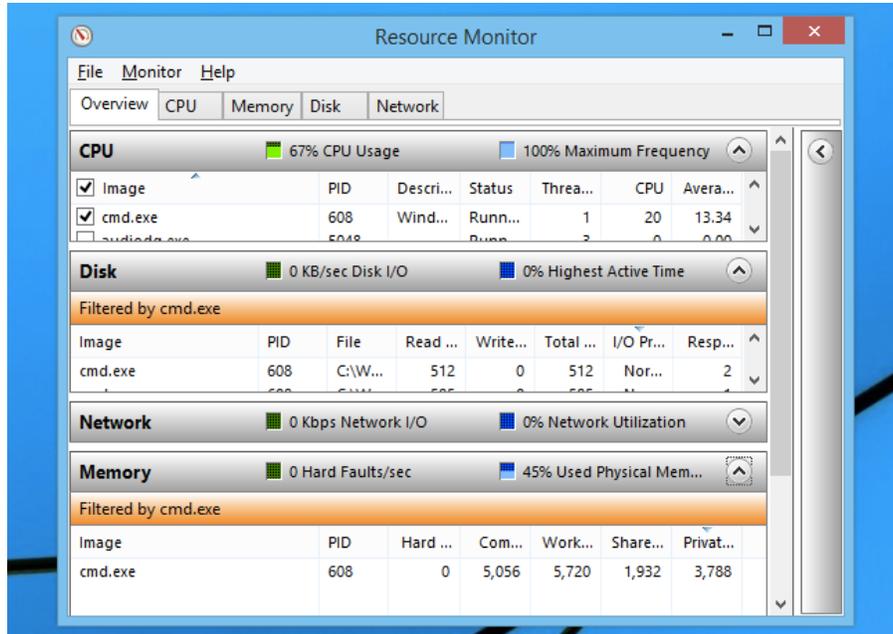
Resource Monitor is the best tool used to keep track of CPU, disk, network and memory usage in a simple and concise way, probably better than Task.

The initial view presents a summary of different parts with sortable columns for CPU, Memory, Drive, Network, so that you can see very easily what your resources are doing. If you need to, you may also utilize the tabs to learn more about each tool.

Although the charts as shown on the right side are fun, on a smaller screen they are always a waste of room, so if you need to, you can cover them with the circular arrow button.

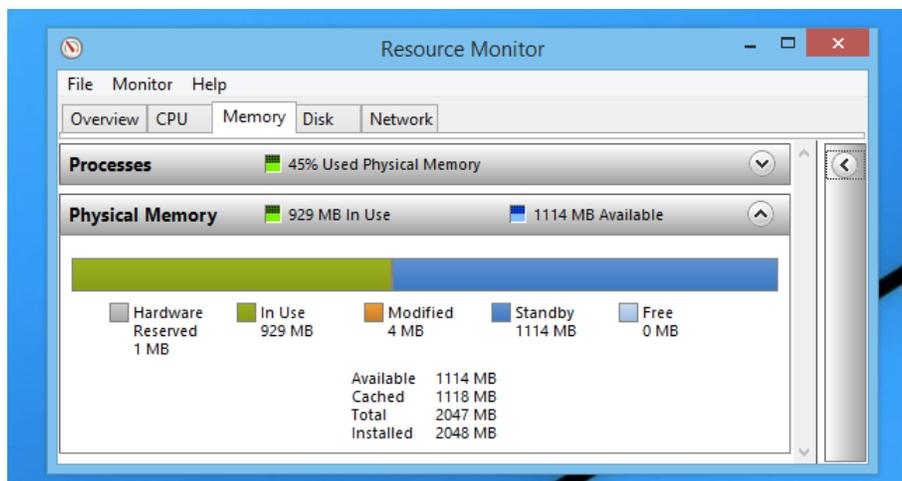


If you just want to delve deeper, use the checkboxes to the left of the list to select a method, and everything else in the interface will only show resource usage for that process. So, if you chose cmd.exe as a process and the command prompt was doing an intensive task, the other panels will only show resource usage for that process..



The CPU tab provides a clearer perspective of all CPU usage, and the Handle Search tool is really useful.

Basically, if a file or folder becomes stuck in a process and you don't know which one it is, you may type the file name into the search box and find it quickly. You can still choose to terminate the process here if you like, but we recommend that you close the application normally so that you don't miss any details.



The Memory tab offers an external view of memory utilization in the form of a bar graph. It also includes a small graph that shows the amount of actual RAM consumed, which is useful.

When you look at the bar graph, one of the first things you'll notice is that the "Free" memory column has 0 MB free. So it's a fantastic thing!

Memory that isn't being used is a waste of energy, so when your program requires extra RAM, Windows will delete low-priority DLLs or RAM processes to keep your RAM full of important stuff (rather than having to load items from your much slower hard drive).

If you run an application that requires a function from a standard DLL, the main executable and the function will both be in standby memory and will not need to be read from the disk.

Hardware Reserved Memory — This is memory set aside for specific drivers and items, such as the device's BIOS. It's primarily reserved for hardware.

In Use - This is the most important one in the list because it represents processes, programs, and Windows itself.

Modified - Memory pages that have been modified and must be flushed to disk before they may be utilized again.

Standby - Frequently used items are stored in this section of memory so that they can be accessed without having to load the disk, but the lowest priority items are wiped out to make place for your use.

Free – This section is normally quite small, and Windows will utilize algorithms to find out which applications and DLLs you use the most, and then move them into RAM (turning that chunk of memory from "Free" to "Standby").

Bottom line You can need to update your RAM or run less items at once if the graph is green all the way through most of the time.

The words relevant to memory use are something that needs a bit more clarification. Many individuals have the wrong idea because of a lot of misunderstanding over the years about how memory is handled by Windows, especially because modern versions of Windows do a much better job. This is what each of the columns really means, based on the screenshot above.

