RONALD'S
I.T Solutions

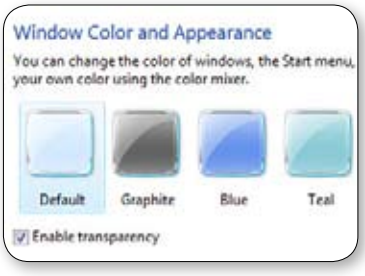
Speed Up *everything*

Windows

27

Components and Devices

82

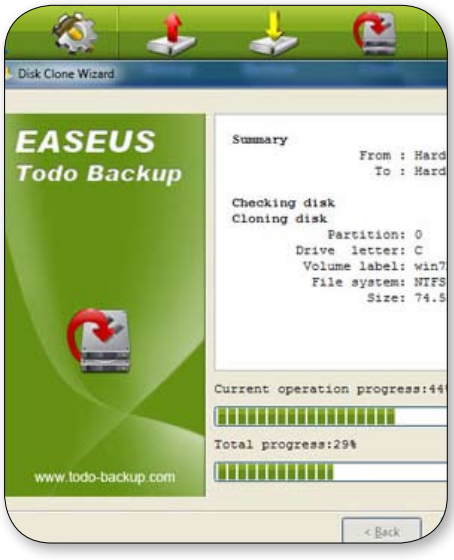


12

Networking

105

Maintenance



133

140

Windows

Windows woes slowing you down? We have a few tips to keep your Windows installation running smoothly.

Software Speed Boosts for Your PC

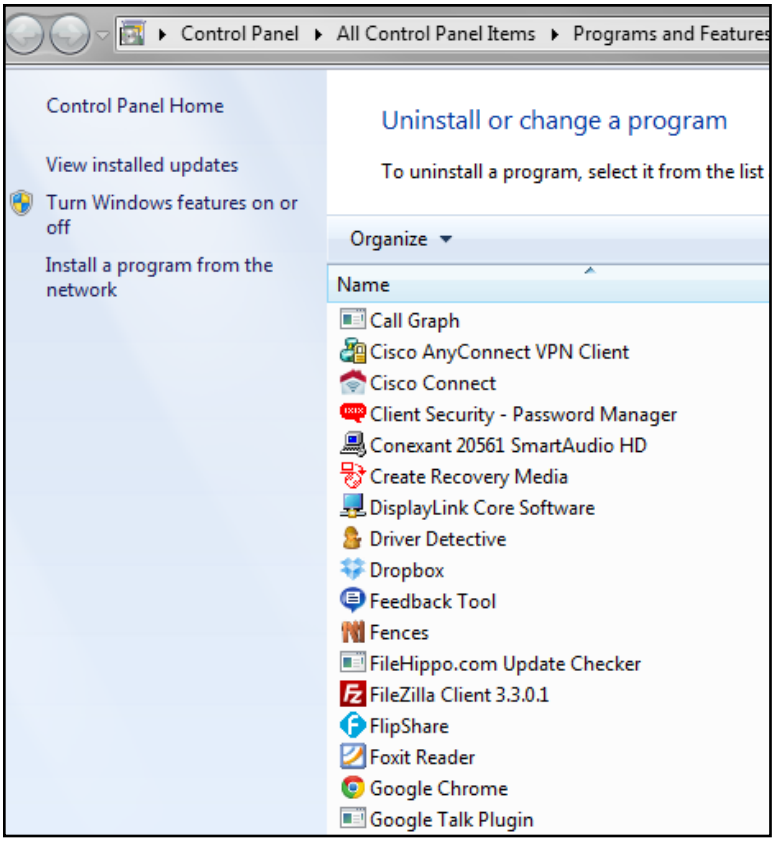
IF UPGRADING YOUR PC is out of the question, you still have plenty of options for increasing its pep. Here are some suggestions that are worth a try. Depending on your system, changing a few simple software settings can lead to massive performance gains.

Run a virus scan: Your PC probably doesn't have a virus, but why not make sure? Schedule your antivirus program to run a weekly scan during late night hours so it won't interfere with your day-to-day computer activities.

