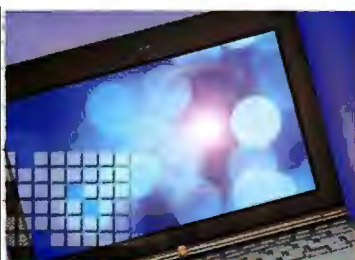


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HANDS-ON TECH REPAIR GUIDE



Revive Stuck Pixels



Reseat Loose Components



Dry Out a Wet Phone



Clean a Dirty Camera

EASY FIXES

FOR THE MOST COMMON PROBLEMS



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Replace an iPod Battery



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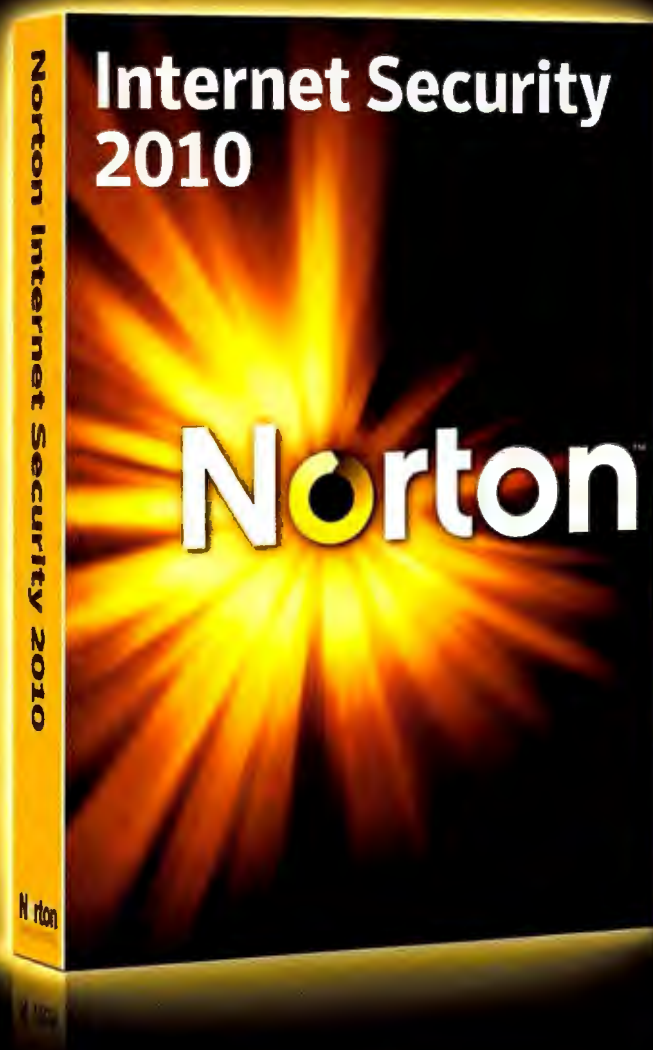


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If you bought a Microsoft Wireless Broadband Networking Base Station or Adapter ("Microsoft Wireless Device"), please read this Notice.

This Notice summarizes the proposed settlement of two class action lawsuits—*Yu v. Microsoft Corp.* and *Shersher v. Microsoft Corp.*—in the Los Angeles County Superior Court. Details and how to claim benefits if it is approved, are in the Stipulation of Settlement and the detailed Notice and Claim Form at www.microsoft.com/hardware/support/bbn ("Settlement Web site").

Plaintiffs allege that Microsoft Wireless Devices' packaging was misleading because their "real world" throughput is less than the data transfer rates on the packaging. Microsoft denies this. The Court preliminarily approved the proposed Settlement and certified the Class for settlement purposes.

You are a member of the Settlement Class if you bought a new Microsoft Wireless Device from Sept. 1, 2002 through July 31, 2009 for use, not resale. The model numbers of the Wireless Devices included are on the Settlement Web site.

If approved, Microsoft will establish a Settlement Fund of \$1.6 million. Class members who submit a valid Claim Form within 180 days after the Court finally approves the Settlement will receive from the Fund up to 10% of the Manufacturer's Estimated Retail Price ("MERP") of each Wireless Device. Claim Forms and instructions are on the Settlement Web site. If valid claims submitted would exceed the balance in the Settlement Fund after payment of Plaintiffs' attorneys' fees and costs, the payment rate will be reduced from 10% of MERP to a rate that will make the total paid equal the Settlement Fund's balance. Microsoft will contribute any balance in the Settlement Fund after payments to Class Members and Plaintiffs' attorneys' fees and costs to the Boys & Girls Clubs of America. Plaintiffs' counsel will apply for Court-awarded attorneys' fees and costs up to 28% of the Settlement Fund. Subject to court approval, Microsoft will pay Court-awarded "incentive" payments of \$1,000 each to the two Plaintiffs.

If you are a Class member and do not wish to be bound by the Settlement, you must sign and mail a written request to be excluded, which states: (a) your name, address and telephone number and the names of these two lawsuits (*Yu v. Microsoft* and *Shersher v. Microsoft*); (b) you are a Class member and (c) you wish to be excluded. Requests for exclusion must be mailed by Nov. 9, 2009 to: Yu-Shersher Settlement Administration, P.O. Box 11487, Birmingham, AL 35302-1487. If the Court approves the Settlement, all Class members who do not exclude themselves will be bound by it and the release of claims and will not be able to sue Microsoft about the legal claims in these cases.

The Court will hold a hearing to decide whether to approve the Settlement, attorneys' fees and payments to Plaintiffs on **Tues., Dec. 8, 2009 at 10:30 a.m.** in Dept. 309, Los Angeles County Superior Court, 600 S. Commonwealth Ave., Los Angeles, CA 90012. You may appear at the Hearing but do not have to. If you wish to object to the Settlement, you must notify the Court Clerk and the parties and provide the information described in the detailed Notice by **Nov. 9, 2009**. Details on the procedures, rights, and effect of making an objection, and your right to appear at the hearing, are in the Stipulation and detailed Notice.