Hard Faults - Also known as Page Faults, seem bad, but they just mean that the application intended to access everything in the paged-out paging file in RAM. If you're seeing a lot of serious issues, it's time to upgrade your RAM.

Commit- The amount of space requested by the program in the paging file is listed in this column. Even in ideal circumstances, apps will require and reserve a significant amount of space here.

Working Set- This is the exact quantity of memory RAM needs to complete the task. It's worth noting that this column is identical to Shareable + Private.

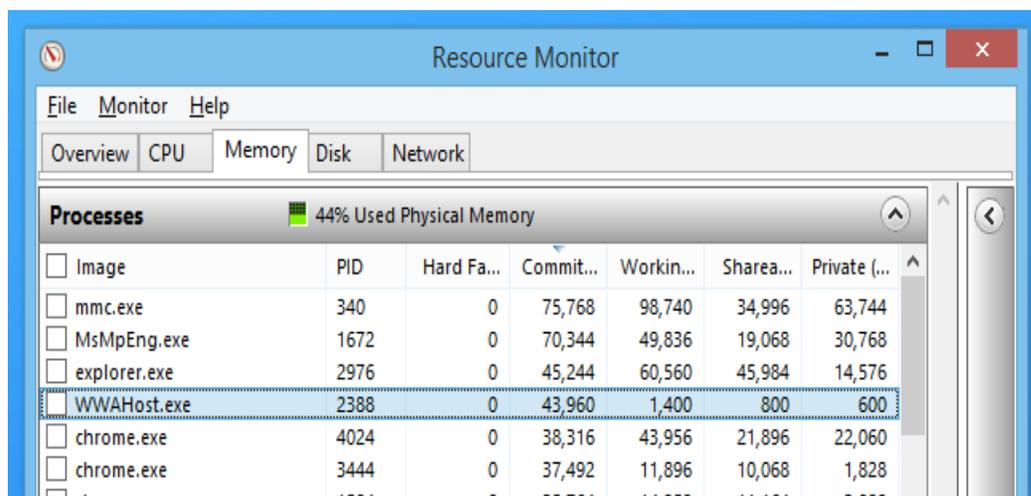
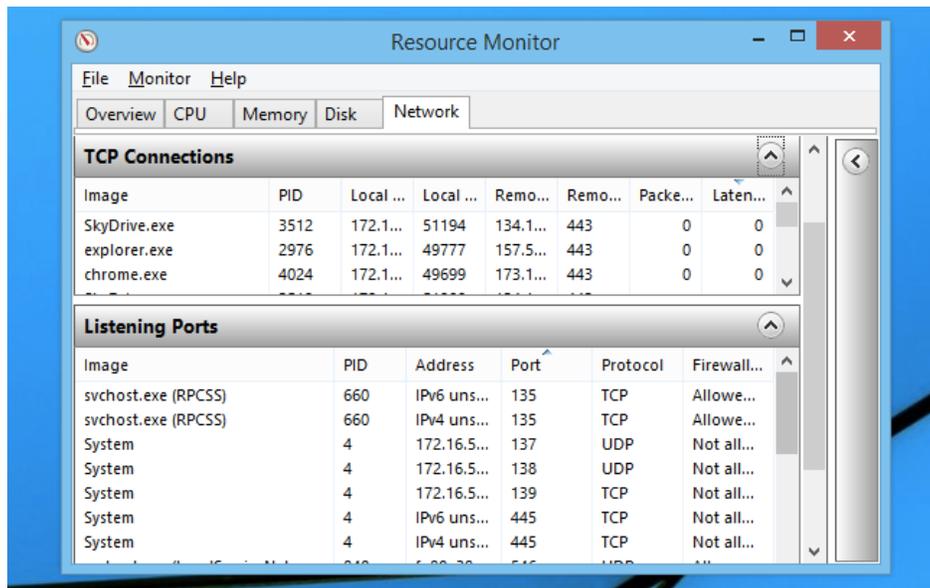


Image	PID	Hard Fa...	Commit...	Workin...	Sharea...	Private (...)
mmc.exe	340	0	75,768	98,740	34,996	63,744
MsMpEng.exe	1672	0	70,344	49,836	19,068	30,768
explorer.exe	2976	0	45,244	60,560	45,984	14,576
WWWHost.exe	2388	0	43,960	1,400	800	600
chrome.exe	4024	0	38,316	43,956	21,896	22,060
chrome.exe	3444	0	37,492	11,896	10,068	1,828

Shareable-This is the quantity that is or may be exchanged with other systems in the job collection. If there's not enough RAM, this is also the portion that can be giving up.



Private-This is the volume of RAM that is used by your program that other processes cannot access.

The Network tab is extremely useful, providing functionality that is usually only available through the command prompt or third-party tools: you can view a list of all TCP connections, as well as see what device processes are actually listening on a port and whether the Windows Firewall allows other computers to connect.

Saving Several Configurations for Setup

You may find yourself using Resource Monitor for a variety of functions at different times. For example, if you want to quickly discover which programs have open ports, open Resource Monitor, click Network, and then open the panel of listening ports and lower the others to see it.

You may also need to perform a completely new task, such as checking for handles or determining which program uses the hard disk the most.

One of the nicest features of Resource Monitor is the option to rearrange the panels to your liking and then save them as a configuration package. All you have to do is go to File -> Save Settings As.