Upgrade your power settings: By default, Windows sets computers with batteries (that is, laptops) to the 'Balanced' power plan profile. That setting strikes a nice compromise between performance and battery life; but if you leave your computer plugged in all the time, battery life is irrelevant.

You can enhance your laptop's performance by using a higher-end power plan, which Windows hides by default. To access it, click the battery icon in the system tray and select *More power options*. Select the drop-down next to 'Show additional plans' and choose *High performance*. Among other things, it will turn off options that put your computer to sleep, saving you significant restarting time when you step away from your PC.

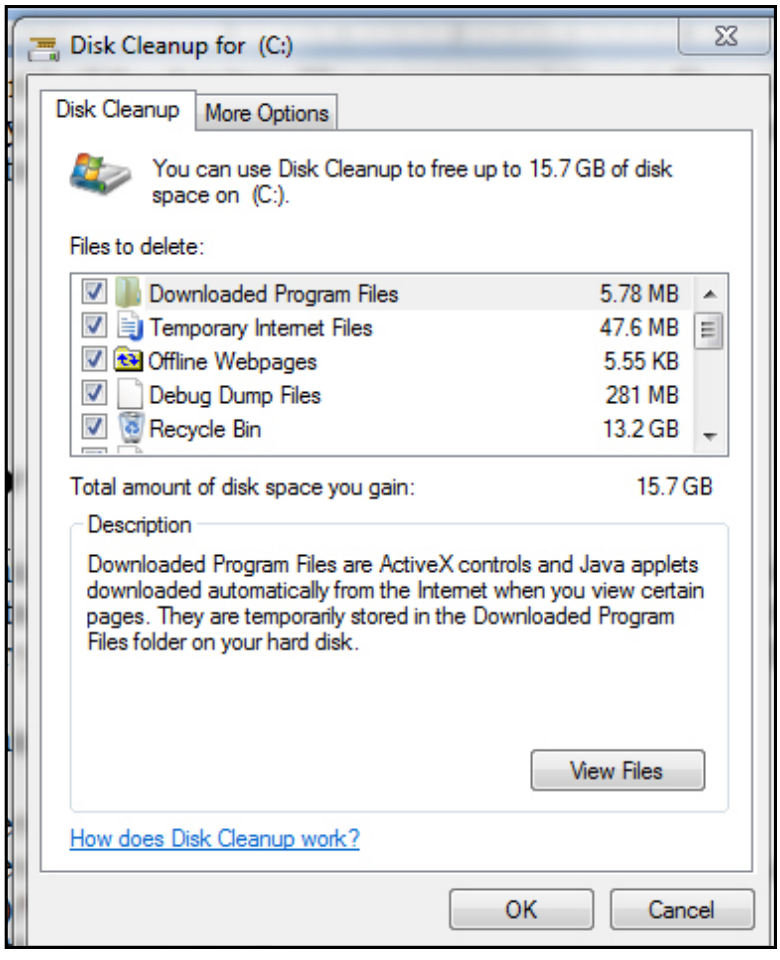
Uninstall, uninstall, uninstall: There is no »



To reduce system clutter, regularly prune installed apps in the 'Programs and Features' control panel.

shame in having installed lots of software on your PC. After all, Windows was designed to run thousands upon thousands of applications on a familiar platform. The problem is that every application occupies space on your hard drive, and many take it upon themselves to open at startup, clogging system RAM whenever your PC is on, whether you use the program or not.

Visit the 'Programs and Features' control panel, and uninstall any application listed there that you're sure you don't use. Not using an iPod anymore? Apple alone accounted for six applications on our test PC. Watch for toolbars and device drivers for products (such as printers, WWAN modems, cameras, keyboards, and mice) that you no longer use. Click *Uninstall* to remove each one. You'll likely have to reboot multiple times.



Windows' built-in Disk Cleanup utility shows you how much hard-drive space your PC is wasting and identifies the main culprits.

Clean up your hard drive: Having a lot of stuff on your hard disk isn't a problem until the disk gets full and Windows has to work overtime to find spare bits here and there to store your files on.