For more information, contact counsel for Plaintiff John Yu: Weiss & Lurie, 10940 Wilshire Blvd., 23rd Floor, Los Angeles, CA 90024, 1-800-437-7918, or visit www.microsoft.com/hardware/support/bbn. **DO NOT CONTACT THE COURT OR CLERK'S OFFICE.**

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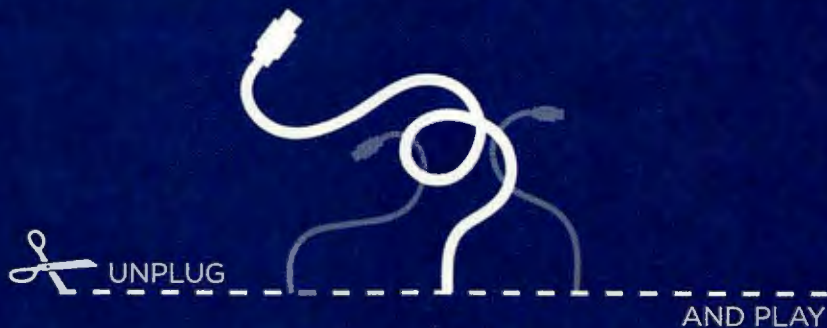
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Product Reviews That Are Beyond Price

YOU MAY NOT notice it right away, but something has changed in this issue's Top 10 charts for desktop replacement laptops (page 55), color laser printers (page 58), and point-and-shoot cameras (page 66): They're priceless.

No, this isn't an ad for MasterCard. It's just that, moving forward, *PC World* will not be using price as a factor in calculating PCW Ratings for products.

Instead, we'll be basing all of our product scores in *PC World* reviews on three factors: performance (determined primarily through lab testing), design (a hands-on evaluation that includes usability), and features (specs, warranty, and the like). These essential criteria have been fixtures of our rating system for as long as any of us can remember.

We will continue to feature price prominently in our charts, right under the product's name, as well as in all stand-alone reviews, both in print and

A revamped PC World scoring system awards top grades to the best of the best and puts a new spin on our Top 10 charts.

online at PCWorld.com. In fact, we absolutely expect that anyone who's in the market for a new product will take price into account—which is why we tweaked our scoring equations in the first place. If readers already weigh cost in their own evaluation, we reasoned, and if *PC World* also bakes price into its scoring system, then price gets double-counted. Even in tough times, that degree of focus seems excessive.

Bidding adieu to price as a factor in our ratings has the potential to remake the charts in interesting ways. When we used price as a criterion, high-flying products often got dinged for having higher-than-average prices, while budget items got a boost based on value. Now, superior products—those that are well designed, easiest to use, fea-

ture rich, and power packed—get our highest rating. If you're in the market to buy, you can read the review, determine how much you're prepared to spend, and choose the highest-rated product that makes your cutoff.

Still Highlighting Bargains

Another change to look for: *PC World* editors may now have the option of awarding the familiar Best Buy logo—formerly pinned to whatever product survived our testing and captured the top slot—to any product that appears on the chart. Our editors are always on the alert for great deals; and when a solid piece of hardware or software is also particularly easy on the wallet, we'll be sure to tell you about it.

If you want to see how this will play out in practical terms, check out this month's *Top 10 Point-and-Shoot Cameras* chart. Canon's very capable PowerShot SD1200 IS isn't the top-performing model in the mix, but it earns kudos (and a Best Buy) for its impressive \$230 price tag and solid performance.

So don't worry; we aren't ignoring price altogether, just putting it into perspective. And we'll continue to chart products in sensibly defined, price-aware categories, such as power desktops and value desktops. There's no sport in pitting a Bentley against a Kia.

Amid all these chart reconfigurations, it was a relief to discover that one of our roundups would be blissfully unaffected by our revised methodology. I refer to our review of free antivirus programs (page 80). When everything's free, price simply can't be an issue.

Now that's priceless. ●

Steve Fox is editorial director of PC World.

PICK OF THE MONTH: INNOVATIVE NEW DIGITAL CAMERAS

FORGET SCHOOL DAYS, autumn leaves, and touch-football games. For the gizmomically inclined, autumn is magical because it signals the annual onslaught of new digital cameras from manufacturers eager to beguile consumers with their wares during the holiday season. According to Senior Editor Tim Moynihan, this year's haul is particularly innovative.

Two examples: Samsung's DualView TL series of point-and-shoots have secondary LCD screens in the front (great for taking your own picture, calming a squirming kid, or showing a countdown for the self-timer); and Nikon's Coolpix S1000pj features a built-in projector for photo and video playback. Because the fall camera lines were introduced as this issue went to press, we don't yet have full reviews available in print. But Tim has assembled an online slide show of his favorite models based on his initial hands-on examination of them (find.pcworld.com/63556), and he'll follow up with detailed evaluations and lab tests shortly. Stay tuned for more in an upcoming issue.



WITH SAMSUNG'S DualView TL 225, photo subjects can criticize how they look before the picture is even taken.



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Amazon's deletion of two purportedly unauthorized George Orwell titles from its Kindle e-book readers generated a storm of comments on our Web site. (See 'The Pros and Cons of Buying E-Books,' page 34, for more on the story.) You can add your own comments at find.pcworld.com/63532.



I have to take issue with a statement in your online article "FAQ: Making a Smooth Move From XP to Windows 7" [find.pcworld.com/63536]: "Can I upgrade from Windows XP straight to Windows 7? You betcha. And no, you don't have make Vista a middleman."

That is not the case for myself and millions of other XP and Vista users residing in Europe—we will not be able to upgrade straight from XP or Vista to Windows 7, because no European copy of Windows 7 will include Internet Explorer. If we wish to install Windows 7, we have to make a clean install. This is because the European courts ruled that Microsoft has been anticompetitive.

So, I for one would like to thank those concerned for making my life just that bit more annoying; thanks a lot!

David Payne, England

Online Security

I applaud all of the efforts by *PC World* to combat the ever growing problem of online malware ["Coordinated Malware Resists Eradication," *Security Alert*, August]. My wife was the victim of a Trojan horse that she acquired during her Web surfing. Our security suite detected it but could not remove it, so I have completely given up on combat-

The way they're going, Kindle won't be around next year. I'll stick with real books!

vinoman, PCWorld.com forum

ing malware using security suites.

Instead, I use those suites only to inform me if I am infected. I bought my wife a powerful and inexpensive new desktop PC (quad-core, 8GB of fast memory) for \$800. I then installed Microsoft's Virtual PC 2007 program (free) and installed XP (license-free from her old, dead PC) in the virtual machine. She browses the Web »

Amazon Erases Orwell

Regarding "Amazon Removes E-Books From Kindle Store, Revokes Ownership" [find.pcworld.com/63532]: Apparently, all copies of Orwell's works on Kindle, everywhere, have evaporated. Gone into the memory hole. Been disappeared. 1984 does not exist; it has never existed. Outer Party members of the Ministry of Truth have replaced it with a picture of the Hero of the Revolution (Jeff Bezos?).

"It's a beautiful thing, the destruction of words."