Instead of using Load Settings to access the specific configuration set, you can create a shortcut to the configurations file. You can also utilize the Jump Lists function by right-clicking the icon

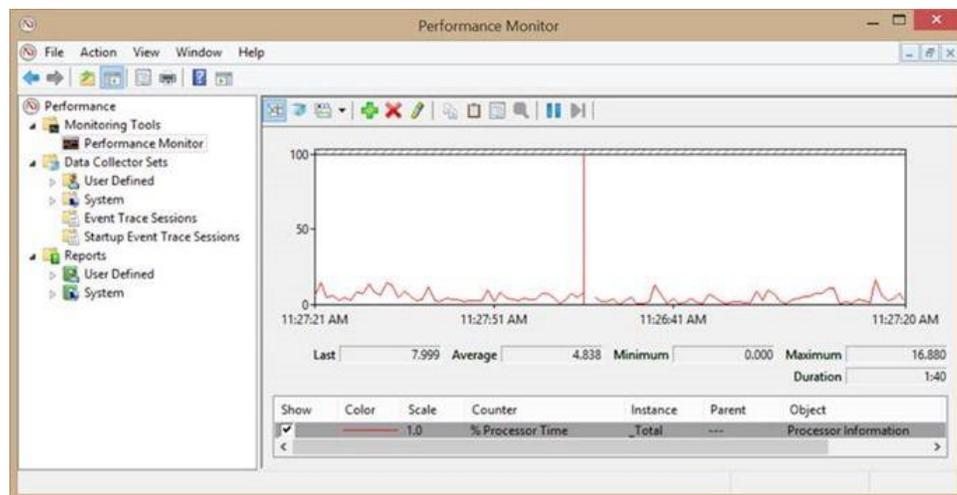


and picking one of the recent items in the folder.

And, because you can open several Resource Monitor instances, this is particularly useful.

8.3.4 Performance Monitor

The Performance Monitor is designed to present data in real time. By default, only one counter is selected: the percent Processor Time counter. You can, however, add more counters by clicking on the green plus icon. This will allow you to track any counters you want in real time.



Though you can see all of the performance counters you need here, the Performance Monitor's true usefulness lies in its capacity to record performance data over a period of time. Taking data over a long period of time allows you to detect trends, which are the most useful for evaluating the system's overall effectiveness. To collect this data, you can use what are known as 'Data Collector Sets.'

Data Collector Sets

Data Collector Sets are what they're called. They collect data from your device so you can see how your equipment's configuration and output information has improved over time.

Basically, there are three groups of data collector types:

Table 8.1 Shows the three groups of data Collector types

Performance Counter	Capture data at a given time period dependent on the polling of an occurrence
Event Traces	Collect data based on current events rather than a specific time frame
System Configuration Information	Capture information about configuration

The following can be viewed under Data Collector Sets:



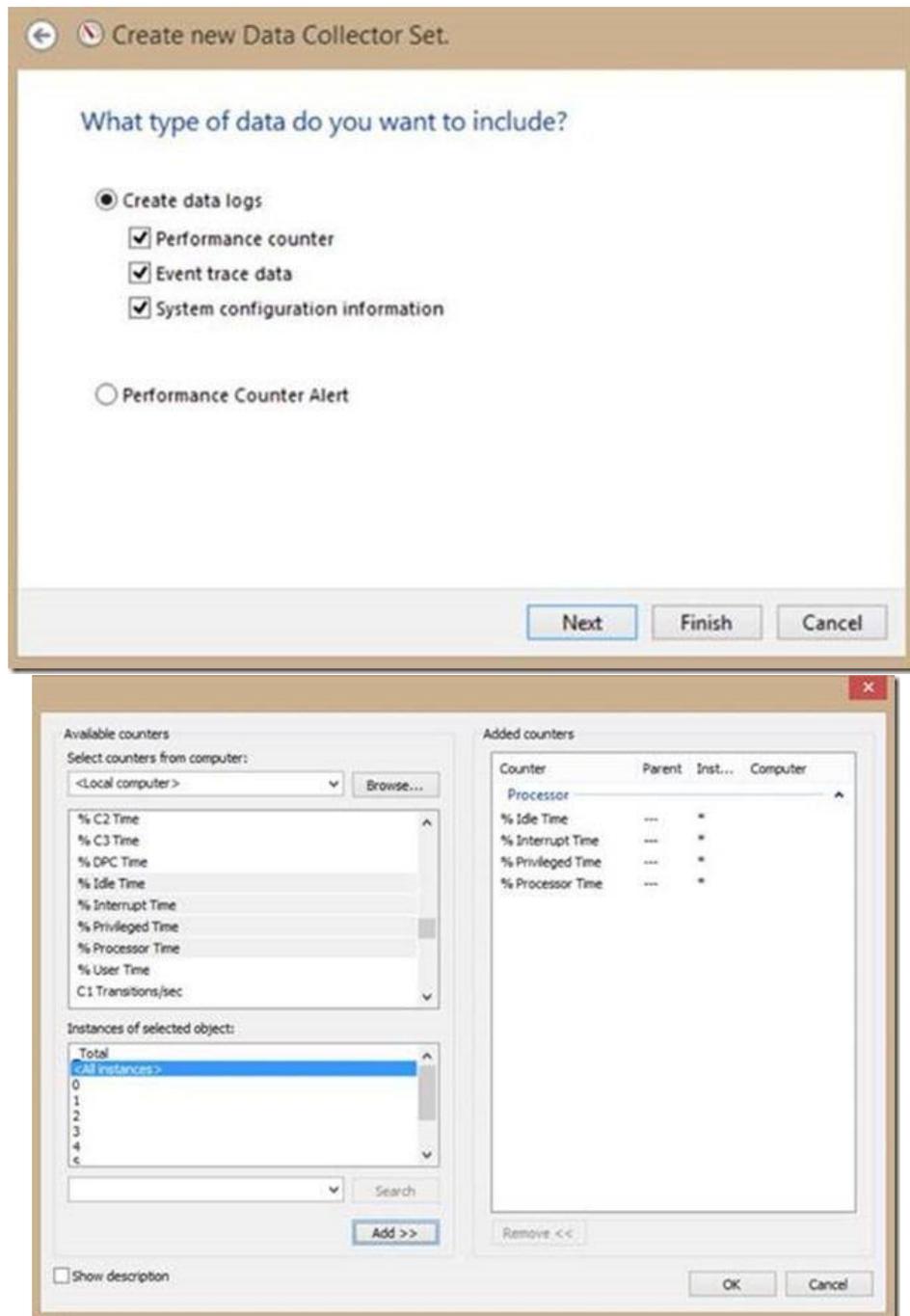
User Defined

Identified Consumer

You can build a custom Data Collector Package of your own under User Defined. This Data Collections Sets can include collectors of counts (counters), traces, and configurations. To make one, You can choose New -> New Data Collector Set by right-clicking on User Defined. You can build a data collector set from a template or develop your own unique set. Let's make one from scratch:

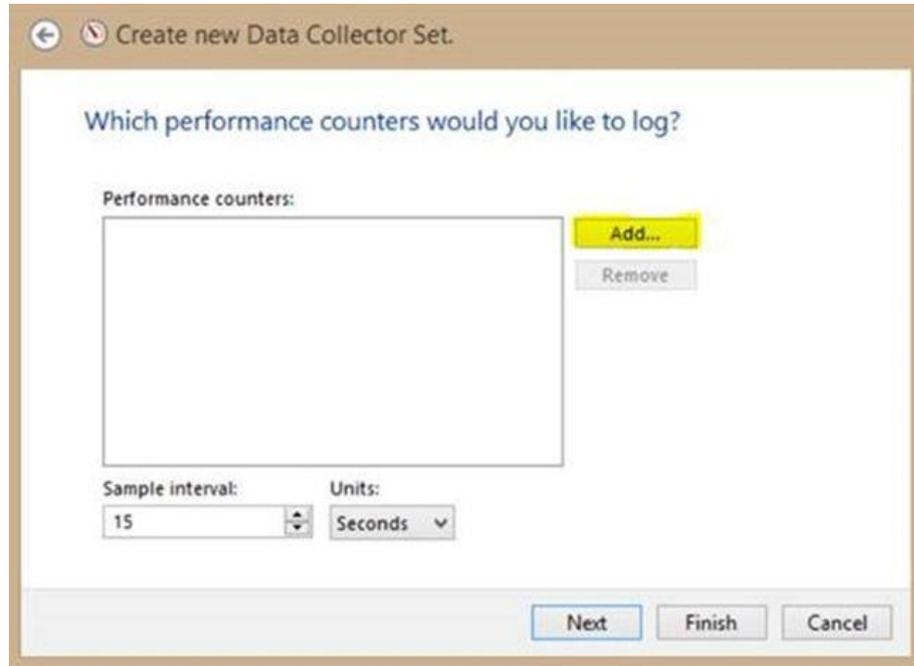
1. Give your Data Collector Set a name select "Create manually (Advanced)"
2. You can create data logs (counter/trace/config) or a Performance Counter Alert on this screen. With the "Performance Counter Alert" option, you can produce alerts depending on certain output numbers and thresholds. For the time being, we'll choose "Create Data Logs" and tick all three boxes:
3. Set the counter interval rate (how often you want it to capture the specified data) and the specific counters you want to capture on the screen below.

4. You will pick counters after you press Add and then add them to the "Added Counters" box. Notice that you have choices in terms of whether you want Perfmon to gather the



data as a whole or, in this case, per processor, whether you want to split the data up. As

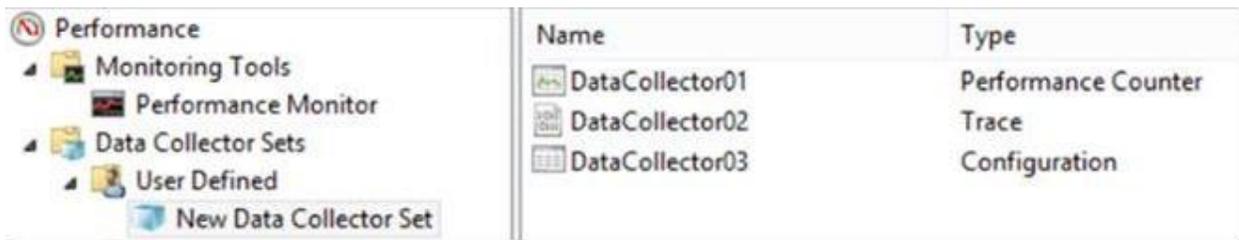
the purpose of these counters depends on what is being counted, you should pay attention to which one you pick.



5. You will be asked to add trace providers afterwards. Trace providers essentially supply details on a particular series of events to perfmon. If you wanted to collect Windows Firewall event data, for example, you'd use the Microsoft-Windows-Firewall provider. If you know what you're doing, you can alter the properties and also record registry keys (after you hit next you can specify which keys to record).
6. You can optionally provide a location for the information to be saved. By default, the data is saved to the following locations: %systemdrive %\PerfLogs\Admin\New\ Data Collector Set
7. Finally, you may choose which user will launch the data collector package. This can be useful in instances where PCs and servers are turned off for security concerns.

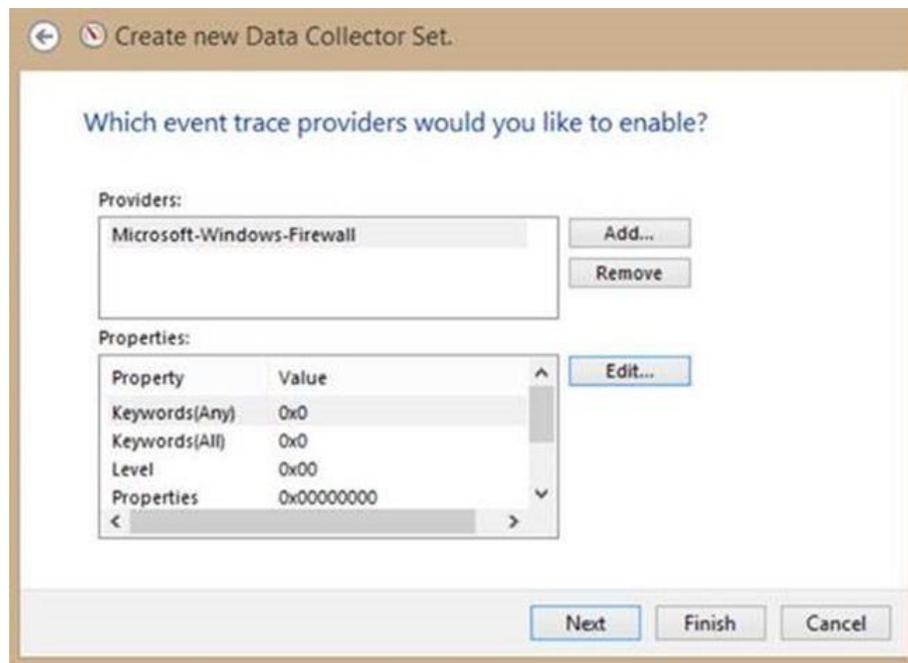
If you look at the "New Data Collector Set" that we just put up, you'll notice that it includes a performance counter, a trace, and a configuration collector.

