What To Do When

Your PC Is Slow

Years ago, car engines used to lose power now and again. They'd go out of time, or their ignition points would need maintenance, and so performance would suffer.

Today, better designs and more reliable components keep our engines humming. Computer control over fuel, air, and spark helps, too.

Ironically, the computers we use for work and play occasionally get sluggish, too. Sudden slowdowns usually indicate a frozen process or software problem. More common is a gradual slide into lethargy; sometimes your hard drive is to blame.

Maintenance

As you use your computer, the OS and apps save data here and there on the hard drive. If there's no free space large enough to store a larger file, the drive saves parts of the file wherever there's room. This fragmentation slows down read and write processes, and the effect is cumulative.

Drives also become slower to save and retrieve data as they fill up, so the first step to restoring their pep is to get rid of unnecessary data. This includes applications you don't use, so launch the Programs And Features window to get rid of them. In Windows 7, click Start, Control Panel, and Uninstall A Program.

Next, use Windows' Disk Cleanup feature to delete temp files, Recycle Bin remnants, and other virtual trash. Press WIN-E (the Windows logo key and E key) to launch Windows Explorer. Right-click your C: drive, select Properties, click Disk Cleanup, and follow the directions. (If the View Basic Information About Your Computer window appears instead of the C: Properties panel, close it and right-click a different part of the C: drive icon or label.) If your hard drive has other drive letters, such as D: or E:, repeat this process with them.
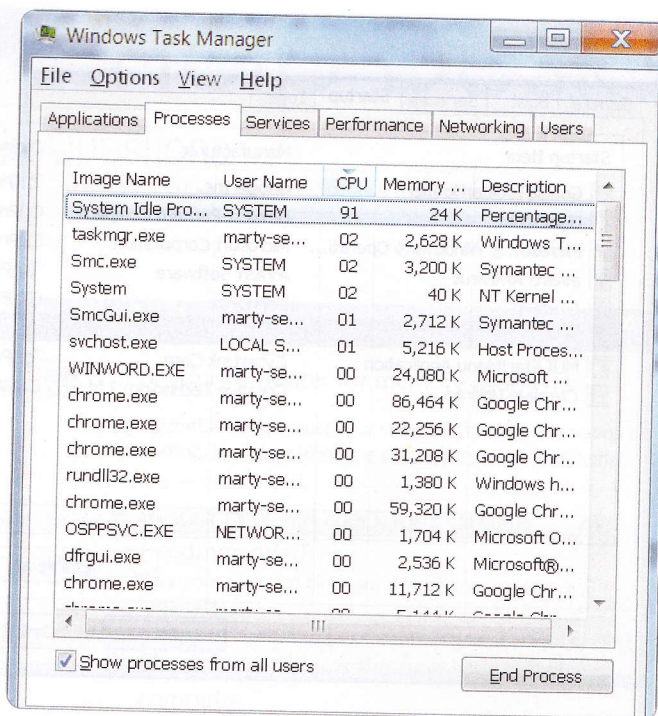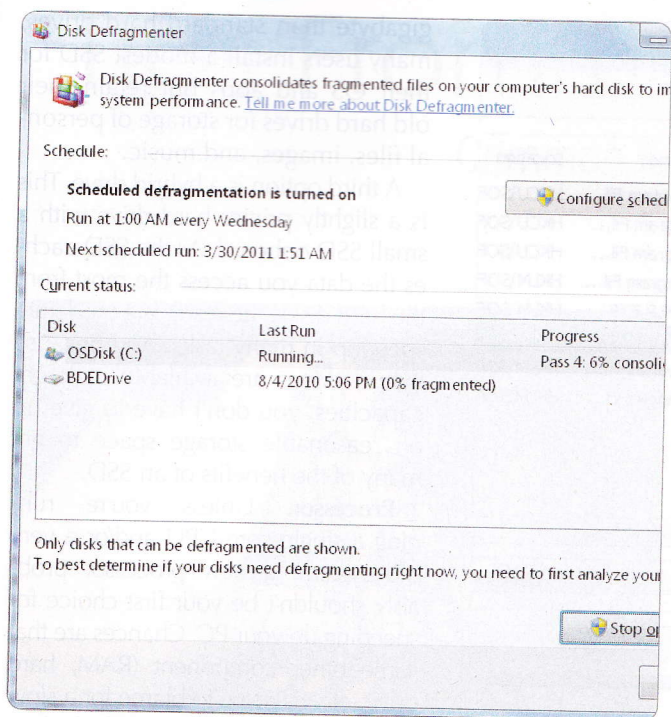
Finally, use defragmentation software to reunite all the split files on your hard drive. Win7 runs its Disk Defragmenter by default every Wednesday morning at 1 a.m., assuming your PC is turned on then. To change this time or to run a defrag manually, click Start, type defrag in the Search Programs And Files field, and click Disk Defragmenter. Note that several third-party defrag utilities can recover even more drive speed by running constantly, but unobtrusively, in the background.