Somewhere, the spirit of Eric Blair is laughing.

rkentesqa9999, PCWorld.com forum

Amazon made a huge mistake here, perhaps because the company listened to its attorneys instead of using common sense. Amazon's move makes it extremely unlikely that I will ever buy a Kindle, as I had formerly been considering.

middlebass, PCWorld.com forum

I believe copyright law basically says that individuals do not actually "own" the content of any book, only the paper. Yeah, it sounds weird, but it has to do with the intellectual rights of the author/publisher. Only the copyright

owner of the work has the right to copy the content. The owner can sell the copies for profit, but retains the sole right to copy. Hence the term *copyright*.

Technically, I suppose they can recall my right to use their content at any time. I guess one advantage of owning the actual printed book (instead of an e-book) is that the publisher would have a very difficult time deleting all the ink from the pages of each copy. Bottom line: Beware—the plug *can* be pulled!

wierbe, PCWorld.com forum

Windows 7

Countless numbers of us out here in cyberland are still smarting from this bloated and bug-riddled Microsoft monster called Vista. Now Microsoft is putting a little lipstick on this pig and calling it Windows 7. You seem to think this is just wonderful ["Get the Best of Windows 7 Without Getting Windows 7," August].

Why would we want to make our current pigs look like the new pig? Are the new additions of any true value? I would say *no*. Do you think we are going to pony up more money to get the latest and probably the worst yet from Microsoft? I would say *no*.

David Richardson, Tucson, Arizona

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PCW Forum

using the XP virtual machine, and if the computer ever gets infected, I will simply delete the file that constitutes the virtual machine and use the uninfected backup copy I have of it.

Given the power of cheap new PCs, this is by far the easiest way to deal with the exploding online malware problem. I am now doing this with all new PCs for myself and the family.

Leo Boeckl, Woodbine, Maryland

Texting While Driving

I found the online article "Surprise: Texting While Driving Is Dangerous" [find.pcworld.com/63534] to be hysterical and irrational.

Ban texting while driving? Yes, data shows an indisputable danger.

Ban cell phone use? Did this author read the study he's writing about? It concludes that previous studies were wrong about the dangers of talking and listening while on a cell phone.

This study does show that drivers should use speed-dialing or voice-dialing technology rather than dialing in a phone number manually.

Also, it shows the importance of keeping technology where it will be used while driving (that is, on a dash mount) rather than adding the risk of trying to reach for it.

Aarrggghh, PCWorld.com forum

First rule of driver's education 101—"Pay attention to the road, and never assume that the other person is." This statement predates the existence of cell phones, laptops, GPS devices, and other such mobile gadgets.

razenyc, PCWorld.com forum

Facebook, Twitter Disasters

Regarding "How to Avoid Facebook and Twitter Disasters" [August]: Everyone needs to remember that once you post something, it can be viewed by new, past, or potential employers. Also, a new date or anyone else you meet can check out your past on the computer and the Internet. So think before you post some compromising, funny, or

sexy photos or write to other people on any public site. Such postings might come back to haunt you later on.

drincon, PCWorld.com forum

From Our Visitors: Unwritten Laws of Technology

Editor's note: Our online story "You Must Obey: The Unwritten Laws of Technology" (find.pcworld.com/63533) inspired a number of readers to post their own laws. Here are some of our favorites.

Data expands so as to fill the space available for its storage.

backbuster

The only time a common PC part (a fan, say) is out of stock and back-ordered is, of course, when yours goes poof.

rwexelblat

When you need to return your computer for service, you will locate every receipt you've ever seen in your entire life—except the one receipt you need.

JimH443

A crash will remind you of how long you've been working since your last save of that big project or document.

Evolution2001

The remote, the mouse, the keyboard, and the wall clock will all require triple-A batteries at the same time—and you will find but a single battery left in your 50-piece megapack.

RustyOne

Sooner or later you will put your phone in your pocket, and you will put your pants in the hamper, and the contents of that hamper will go into the washing machine, cell phone and all.

IDontKnowJack

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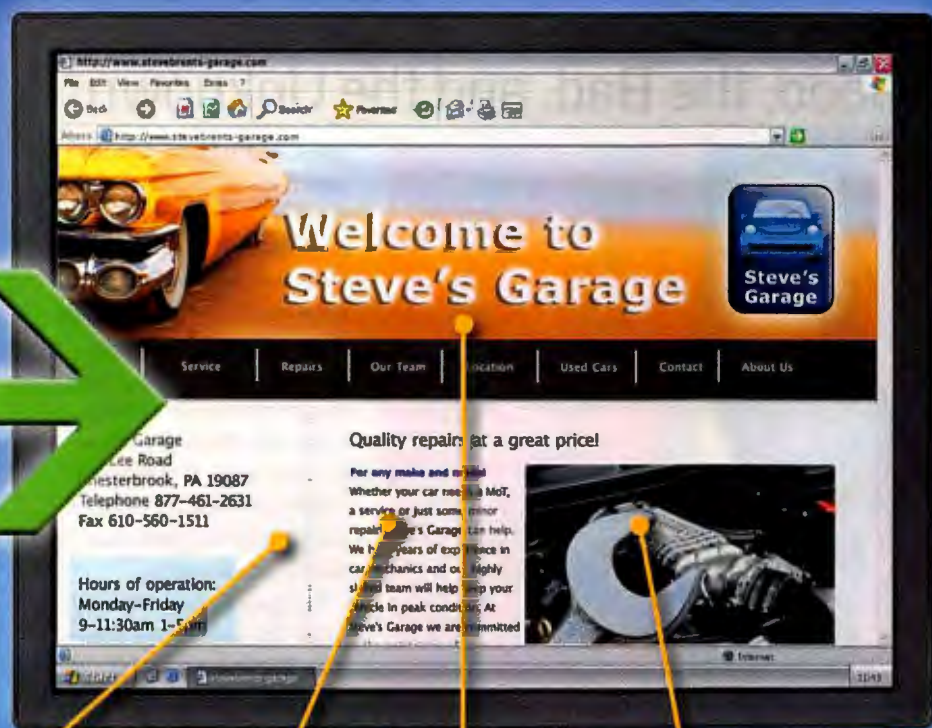


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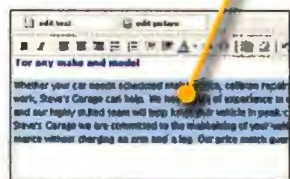