Finally, if you look at the remaining items under Data Collection Sets, you can see a lot of preconfigured collector sets.



The screenshot shows the Performance Monitor console tree on the left and a list of Data Collector Sets on the right. The console tree is expanded to 'Data Collector Sets' > 'User Defined' > 'New Data Collector Set'. The list on the right has the following data:

Name	Type
DataCollector01	Performance Counter
DataCollector02	Trace
DataCollector03	Configuration



The screenshot shows the 'Create new Data Collector Set' wizard. The title bar reads 'Create new Data Collector Set.' The main question is 'Which event trace providers would you like to enable?'. There are two sections: 'Providers' and 'Properties'. The 'Providers' section has a list box containing 'Microsoft-Windows-Firewall' and buttons for 'Add...' and 'Remove'. The 'Properties' section has a table with the following data:

Property	Value
Keywords(Any)	0x0
Keywords(All)	0x0
Level	0x00
Properties	0x00000000

There is an 'Edit...' button to the right of the Properties table. At the bottom of the wizard are 'Next', 'Finish', and 'Cancel' buttons.

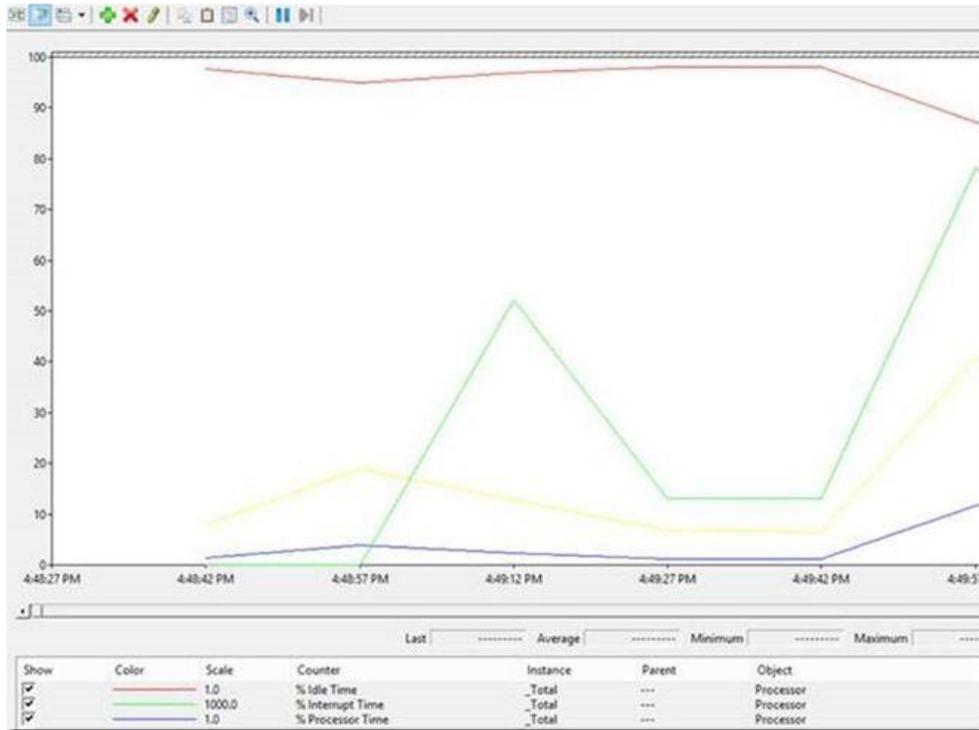


Reporting

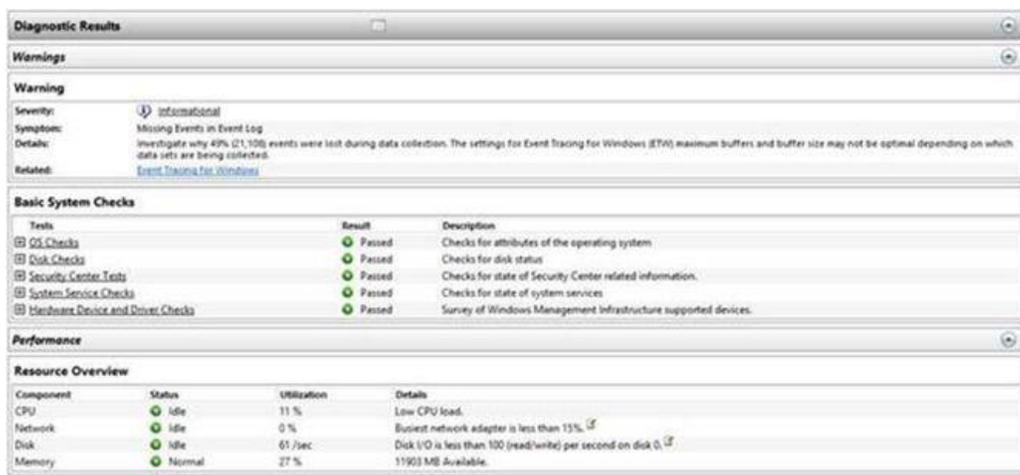
The Reports segment is the final component of the Performance Monitor. Here you can access the details that your data collector sets have stored. If your data collector collection has never been run, then when you click on it, you will not see any detail.