SSD. Because SSDs (solid-state drives) read and write files at the same speeds whether fragmented or not, you don't need to defrag them. In fact, you shouldn't defrag SSDs at all because it only accelerates wear on their memory cells.

That said, SSDs can slow down over time due to a delay in the way flash memory writes files to memory cells with deleted data that's still physically present. Win7 automatically runs a command called TRIM during idle periods to fix this issue on SSDs that support it.

However, if you're running an older OS, an SSD without TRIM support, and/or an SSD RAID (redundant array of independent disks), check the SSD manufacturer's site for a performance recovery utility commonly called "garbage collection." Some vendors also provide firmware updates with speed increases. Installing new firmware can be risky, however, so back

Disk Defragmenter

Disk Defragmenter consolidates fragmented files on your computer's hard disk to im system performance. Tell me more about Disk Defragmenter.

Schedule:

Scheduled defragmentation is turned on

Run at 1:00 AM every Wednesday

Next scheduled run: 3/30/2011 1:51 AM

Configure sched

Current status:

Disk	Last Run	Progress
OSDisk (C:)	Running...	Pass 4: 6% consoli
BDEDrive	8/4/2010 5:06 PM (0% fragmented)	

Only disks that can be defragmented are shown.
To best determine if your disks need defragmenting right now, you need to first analyze your

Stop o

Windows Task Manager

File   Options   View   Help

Applications | Processes | Services | Performance | Networking | Users

Image Name	User Name	CPU	Memory ...	Description
System Idle Pro...	SYSTEM	91	24 K	Percentage...
taskmgr.exe	marty-se...	02	2,628 K	Windows T...
Smc.exe	SYSTEM	02	3,200 K	Symantec ...
System	SYSTEM	02	40 K	NT Kernel ...
SmcGui.exe	marty-se...	01	2,712 K	Symantec ...
svchost.exe	LOCAL S...	01	5,216 K	Host Proces...
WINWORD.EXE	marty-se...	00	24,080 K	Microsoft ...
chrome.exe	marty-se...	00	86,464 K	Google Chr...
chrome.exe	marty-se...	00	22,256 K	Google Chr...
chrome.exe	marty-se...	00	31,208 K	Google Chr...
rundll32.exe	marty-se...	00	1,380 K	Windows h...
chrome.exe	marty-se...	00	59,320 K	Google Chr...
OSPPSVC.EXE	NETWOR...	00	1,704 K	Microsoft O...
dfrgui.exe	marty-se...	00	2,536 K	Microsoft®...
chrome.exe	marty-se...	00	11,712 K	Google Chr...

☑ Show processes from all users

End Process

Most gradual PC slowdowns are related to the hard drive. Use Windows' Disk Defragmenter or a third-party utility to keep your drive in the pink.

In Task Manager's Processes tab, click the CPU or Memory categories to sort them so that the processes using the most resources rise to the top.

up your data beforehand and follow the directions exactly.

Windows Tweaks

Sometimes there's an obvious reason for a sudden slow-down, such as your antivirus software starting a scan. Other culprits include opening a multi-gigabyte folder with thousands of media files, launching a group of tabbed browser bookmarks, and running enough programs to max out your RAM.

And then there's the odd program that won't open or close correctly. Press CTRL-SHIFT-ESC to launch Task Manager. Select the application (it may be marked Not Responding) and then click End Task and Yes.

The Processes tab can reveal a process that's sucking up resources, as it will have high numbers in the CPU and/or Memory columns. Select it and click End Process twice.

If all else fails, rebooting your computer may help. If the normal Restart method doesn't work, press CTRL-ALT-DELETE and then click the red arrow icon at the lower right.

Malware can cause a major slowdown, especially if it makes your PC send out spam or participate in online attacks such as DDoS (distributed denial of service). Update your antivirus and run a scan.

There are also some more long-term tweaks you can do to keep your system humming. One is to disable any unwanted programs that start up with Windows. Click Start, type **msconfig** in the Search field, and click Msconfig.exe in the results. Under the Startup tab, uncheck any apps you don't want. Process-Library.com can help you identify unfamiliar items in the Command list (you may have to widen the column to find the program name at the end of each file path). Be sure not to disable any update utilities for common apps such as PDF (Portable Document Format) readers, as these often download security patches. When you're finished, click Apply, OK, and Restart. If you see

a Security Configuration message window, click the Do Not Use option.

Some users also report gaining some speed by using Windows' ReadyBoost feature, which employs removable flash media to temporarily store files that your system is using in an effort to increase performance. Plug in a fast USB flash drive and then right-click it in Windows Explorer and choose the ReadyBoost tab.

Upgrades

Some PC slowdowns respond best to very specific upgrades. For example, if your computer only feels slow during gaming or video editing, you probably need a more powerful graphics card. As for more general sluggishness, here are a few hardware upgrades that can cure a number of ills.