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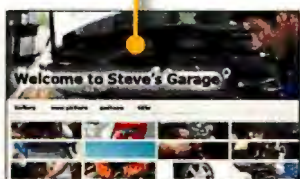
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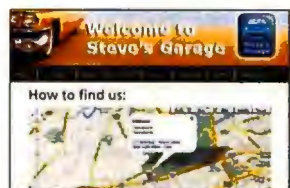
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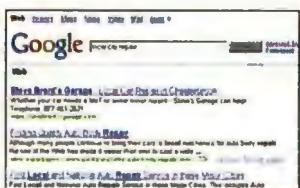
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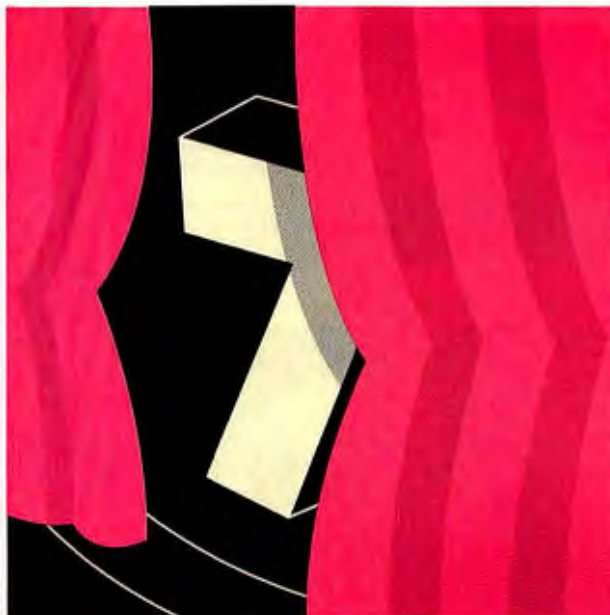
Windows 7: The Good, the Bad, and the Unknown

Microsoft's new OS isn't perfect, but it is what Windows Vista should have been. Here's a hands-on look at the version starting to hit PCs.

BY HARRY McCracken

FOR MOST PEOPLE who are considering moving to Windows 7, October 22 is D-Day. On that date Microsoft's newest operating system lands on store shelves, both as a shrink-wrapped upgrade and preinstalled on new PCs. But for some folks, D-Day has already arrived. Microsoft has issued the final RTM (release to manufacturing) version of Windows 7 to large companies that buy Windows via volume licenses, and to IT pros in its Technet service. The Windows Vista era is officially drawing to a close; the Windows 7 one is beginning.

Win 7 is designed to stay out of your way so that you can get stuff done. It smartly addresses Windows annoyances both new (User Account Control) and old (the system tray). And the final version that I've been using



seems to realize the promise of the rough drafts we started testing last October.

Windows 7 isn't without its warts, but I haven't been so impressed by a new Microsoft operating system since Windows 2000 debuted close to a decade ago. Here's a quick look at some of its best features, a few drawbacks, and areas where reserving judgment makes sense. (Note: Much more *PC World* coverage is on its way, including an in-depth review, test results, upgrade tips, and reports on Windows 7 systems.)

The Good...

The OS is less piggish: The initial version of Windows Vista had a signature feature (the splashy Aero environment) that was too much of a resource hog to run well on many early-2007 PCs. So far, all signs point to Win 7's being sprightly enough to perform decently on all current systems, even netbooks.

In Windows 7, both the taskbar and its system tray undergo sweeping, long-overdue makeovers. The new taskbar's default style does away with text labels and relies solely on program

icons, making better use of screen space. Its thumbnail previews—an improvement over Vista's—work well even when you have multiple windows open for one app. And the new Jump Lists feature gives you right-click access to context-sensitive menus of options. Even the nub on the right edge of the taskbar, which you can click to reveal the desktop, is a welcome, subtle enhancement.

The system tray—officially called the notification area—is no longer one of Windows' most aggravating "features." When you install new apps, any associated system-tray applets are cordoned off in a holding pen, where they can't clutter up the tray or use word balloons to pester you. Microsoft has also dramatically reduced the volume of distracting messages from Windows itself, courtesy of Action Center, which queues up system alerts so that you can check them out at your convenience.

UAC is now tolerable: Windows Vista introduced User Account Control, which tries to warn you of attempts by viruses and other malware to tamper with your system. But it essentially has two

settings: So Annoying You Click Without Thinking, and Off. In Windows 7, two intermediate settings alert you only if a program changes settings, with or without Vista's screen-dimming effect. This is so reasonable that it's puzzling how Microsoft could have botched the Vista version so badly.

Libraries collect your files:

For years, Microsoft has tried to train Windows users to store all of their personal files in one place, helpfully providing a folder named My Documents for that purpose. Many of us blithely ignore the suggestion and store stuff willy-nilly around our hard drives. A new feature called Libraries splits the difference by giving you virtual folders for documents, music, photos, and videos that combine the contents of whichever folders you specify into one unified view. Libraries would be even more useful if they were integrated with the existing Saved Searches feature, which creates a separate form of virtualized folder.

The Bad...

HomeGroup is disappointing: It sounds like a nifty idea—a way to share folders full of media and documents between PCs across a network, so you can peruse photos stored on the den's desktop from your laptop in the living room, for instance. But Microsoft's implementation is surprisingly half-baked: Rather than letting you specify a password during setup, for instance, it assigns one consisting of ten alphanumeric gibberish characters



WINDOWS 7'S NEW TASKBAR sports better thumbnail previews, context-sensitive Jump Lists, and other features that help speed up the navigation and management of applications and windows.

and tells you to write it down. And HomeGroup works only if all the PCs in question run Windows 7.

Windows Update can still shut you down: Windows 7 will probably require as much patching as earlier versions of the OS. If you use Windows Update the way Microsoft recommends, your computer may still demand that you shut it down so it can update itself, or it may decide to devote a big chunk of time to installing updates when you try to reboot it—a flashback to Windows' annoyingly pushy past.

You can't upgrade Windows XP directly: If you want to move from XP to 7, you'll need to start anew, reinstalling all of your apps and recreating your settings. (Vista users can opt to install 7 on top of their current OS, but not in every possible scenario.) Microsoft's decision not to enable XP-to-7 upgrades is defensible—a fresh install will likely be more reliable than one overwriting XP's aging underpinnings—but it will scare off some XP users who would probably love using Windows 7.

and indeed, it helped even the earliest Windows 7 preview versions we tested run surprisingly smoothly for a prerelease operating system. But as millions of people install Windows 7 on an endless array of PCs, some of them will undoubtedly encounter problems that Microsoft didn't anticipate.

Will hardware companies take to Device Stage? This new feature gives your printer, camera, and other peripherals information centers of their own, which hardware makers can customize with features such as links to online manuals and troubleshooting tools. But unless those companies invest in building useful Device Stages, this could be another Microsoft bright idea that >>

PLUGGED IN STEVE FOX

APPLE TABLET? Pundits were frothing like protesters at a town hall over a rumored iPad, proving Apple can get press even for a product type that consumers hate.