Offload whatever you can to external hard drives or other archival storage; then run Disk Cleanup to get rid of junk such as temporary Internet files, old installation programs, and Recycle Bin junk. To access Disk Cleanup, type **disk cleanup** in the Start menu search box, and press **Enter**. Select the boxes for each type of file you'd like to get rid of, and let Disk Cleanup do its magic.

Give ReadyBoost a try: If you have an older PC with very little RAM, you can cheat your way to a modest speed increase by using ReadyBoost, which lets you plug a USB thumb drive into your »

Components & Devices

Your PC's parts can do so much more. Use these tips to push your PC's hardware and peripherals to the limit.

Hardware Speed Boosts for Your PC

YOU WANT A faster system? Put faster parts in it. That's the simple answer to a question that every PC owner asks from time to time. But replacement parts aren't free, and cash-strapped computer enthusiasts know that the key is to put their money where it counts most.

That's why the PCWorld Labs sought to identify which upgrades give PCs the best performance bang for the buck. (Many PCWorld Labs testers died to bring you this information.)

First, we separated our benchmark tests into two components: general system tasks (including office applica- »

LAB TESTED

EFFECTS OF VARIOUS COMPONENT UPGRADES

POLYWELL SYSTEM SPECS	WorldBench 6 score	Overall system improvement	Average graphics test improvement	Average system and graphics improvement
Stock Polywell PC (3.4GHz Pentium D CPU, 800MHz frontside bus, 2GB DDR2-800 RAM, 500GB 7200-rpm hard drive, GeForce 8800GT 512MB graphics board)	76	–	–	–
Stock with 4GB DDR2-800 RAM ($97)	77	1.3%	0.1%	0.7%
Stock with OCZ 120GB solid-state drive ($210)	82	8.0%	18.4%	13.2%
Stock with Radeon HD6870 1GB GDDR5 graphics board ($225)	76	0.0%	14.9%	7.5%
Stock with 2.67GHz Core 2 Quad Q6700, 1066MHz FSB ($259)	104	36.8%	43.2%	40.0%
Core 2 Quad, 4GB RAM, 120GB SSD, Radeon HD6870 ($791)	115	51.3%	135.8%	93.6%
Stock with 3.0GHz Core 2 Duo E8400, 1333MHz FSB ($153)	116	52.6%	53.5%	53.1%
3.0GHz Core 2 Duo E8400, 1333MHz FSB, 4GB RAM, 120GB solid-state drive, Radeon HD6870 ($685)	127	67.1%	166.3%	116.7%
DELL SYSTEM SPECS	**WorldBench 6 score**	**Overall system improvement**	**Average graphics test improvement**	**Average system and graphics improvement**
Stock Dell XPS 8100 PC (2.8GHz Core i7 860 CPU, 4GB DDR3 RAM, 1TB 7200-rpm hard drive, ATI Radeon HD 5670 1GB GDDR5 graphics board)	135	–	–	–
Stock with 8GB DDR3 RAM ($45)	139	3.0%	0.3%	1.7%
Stock with Radeon HD6850 1GB graphics board ($180)	135	0.0%	117.2%	58.6%
Stock with 8GB RAM, Radeon HD6850 ($225)	139	3.0%	119.8%	61.4%
Stock with 120GB solid-state drive ($210)	141	4.4%	0.2%	2.3%
8GB RAM, Radeon HD6850, 120GB solid-state drive ($435)	147	8.8%	121.1%	65.0%

tions, photo editing, and movie encoding), and gaming. Then we divided our upgrades into four categories: CPU, RAM, hard drive, and graphics board.

We selected two primary test systems to represent the kinds of desktop PCs that users are likely to want to overhaul with hardware upgrades: a three-year-old Polywell with a 3.4GHz Pentium D processor, 2GB of RAM, a 500GB hard drive, and a GeForce 8800GT graphics card; and a one-year old Dell with a 2.8 GHz Core i7 CPU, 4GB of RAM, a 1TB hard drive, and an ATI HD 5670 graphics card. We then ran tests on the systems using various combinations of the »