RAM. Memory is odd, in that having more isn't always better. At the same time, if your PC doesn't have enough RAM, it'll slow to a crawl whenever you run demanding applications. It
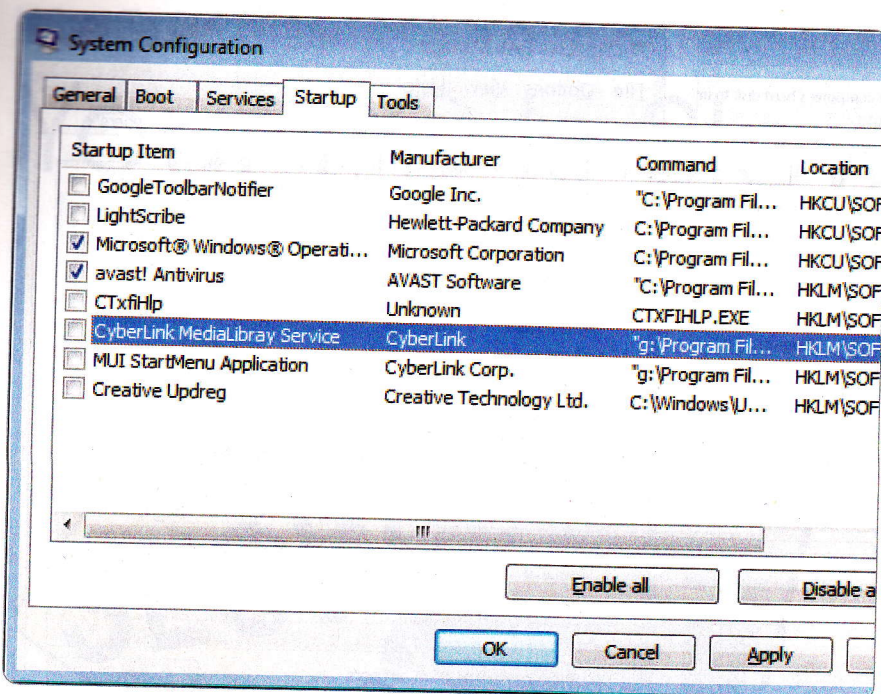
Apps often add items to Windows' startup list. You can prune away gratuitous processes with Msconfig.exe.

gigabyte than standard hard drives, many users install a modest SSD for their OS and apps but retain their old hard drives for storage of personal files, images, and music.

A third option is a hybrid drive. This is a slightly pricier hard drive with a small SSD onboard. As the SSD caches the data you access the most from the hard disks, the result is a moderate speedup in many tasks. And because hybrid drives are available in larger capacities, you don't have to give up on reasonable storage space to get many of the benefits of an SSD.

Processor. Unless you're running a single-core CPU and/or a very old system, a new processor probably shouldn't be your first choice for speeding up your PC. Chances are that some other component (RAM, hard drive, etc.) is more to blame for a slow system. CPUs are not normally the bottleneck when you're trying to deal with a computer that's begun to slow down. Also, a new CPU may force you to buy a new motherboard, RAM, graphics card, and even a power supply. That could be more of an upgrade project than you had in mind when you started out to speed up your system.

That said, moving from a single-or dual-core CPU up to a more powerful CPU will pay dividends. Multi-core processors don't get maxed out very often by typical workloads, so you'll rarely have to wait while your CPU is "thinking." Likewise, a faster CPU can accelerate media file transcoding from one format to another, as well as compression and encryption tasks.

will also work the hard drive a lot more because Windows' virtual memory is nothing more than drive space (called a swap file or paging file) tasked with doing the job of the much faster RAM.

A recent OS such as Win7 can get by fairly well on 2GB or more memory. That said, having 3GB or more can make a noticeable difference, as Win7 likes to cache lots of data in RAM to avoid time-consuming disk accesses. (Note that you'll need 64-bit versions of Win7 or Windows Vista to make use of 3.3GB or more of RAM.)

Fortunately, adding memory to your computer is normally easy and relatively inexpensive. Most current desktop PCs use DDR3 (double-data rate 3) RAM, which can be purchased in a variety of speeds and capacities, and in matched sets.

OS. One of Win7's advantages over older OSes is its performance. It not only boots and runs faster than its predecessors, but it also feels faster due to tweaks to the UI (user interface). And even though the 12-year-old WinXP can outpace Win7 at several tasks on

older hardware, we still recommend Win7 and Win8 for their improved security and support of new technologies.

Storage. It's true—today's CPUs are so fast that they largely sit unused while waiting for data to arrive. For the vast majority of computing tasks, the bottleneck lies in the slower devices, such as the hard drive.

Upgrading to a faster hard drive can speed bootup and application launches, even as it adds capacity.

That said, a fast SSD can provide a more radical boost in performance. Because they're more expensive per

Where's The Bottleneck?

Is your PC stuck in neutral, or is it spinning its wheels? Windows 7 lets you peek under the hood with a few handy utilities. Besides Task Manager, Win7 offers Resource Monitor. Click Start, type resource, and click the Resource Monitor link.

We also use third-party Desktop gadgets such as All CPU Meter. Right-click the Desktop, click Gadgets, and select All CPU Meter. Some gadgets can also be downloaded from various third-party sites.