HEAVY METAL: Rumors swirl about Google Chrome, the operating system. Not to be confused with Google Chrome, the browser—or Google chrome, the trim on Sergey Brin's Tesla.



MICROSOFT AND YAHOO MAKE A DEAL: Bing will now power Yahoo's search site. No word yet if a Yahoo operating system will be powering all Microsoft-owned PCs.



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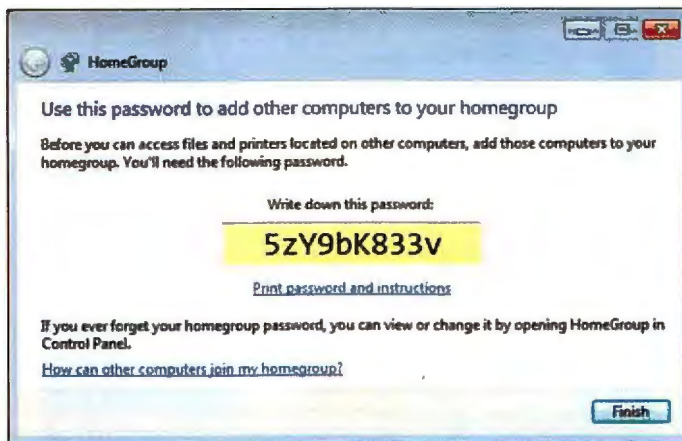


TWITTER ATTACK: A DDoS assault shut down the service for 2 hours. Productivity spiked elsewhere, as Twitterers were forced to do real work for 120 grueling minutes.



doesn't go much of anywhere. Also, parts of Device Stage look short on substance (giant photorealistic renderings of your peripherals!), and others could be irritating (printer companies hawk- ing ink cartridges right inside your OS!).

Is touch input a boon or a boondoggle? Windows 7 is the first version of the OS with support for multitouch input—for example, if it notices that you've opened the Start menu with your finger rather than the mouse pointer, you'll see a roomier version of the menu that takes less precision to navigate. Of course, all of that requires a multitouch-



HOMEGROUP'S MEDIA-SHARING FEATURES sound cool, but they work only with Windows 7 PCs. And why does it want you to write down passwords?

capable PC, and only a handful (such as the upscale HP TouchSmart) are on the market. Windows 7's arrival may prompt a profusion of interesting new touch-enabled PCs—but even then, what we really need are interesting touch-enabled applications.

The Bottom Line

Even when an OS upgrade is as appealing as this one, it makes sense to proceed with caution. Many early adopters will be happy. But I suspect that many folks who wait a bit longer—installing the new OS only after other people

have discovered unexpected glitches with programs and drivers—will be even happier. And if you use an aging PC, it's perfectly sensible to hold off on Windows 7 until you're ready to buy a new system that's designed to run it well.

My advice for Windows users, then, is this: Get Windows 7, but on your own schedule. It'll be ready when you are—and you'll almost certainly consider it an improvement over whatever version of Windows you're using now.

Former PC World editor in chief Harry McCracken blogs at his own site, Technologist.

OS UPGRADE Q&A

Just the FAQ: Making a Smooth Move From XP to Windows 7

IF MICROSOFT WANTS Windows 7 to succeed, it has to convince a majority of users to ditch their old operating system. A pain-free process will certainly help. But is that hope realistic? Not exactly.

Where are the bumps in the upgrade road? How difficult will the migration really be? We'll try to answer those questions here.

Can I upgrade from Windows XP

straight to Windows 7? Yes—you don't need Vista as a middleman.

There's always a catch. What is it this time? You can't do an "in-place" upgrade from XP to Windows 7. You'll have to do what's called a "clean" install, which means restoring backed-up data, re-creating settings throughout Windows, and reinstalling all apps.

What are the system requirements for Windows 7? They're very similar to those for Vista. According to Microsoft, you'll need:

- 1GHz or faster 32-bit (x86) or 64-bit (x64) processor
- 1GB of RAM (32-bit) or 2GB of RAM (64-bit)
- 16GB available hard-disk space (32-bit) or 20GB (64-bit)
- DirectX 9 graphics processor with WDDM 1.0 or higher driver

How do I know if my XP machine can handle Windows 7? Run the Windows 7 Upgrade Advisor. Go to find.pcworld.com/63569, download and install the advisor, and then start the utility.



I'm running XP Home now. What are my Windows 7 choices? You can upgrade to Home Premium (\$120), Professional (\$200), or even Ultimate (\$220) if you want.

I'm running XP Professional. What are my Windows 7 choices? Your options are the same as if you were running XP Home now: You can upgrade to Home Premium, Professional, or Ultimate.

What will the process be like? We won't know for sure until Microsoft makes final Windows 7 Upgrade discs available, but the company will help you back up and then restore settings and data with the Windows Easy Transfer utility on the Windows 7 DVD.

What should I do before I start the upgrade? Tops on the list: Make a complete disk image of your XP machine as it exists now so that you can revert, if you wish, to XP without a lot of hassle.

Will I be able to run my old Windows XP software? Yes, if you bought the upgrade to either Windows 7 Professional or Ultimate. Those two editions let you run the Windows XP Mode add-on.

What happens if I hate Windows 7? Can I revert to Windows XP? Yes, you can. Ideally, you'd restore from the disk image you made earlier (see "What should I do before I start the upgrade?").

—Gregg Keizer, *Computerworld*

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¹ MobileMark® 2007 test results for the Acer Aspire Timeline model 3810. Battery life will vary based on your configuration. The MobileMark® 2007 benchmark does not include DVD playback.

² 13.3" and 14.0" models.

³ When referring to storage capacity, GB for one billion bytes. Some utilities may indicate varying storage capacities. Total user-accessible capacity may vary depending on operating environments.

⁴ The operating system on the CD can be installed in place of, not in addition to, the pre-loaded operating system.

⁵ For a free copy of the standard limited warranty, see a reseller where Acer products are sold or write to Acer America Corporation, Warranty Department, P.O. Box 6137, Temple, TX 76503.

⁶ On-site service applies to the continental U.S. and Canada only and may not be available in all locations. In those areas where on-site service is provided, a technician will be dispatched, if necessary, following efforts to resolve the problem by telephone support.

Prices shown are estimated street prices and do not include tax or shipping. Retailer or reseller prices may vary.

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What's Rotten—If Anything—About Apple?

LATELY, APPLE HAS been the tech world's piñata, battered by iPhone users and critics who have blasted Apple for its rigid business style, which they view as arrogant, anticonsumer, heavy-handed, monopolistic, and just plain mean.