UPGRADE BANG FOR THE BUCK

POLYWELL SYSTEM UPGRADE	Cost	Approximate dollar cost per 1% system improvement	Approximate dollar cost per 1% graphics improvement
4GB DDR2-800 RAM	$97	$74.62	$970.00
OCZ 120GB solid-state drive	$210	$26.58	$11.41
Radeon HD6870 graphics board	$225	Not applicable	$15.10
Core 2 Quad Q6700 processor	$259	$7.04	$6.00
All of the above	$791	$15.42	$5.82
3.0GHz Core 2 Duo E8400 processor	$153	$2.91	$2.86
3.0GHz Core 2 Duo E8400 processor, 4GB RAM, 120GB solid-state drive, Radeon HD6870	$685	$10.21	$4.12
DELL SYSTEM UPGRADE	**Cost**	**Approximate dollar cost per 1% system improvement**	**Approximate dollar cost per 1% graphics improvement**
8GB DDR3 RAM	$45	$15.00	$150.00
Radeon HD6850 graphics board	$180	Not applicable	$1.54
4GB RAM and Radeon HD6850	$225	$75.00	$1.88
OCZ 120GB solid-state drive	$210	$47.73	$1050.00
All of the above	$435	$48.88	$3.59

Networking

Network slowdown can make even the speediest PC sluggish. Blow up your bottlenecks by optimizing your network and Internet connections.

Upgrade to Gigabit Networking for Better Performance

THE SPEED OF your network affects nearly every device on your home network, whether it be a home-theater PC, an external storage device, or a gaming console. For most networks, the transfer rate of a faster ethernet connection (roughly 12.5 megabytes per second) is the typical speed limit. That may be okay for transferring ordinary files, but it's painfully slow if you're trying to back up a PC to a network device, for example, or to stream a high-definition movie to your living room.

The solution? Move up to a gigabit network. Switching over to gigabit (1000-mbps) speeds increases your potential throughput tenfold, minimizing your transfer times and greatly enhancing your ability to stream high-bandwidth files to connected devices without interference. Gigabit networking is now a sufficiently common feature of modern networking devices that it shouldn't carry too great a cost premium. As for your motherboards, the odds are good that they already have gigabit functionality built in, whether you know it or not.

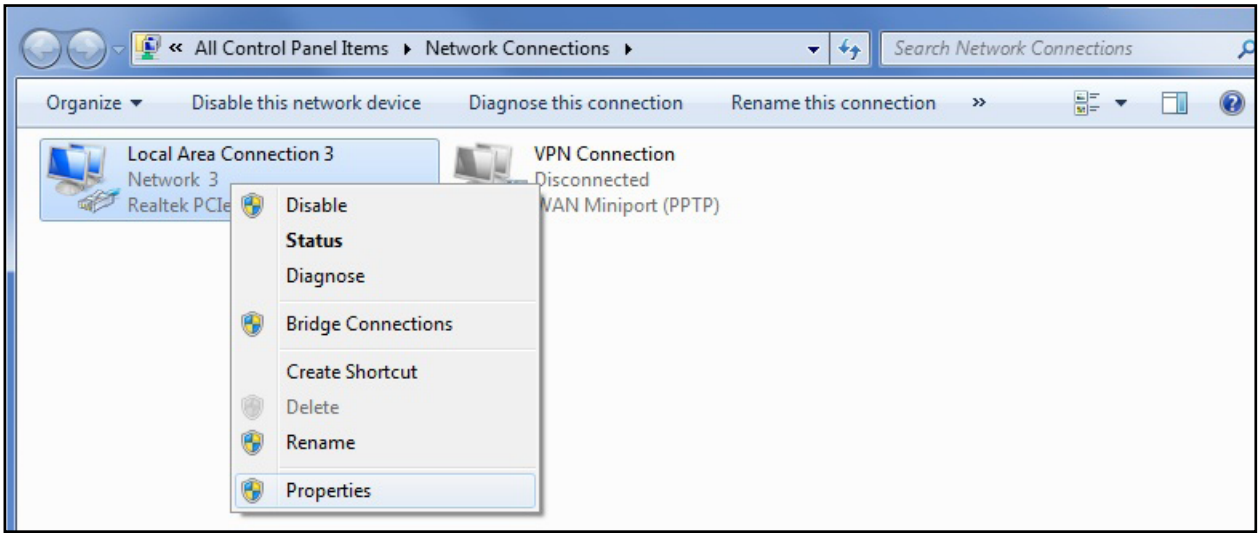
I should note that this guide does not apply to wireless networks; that's because the factors that constrain speeds on wireless networks are entirely different from those that limit speeds on wired networks.