However, once you've ran your data collector set, you can click on it to examine the reports and information that have been collected:



So, here's a quick rundown of Windows Performance Control. When you understand the pieces, you'll be able to figure out which counters to employ and what the counter interval rate should be for tracking this type of data vs. that type of data.



Diagnostic Results

Warnings

Warning

Severity: Informational
Symptom: Missing Events in Event Log
Details: Investigate why 40% (21,108) events were lost during data collection. The settings for Event Tracing for Windows (ETW) maximum buffers and buffer size may not be optimal depending on which data sets are being collected.
Related: [Event Tracing for Windows](#)

Basic System Checks

Tests	Result	Description
OS Checks	Passed	Checks for attributes of the operating system
Disk Checks	Passed	Checks for disk status
Security Center Tests	Passed	Checks for state of Security Center related information.
System Service Checks	Passed	Checks for state of system services
Hardware Device and Driver Checks	Passed	Survey of Windows Management Infrastructure supported devices.

Performance

Resource Overview

Component	Status	Utilization	Details
CPU	Idle	11 %	Low CPU load.
Network	Idle	0 %	Busiest network adapter is less than 13%.
Disk	Idle	61 /sec	Disk I/O is less than 100 (read/write) per second on disk 0.
Memory	Normal	27 %	11903 MB Available.

8.3.5 External tools for PC diagnosis and maintenance

It can also be helpful to use some certain software to execute these tasks from a third party website. Imagine if you are away to another location, and one of the users need your help to diagnose and resolve a problem. And he seems not to explain it so well that you wish you can be there virtually to assist, well, there is one very nice third-party tool for this, it's the Team Viewer.

Remote Access using Team Viewer

TeamViewer is a popular application that lets you take control of a PC remotely over the internet.



With the assistance of TeamViewer, you will still reach a user's PC or your personal computer.

Here's a terrible scenario: you worked through the night to finish the report your employer requested first thing in the morning, but when you get to work, you discover you left the file on your PC's Desktop. So, what are your plans? Should you resign, make a pleading for sympathy, or simply flee?

If you have TeamViewer installed on your computer, then relax.

TeamViewer is a clever and powerful tool that allows you to remotely operate a computer via the internet. It's also a great method to assist friends and family with computer issues without having to leave the comfort of your desk.

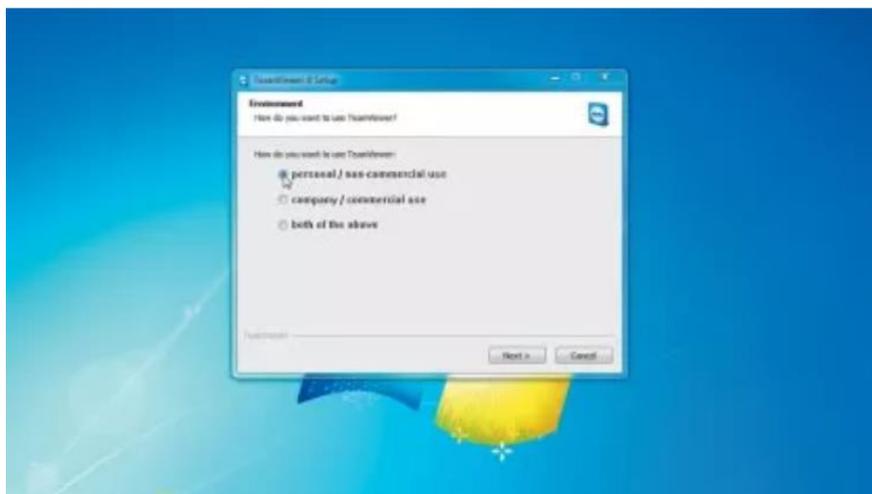
If you are a domestic user, you can download and install the software for free. See the license options for commercial use. As you read on, we'll figure out how to restore the lost file, as well as how to remotely operate your laptop PC. Here's how to deal with it.

Step-by-step: Get the files from your PC over the internet.

1. Download the software

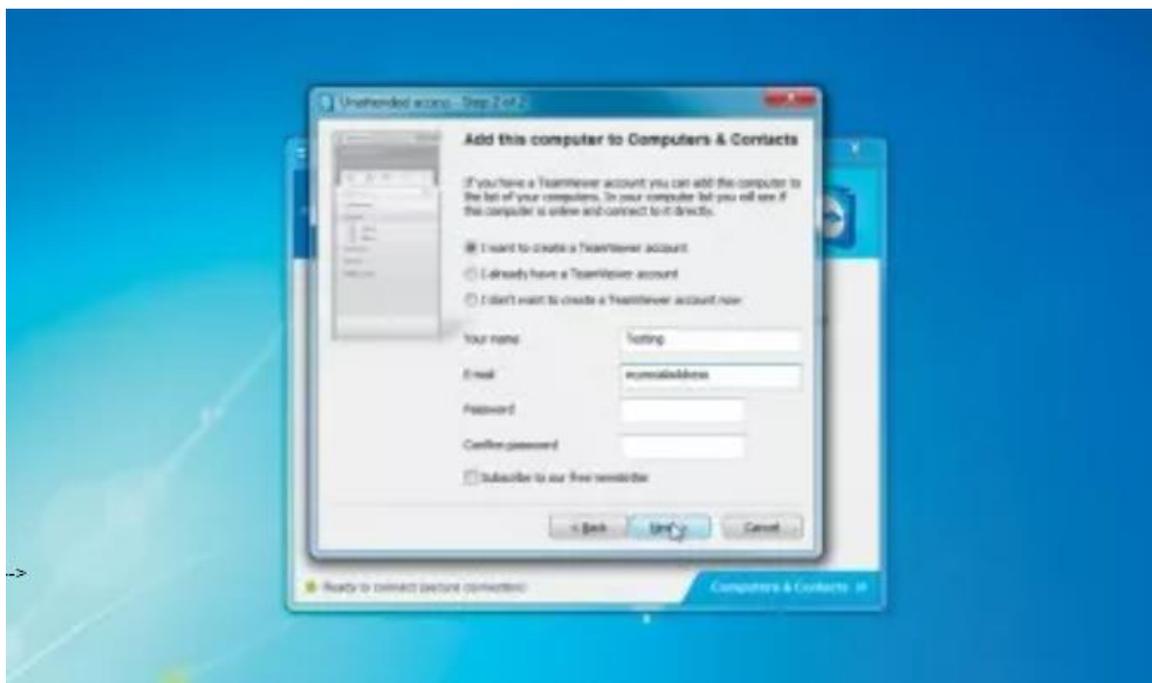
Because TeamViewer works like a phone call between two device, the software must be installed on both computers. Let's pretend you have a desktop PC and a notebook with you at all times. To get started, go to www.teamviewer.com and download TeamViewer for your desktop PC.