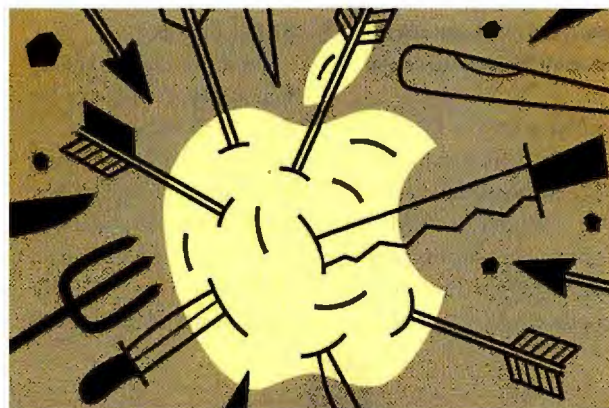
Is Apple the monster it's made out to be? Here are Apple's so-called offenses.

• Hanging up on Google

Voice: Banned from the iTunes App Store (with no public explanation) is Google's app for iPhone called Google Voice, a Web service that lets you control all of your phones with one number. This unpopular move by Apple caused the U.S. Federal Communications Commission to launch an investigation into the App Store approval process.

But Michael Gartenberg, vice president of strategy and analyst at market research firm Interpret, suspects that AT&T—the iPhone's wireless provider—is largely responsible for the Google

Voice app rejection. He says AT&T's landline phone business is fading as consumers either switch to an Internet phone service or go without any home phone at all. Having Google Voice in the App Store could result in AT&T's



revenues taking a hit, as Google's app makes ditching any phone service (including AT&T's) a breeze.

• **Palm Pre's sour note:** Pre owners were peeved when Apple prohibited the Pre from syncing with the iTunes music library. Palm then re-enabled iTunes syncing—but how long will that last?

Is this misbehavior on Apple's part? Tech industry consultant Tim Bjarin, president of Creative Strategies, says no. He points out that Apple clearly designed iTunes to work with the iPod and the iPhone, not

with third-party hardware.

"Apple's ease-of-use is only guaranteed to work within the Apple ecosystem. As soon as you go outside of that, you really do start making things much more difficult for the mainstream consumer," he explains.

• **Approval aggravations:** Apple has been derided for

what many call its controversial and confusing approval process for the App Store. Apple banned a dictionary program, called Ninjawords, saying the dictionary contained obscenities. Ninjawords, published by Daring Fireballs, is just the latest in a string of rejections. Sure, Apple wants to keep its App Store family-friendly, but lately the company seems overzealous and inconsistent in its efforts to block out naughty apps.

IDC consumer senior analyst Danielle Levitas says that a porn- and profanity-free App Store is simply smart business. "You want to know that your child's mobile experience is...not going to get them into too much trouble." And the iPhone's \$99 price points to teens as a target market.

• **Apple and AT&T, a dastardly duo?** Apple's exclusive deal with AT&T, the iPhone's sole U.S. carrier, has some iPhone users crying foul—they're unhappy with the reliability and performance of AT&T's wireless network. Others cite the axing of Google Voice as evidence of AT&T's sway over Apple.

Analyst Gartenberg thinks AT&T's sphere of influence over Apple is real. He says he doesn't blame the two for colluding—it's simply in their mutual best interests.

One final note: Apple and AT&T may act like control freaks, but you can always ditch them, Gartenberg says.

—Jeff Bertolucci (*Tom Spring*, PC World senior news editor, contributed to this report)

MOBILE WEB APPS

Google Voice May Be Sneaking Onto iPhones

DESPITE RECENT DRAMA (see above), Google Voice will soon be available for the iPhone—as a Web-based app—says the *New York Times*.

The phone-management application (which was widely speculated to have been rejected for threatening AT&T profits on calling plans) will be remade as a stylized Web site that offers everything the rejected app would have.

It is unclear if Apple would reject a repurposed Google Voice app. But considering how the company's recent decision drew attention from a wide range of people, including some at

the FCC, it probably wouldn't be a wise choice to block a rethought Google Voice app.

Web apps can be bookmarked on the iPhone interface and look like an app from the App Store. You can browse available Web apps, ranging from Facebook to BPlayer (which "allows you to listen to your favorite Belgian radio stations"), at find.pcworld.com/63574.

In addition, you can currently visit a text-heavy version of Google Voice on your iPhone by pointing Safari to google.com/voice/m.

—Paul Suarez



1TB SSD Drive Coming Soon—For a Steep Price

OCZ, A MEMORY maker that has been diversifying into other components and peripherals, has confirmed that it is launching a new 1-terabyte solid-state drive (SSD) that will fit 3.5-inch drive slots. Following reports on gadget sites about rumors of the product's launch, the company verified that the 1TB Colossus SSD drive should be available by the time you read this—and that its price tag would be \$2200.

Unveiled earlier this summer at the Computex expo



OCZ'S 1TB DRIVE will still fit into standard 3.5-inch drive slots.

in Taipei, OCZ's 1TB Colossus SSD drive combines huge capacity and reasonably small size. It weighs 14 ounces, but remains compact enough to fit into a standard 3.5-inch drive bay.

(Laptop users will have to wait for a smaller version, however.)

The company claims that the 1TB SSD will achieve read speeds of up to 250 megabytes per second and write speeds of 220MB per second over a SATA2 interface.

But if you don't want to remortgage your house for the 1TB Colossus drive, OCZ will also launch some less-pricey, lower-capacity models. For \$300, you'll be able to buy a 120GB version; \$650 will get you a 250GB version; and \$1200 will

bring you the 500GB model, the company says.

In April OCZ launched a still smaller 1TB SSD, with better write speeds, at a price of \$3000.

SSDs can deliver faster data access and lower power consumption than traditional hard drives (for more, see page 52). But as in the case of the Colossus, the price of an SSD can be prohibitive for many users. So until SSDs start retailing for much lower prices, don't expect to hear the death knell of the regular hard drive just yet.