How do you determine whether your equipment is capable of handling gigabit networking? And if it isn't, how do you build a gigabit network from scratch? Let's start with the basics.

You can't tell a gigabit network port from a fast ethernet port just by looking at it. Instead, consult the specification chart or do a little software-driven digging!

Identify Your Network

Do you already have a gigabit network? »



You can check the performance potential of your motherboard's network connection in just a few mouse clicks. Start by pulling up your Network Connections window.

The Windows desktop provides no signal to let you know when you've achieved this superspeedy networking feature. And a lot of factors influence your network transfer speeds—so your gigabit network might crawl along at a data transfer rate of less than 125 mbps for various reasons.

The most basic requirement of gigabit networking is that all connected devices must be connected via a gigabit port. In addition, they must be connected to each other with network cables that can handle the bandwidth. For devices such as your router, a gaming console, or an external storage device, the quickest way to discover whether they support fast ethernet (10/100 mbps) or gigabit ethernet (10/100/1000 mbps) is to check the devices' specifications in their online descriptions or accompanying manuals. Look for a mention of either 'gigabit networking' or '1000 mbps [or mbps]'.

Your PC's motherboard is a critical component of the gigabit network. If your system came prebuilt or you don't remember relevant details about the motherboard you used in your rig, don't worry. Click your Windows *Start* button and select *Run* (or for more modern versions of the OS, just point your cursor on the search box and left-click). Type **ncpa.cpl** and press *Enter*. The Network Connections window should pop up.

Right-click the network connection listed as Local Area Connection (LAN), and left-click *Properties*. Click the big *Configure* button that appears to the right of the listing for your network controller. In the new window that appears, open the *Advanced* tab and scroll down until you find a property labeled 'Connection Type' or 'Speed'. Left-click it and then click the *Value* field to the right. »

Maintenance

You'll need to take care of your PC to keep it running in tip-top shape. Save some time with these tips and tricks for maintaining your PC.

Clean the Crud From Your PC

BY LOYD CASE

FACT: YOUR WINDOWS PC is slowing down. Maybe it takes longer to boot up or shut down. Perhaps the hard drive grinds in the background constantly. Or maybe launching an application takes much longer than it once did. And although Windows 7 is speedier than previous versions, it can still become sluggish, particularly if you install and uninstall a lot of applications.

In this article I'll look at what it takes to clean out the crud that has built up over time in your system. I'll discuss boot times, hard-drive issues, and the mysterious Windows Registry. I'll also explain how to minimize problems in the future and change crud-inducing habits.

Mysterious PC Slowdowns: Possible Hardware Culprits

Sometimes a PC will start to crawl without warning, and the reason isn't always obvious. Although the focus here is on cleaning and preventing operating-system gunk, it's worthwhile to touch briefly on a few hardware problems that can cause sudden slowdowns.

Vanishing Memory

If you built your system yourself, the BIOS may on occasion reset itself without your knowledge. This can happen during a power failure, or if you shut down the system during the POST (Power-On Self Test) process. In such a reset, memory speeds may revert to something slower. You'll notice performance issues only with memory-intensive apps.

Another possibility is that the apparent amount of memory might shrink. For example, on recent motherboards built with Intel's P55 and X58 chipsets, a heat sink that's too tightly mounted can bend memory circuit traces on the board. The net result is that one memory module becomes invisible to the system, potentially reducing the amount of memory available to Windows by one-third or one-half. That hampers your system, particularly when apps and data are swapped to virtual memory on your hard drive.

Overheating

Modern Intel and AMD CPUs will automatically throttle down if they get too hot, which can happen if your system's CPU and case cooling fans become coated with dust and start slowing down. Be sure to check the system temperature in the BIOS, or via utilities that may have shipped with your motherboard.