2. Get configured



Now press 'Run' at the bottom of the page and approve the licensing agreement when prompted. You're going to need to check both tick boxes here, too. Finally, pick 'Personal/ non-commercial use' when asked and press 'Next'. 'Set up unattended entry' is called the next windows. To proceed, all you need to do is click 'Next'.

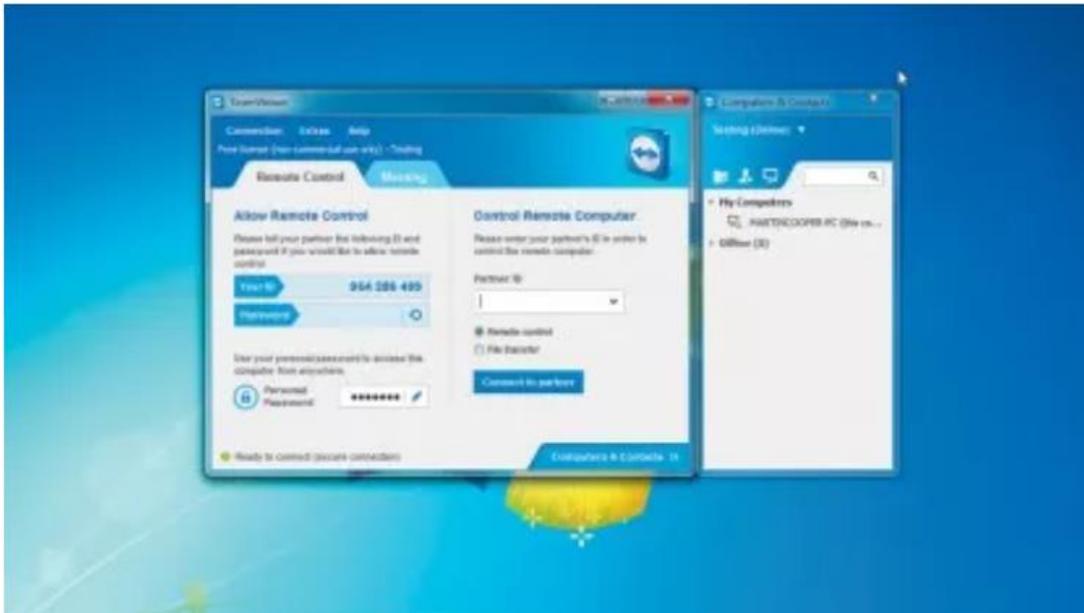
3. Make an account



Now, at the bottom of the page, click 'Run,' and accept the licensing agreement when requested. You'll also need to check both tick boxes in this section. Finally, when prompted, select 'Personal/non-commercial usage' and click 'Next.' The following window is labeled 'Set up unattended entry.' All you have to do now is click 'Next' to continue.