—Daniel Ionescu

BETA WATCH

EDWARD N. ALBRO



RoboForm Online: Protected-Password Syncing

Using a password manager is the only way to really secure passwords and keep track of the darn things. Password managers that run on your PC, like RoboForm, are inherently limited, though; they're great when you're at the PC on which they run, but worthless if you're on some other computer. RoboForm Online deals with that problem in much the same way that bookmark-syncing software does: You sync your passwords to RoboForm's servers and can access them online or sync them to another PC with the company's desktop software. The passwords are encrypted, so even RoboForm employees can't read them. RoboForm's desktop software (\$30; a limited edition is free) is one of the most convenient password managers I've used, and this free service is a nice extension. online.roboform.com

FanSnap: The Kayak of Tickets

Ticket scalpers are no longer just sketchy-looking guys holding cardboard signs near the ballpark. You can find lots of online ticket resellers such as RazorGator and StubHub—so many, in fact, that it's time for the next wave: the scalping

aggregator. As Kayak does for travel services, FanSnap gathers deals from a wide range of ticket services and presents them in a nifty interface. A chart shows the distribution of prices for an event and a map of the arena, with icons indicating the location of the tickets on sale. Blue stars point to great deals. Don't want to spend more than \$100 to see Nickelback (and really, who would)? FanSnap will filter down to only the cheap seats. fansnap.com

LocateTV: 21st Century TV Guide

Video viewers these days are confounded by choices: hundreds of TV networks, dozens of Web video services, and millions of DVDs. But you can still find yourself on the couch on Thursday night wondering what to watch. LocateTV

does a nice job of highlighting the stuff that average viewers are most likely interested in—new episodes of television series, the latest movies, and so on. LocateTV will tell you exactly where to find them, whether on a basic cable station, DVD, Hulu, or iTunes. If you have a favorite show, the free service will e-mail you a reminder every time that program is going to air. locate.tv



FANSNAP PULLS TOGETHER deals for concert or sports tickets from a range of services, then shows you the seats on a map of the arena.

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FUJITSU

Chrome's Bookmark Syncing

GOOGLE'S Chrome browser may soon let you synchronize your bookmarks across multiple computers—a feature that could have broader implications down the road.

Reportedly, the new bookmark-syncing feature will rely on regular Google user accounts for storing and syncing browser-based data.

From the sound of it, the Chrome bookmark syncing will mirror at least some of the functionality offered by Mozilla Weave—a service currently under development that continually synchronizes a user's bookmarks, history, and saved passwords across multiple instances of Firefox. It's likely to overlap even more directly with Xmarks, a third-party utility that synchronizes different kinds of user information within Firefox, IE, and Safari.

Ultimately, Chrome bookmark synchronization could stretch far beyond the browser window. With the upcoming debut of Google's Chrome OS, integrated file synchronization could take a more prominent role across the operating system. And Chrome sync data will likely be accessible to users via a Web interface tied to Google Docs. This syncing will also work with client-server messaging services such as XMPP, which the Google Talk chat system uses now.

—JR Raphael



GEEKTECH

Why You Should Use Sleep Mode Every Day

SHUTTING DOWN YOUR PC at the end of the day is so twentieth century. What you probably should be doing is putting it into Sleep mode. You'll avoid that interminable wait for your system to boot up, without destroying the earth or your bank account by causing a dramatic upsurge in energy usage. Allow me to illustrate.

I have a fairly high-end system at home—a Core i7 920-based PC with 6GB of RAM, a high-end GeForce card, and a reasonably quick Seagate 7200.10 hard drive. The machine is running the final release of Windows 7. Shutdown takes 16 seconds, and bootup takes 66.

Shutting down is pretty fast, but booting up is painfully slow. I'm referring to "true" boot-up time—from when I press the power button to when I'm at a usable desktop, clicking away and getting a response. And my startup includes a couple of things like anti-virus software loading at boot.

In contrast, it takes 18 seconds to put my PC on Sleep mode, and a mere 2 seconds to wake it. That's right: just 2 seconds to start a truly usable desktop waking from Sleep mode. Shutting down takes a couple of seconds longer, but my computer wakes almost instantly. Not to mention that I can wake my PC by tapping the keyboard, instead of reaching down to press a small power button on the case.

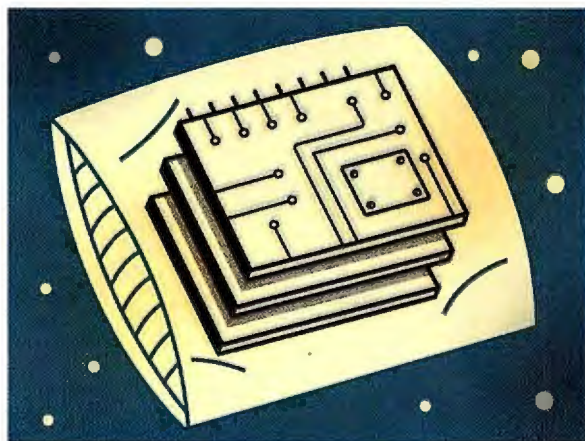
But what about power? Am I running up my power bill? Since my system BIOS supports the S3 ACPI (Advanced Configuration and Power Interface) mode, the answer is no. The S1 mode leaves the CPU and RAM powered up; the S3 mode powers them down. An article from a couple years ago on how to check and change your BIOS sleep state is still relevant (see find.pcworld.com/63538). My high-end system (excluding the monitor) uses some 120 to 130 watts just humming quietly, and 1 watt when powered off (most computers draw a very small amount of power even when off, so that they can do things like turn on when you press the power button). In Sleep mode, my system draws a modest 5 watts of electricity.

My computer runs a lot more than the aver-

With Sleep mode, the instant-on dream is practically here, and it doesn't use a lot of extra power.

age person's, so let's suppose that your system is off 16 hours a day. That 4-watt difference works out to a grand total of 1.92 kilowatt-hours (kWh) per month. According to the Department of Energy, the average price for electricity in the United States is 11.59 cents per kWh, so Sleep mode costs you 22.2 cents per month. Since the average U.S. home uses 936 kWh per month, 16 hours of Sleep mode a day would be an increase of 0.21 percent in monthly power usage. That's essentially a "rounding error."

Some systems use a little more power in Sleep mode, but it's almost always less than 10 watts. You probably don't want Hibernate



mode, which dumps the contents of your PC's RAM to the hard disk and then powers off your PC; although this mode lets you resume right where you left off, the large amount of RAM in today's systems makes it a pretty slow option.

If you use a laptop, see find.pcworld.com/63539 to change the power button's function.

You should also make sure that both Windows and your BIOS are up to date. Sleep mode had a reputation for finickiness in the past, but by now motherboard manufacturers and Microsoft have worked out most of the option's kinks.

—Jason Cross

Visit the GeekTech blog at go.pcworld.com/geektech for more hacks, tweaks, and tips.

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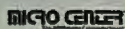
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These Gadgets Take the Trouble Out of Travel

IT'S THE LAST days of summer: Past time to get out from under your work e-mail and the tweets on your smartphone, and switch to a vacation state of mind. But before you go, take a look at

this clutch of high-tech travel gadgets.