Imminent Hard-Drive Failure

As hard drives begin to develop bad »

sectors, they try to copy data to safe sectors. This ordinarily occurs rarely—but when a drive starts to fail, the behavior could become more frequent. The net result is constant disk use, as the system attempts to find free, good sectors. If you suspect such activity, turn on the SMART feature in your PC's BIOS, which will pull diagnostic information from the drive and warn you if failure seems imminent.

Windows Entropy: Why Windows Gets Slower with Use

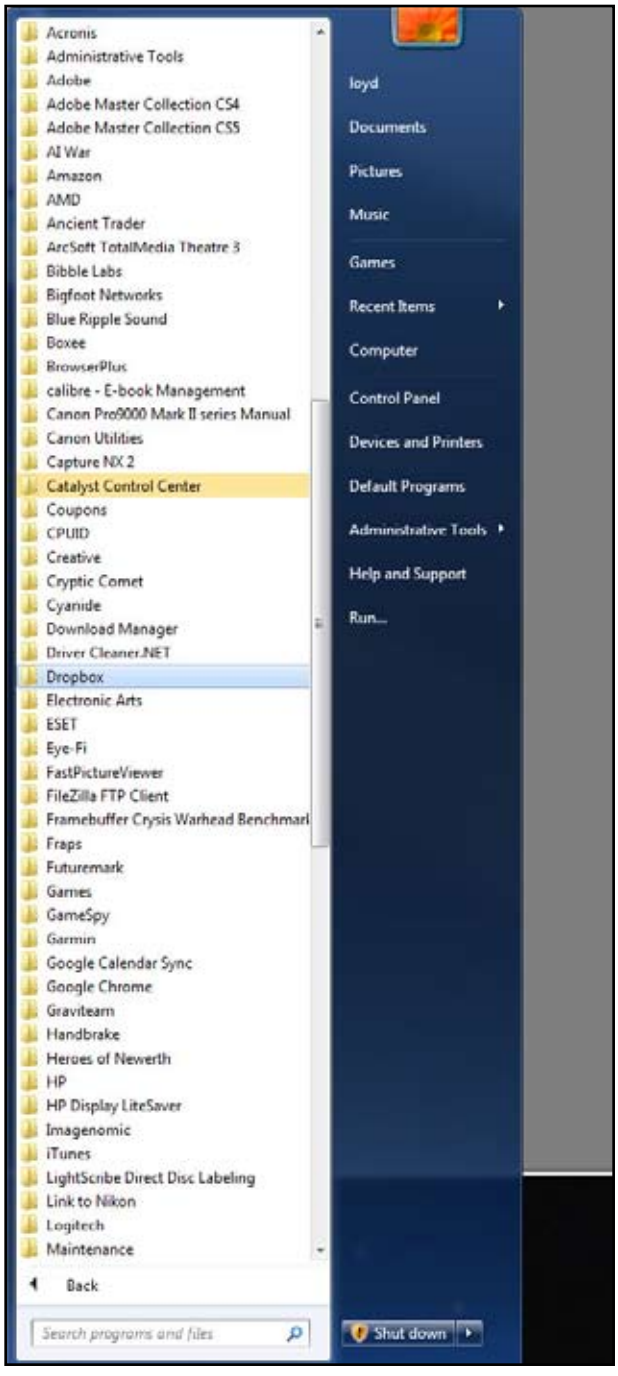
Now let's move on to Windows itself.

Windows slowdown has three main causes: The Windows Registry gets bigger, DLLs and other junk are needlessly duplicated, and hard drives become fragmented. A fourth cause is that, on machines with many programs installed, a lot of background services and apps can be running, without your knowledge.

These potential problems aren't mutually exclusive. The Registry can swell as you install more software, which in turn loads a lot of background tasks. Plus, your hard drive may fill up, making Windows auto-defragging harder. But let's look at these issues one at a time.

The Windows Registry

Windows maintains configuration settings, application install settings, and options in a database called the Windows Registry. As you install and uninstall applications or make changes to



That's a lot of apps.

Windows, the Registry tends to grow larger and larger. For example, the Registry on my production PC, which has a ton of apps installed, is about 384MB—and that's just a backup. »