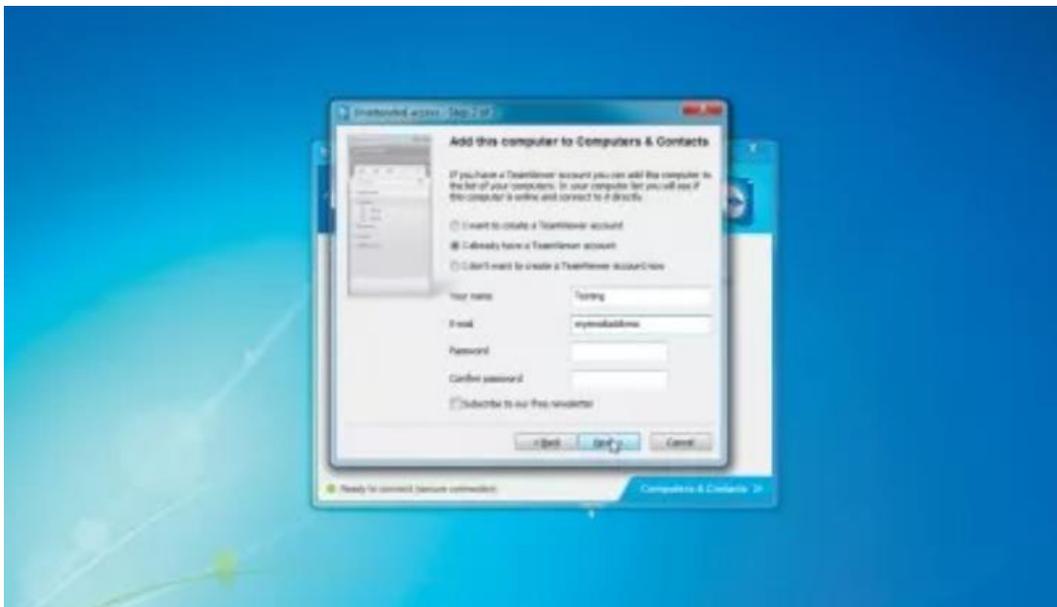
4. Activate Team Viewer

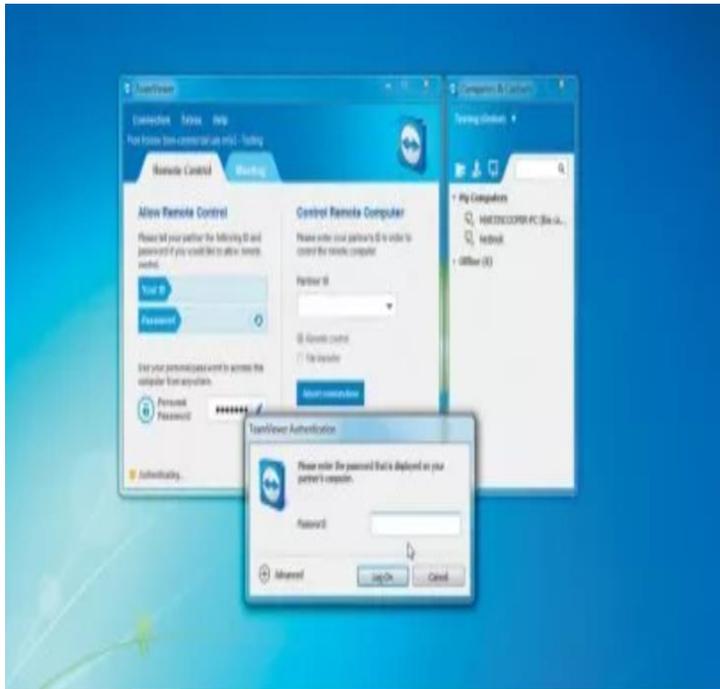
You will now see a screen similar to the one shown above. Don't worry about the passwords just yet; we'll use them later. Accessing your email mailbox and finding a reply from TeamViewer is your last task. You'll need to open it and press the long Url that will enable your registration with TeamViewer.



5. Configuring your laptop

Then, it's time to power up your laptop and there, to load TeamViewer there too. You'll need to take the same steps as before when you're finished, until you hit the screen above. You will now see a screen similar to the one shown above. Don't worry about the passwords just yet; we'll use them later.





6. Take control

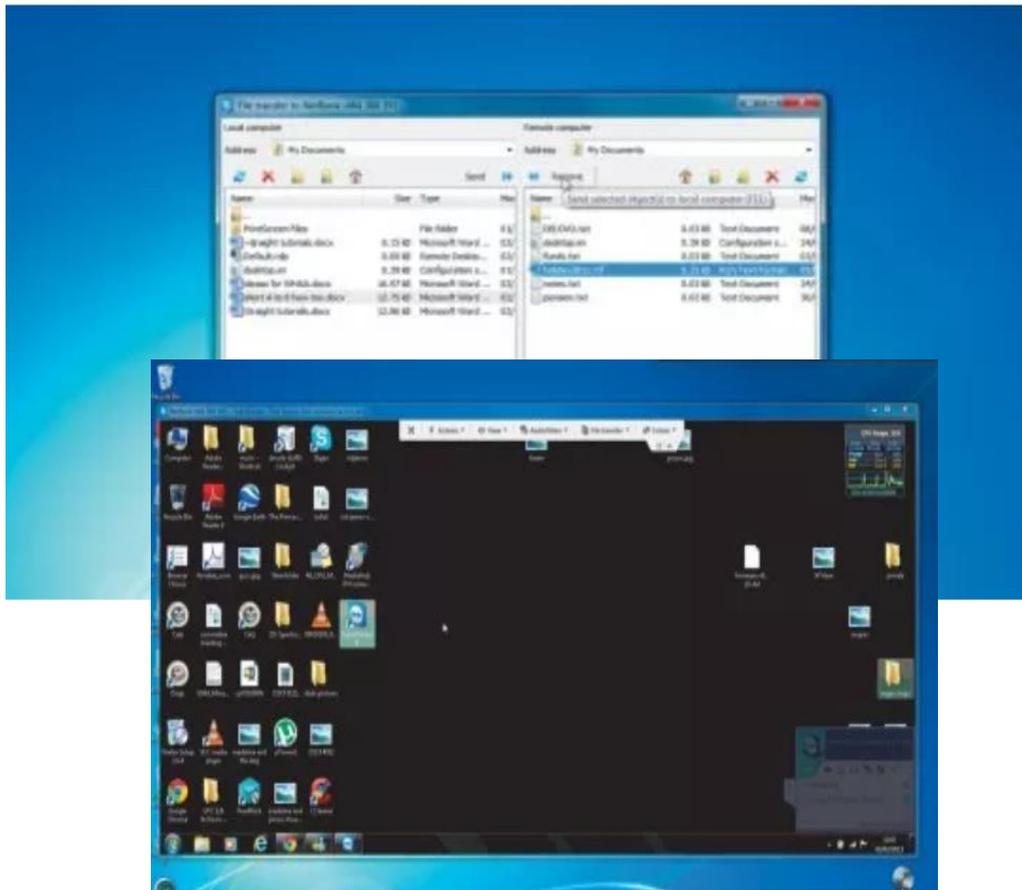
Let's give your laptop complete control over your desktop. By looking at your key PC, write down the number next to 'Your ID.' Now, operating on your laptop, in the 'Partner ID' box, enter this number. Tap on 'Link to partner' and Enter your TeamViewer password. The Windows desktop for your desktop PC will appear.

7. Remote access to your PC

By working on your desktop, you should now be able to click and drag icons around on the other PC. You can open and close programs, as well as make changes to the machine's settings. TeamViewer is also suitable for troubleshooting PCs remotely in this mode. Set it up as before and without leaving your own house, you would be able to support your users.

8. Retrieving the file

If you forgot to transfer a file from your desktop, Close the windows controlling your other



PC, then look at the TeamViewer display under "Control Remote Computer" . Select 'File Transfer > Connect > Log on' . Select your file after navigating to it. It will be transferred to your laptop's My Documents folder after you click 'Retrieve.'