With one or more of our finds, you can say good-bye to travel stress. We include everything from waterproof HD camcorders to portable translator

devices to mobile power packs (see our full slide show at find.pcworld.com/63567).

Still planning your vacation? Stop by find.pcworld.com/63559 for some help.

—Lauren Barnard ●



Jobo Giga Vu Extreme

Designed for photohounds, the Jobo Giga Vu Extreme copies images from card to disk, but it does far more: Combining a 3.7-inch LCD with a hard drive (80GB to 160GB) and card slots, it offers TV-cut, creates on-the-fly slide shows with music, plays movies and audio in numerous formats, and lets you attach USB devices such as digital cameras, printers, and MP3 players. Pricing: \$599 to \$899. find.pcworld.com/63560



Nikon GP-1 GPS Unit

If you own a Nikon DSLR, this gizmo could save you a lot of trouble. (Can't remember where you were when you took that photo of your family posing on a scenic bridge?) This \$210 geotagging device takes the place of your memory when you need it to. Affix it properly to your Nikon DSLR camera, and it will remember the exact coordinates where you snap each and every photo. find.pcworld.com/63561



Franklin Speaking 12-Language Translator

Sure, you took French for four years in high school, and you've even been brushing up for your trip. But what if you accidentally say something inappropriate when you meant to ask for the nearest bathroom?

To the rescue: the speaking TGA-490 12-language pocket-size translator by Franklin. The \$200 unit includes an organizer, a calculator, and a currency and metric converter. find.pcworld.com/63562



Kensington Portable Power Pack

Few things are more disheartening than having your iPod run out of battery life 20 minutes into a long flight. Or having your smartphone's battery die in the middle of an important call. Avoid such frustrating moments by toting the Kensington Portable Power Pack in your carry-on. Priced at \$60, this power pack is especially slim and convenient, and it works with any USB device. find.pcworld.com/63564



Sanyo VPC-WH1 Waterproof HD Camcorder

With this video camera, you can shoot clips of aquatic activities, from your kids doing the backstroke at their swim lessons to the whole family snorkeling in the Great Barrier Reef. It comes in three bright colors—blue, yellow, and white—and you can take it to depths of 10 feet underwater. For \$335, it's one of the best ways to document your next vacation, and you won't have to worry about getting it wet. find.pcworld.com/63565



Olympus Stylus Tough 8000

If you're afraid of damaging your camera on trips, but you want to prove to your Facebook friends that you actually backpacked across Europe, you need to buy a more durable model. This shockproof, waterproof, and freezeproof \$400 camera is a good option. It can withstand being dropped 6.6 feet, submerged to depths of 33 feet underwater, and used in Arctic temperatures. find.pcworld.com/63566

Things have a way of piling up.

Here's some tools to keep it all sorted.



Office 2007 helps with lots of household tasks. Sadly, changing diapers isn't one of them.

From better managing finances and school projects to creating greeting cards and resumes, Office has a tool to do it all. The improved look and feel lets you quickly master any task, while a free online workspace lets you handle it from just about anywhere. It's all part of Microsoft® Office 2007.

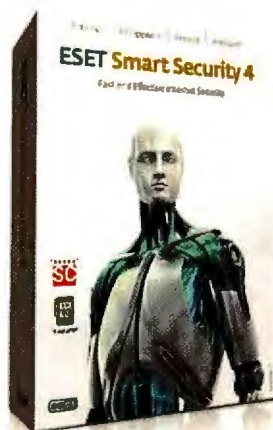
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Consumer Watch

How Much Does a Smartphone Really Cost?

BY MARK SULLIVAN

ARE YOU CONCERNED about the long-term expense of owning a smartphone? You should be. In extended pricing comparisons of eight of the most popular smartphones on the market today, we noticed a big dropoff in long-term costs between a closely grouped pack of six high-end models (including the AT&T-linked iPhone 3GS, various AT&T- or Verizon-bound BlackBerry handsets, and the AT&T-connected Nokia E71x) and two lower-priced alternative smartphones (the HTC G1 from T-Mobile and the Palm Pre from Sprint).

Over the length of a standard two-year contract, there isn't much difference in the total cost of ownership (device, service contract, and so on) for an iPhone, any of four BlackBerry models (the Curve 8330, the Curve 8900, the Storm, and the Tour 9630), or a Nokia E71x: All six come in at around \$3800. If that's more than you want to spend, you might consider a lower-priced newcomer such as the Palm Pre or the T-Mobile HTC G1, which end up costing hundreds of dollars less (\$2635.75 for the Pre and \$3184.99 for the G1) over the same two-year period.

Gauging Total Price

We calculated the total for eight of the hottest smartphones on the market today, comparing the total cost of ownership for two years (the normal term of a wireless service contract), as well as the

In comparing the total cost of ownership over two years for some hot smartphones, we found unmistakable bunching on price at the top of the list but a significant dropoff lower down.

(amortized) monthly cost. For instance, you'll pay a total of \$3835.75 in the first two years of owning a new iPhone 3GS (16GB); that's about \$160 per month (excluding a monthly smorgasbord of taxes, fees, and surcharges, which vary from locale to locale). Similarly, the price of owning a new BlackBerry Tour from Verizon for two years comes to \$3764.75, or

about \$157 a month (again excluding taxes and fees). Many people pay as much monthly for their smartphone as for their car.

The iPhone 3GS from AT&T, the BlackBerry Tour from Verizon, the BlackBerry Curve from AT&T or Verizon, the BlackBerry Storm from Verizon, and the Nokia E71x from AT&T each cost between \$150 and \$160 per month to own, and between \$3683.76 and \$3835.75 over two years. The costs of the devices themselves vary, but the unlimited voice, messaging, and wireless broadband rates for the six AT&T and Verizon smartphones in our study are exactly the same (\$99.99 per month).

Still, not all smartphones adhere to the pricing norms that prevail among the most popular models. If you're looking for a less expensive unit, consider a lower- ➤

ONE-TIME COSTS ¹	Apple iPhone 3GS 16GB (AT&T)	RIM BlackBerry Tour 9630 (Verizon)	Palm Pre (Sprint)
Smartphone	\$199.99	\$199.99	\$299.99
Mail-in rebate	None	-\$70	-\$100
Activation fee	\$36	\$35	\$36
Total (excluding sales tax)	\$235.99	\$164.99	\$235.99
MONTHLY CHARGES ²			
Plan name	Nation Plan: Unlimited	Nationwide Basic: Unlimited	Simply Everything
Unlimited domestic talk plan	\$99.99	\$99.99	\$99.99
Unlimited domestic text-messaging plan	\$20	\$20	Included
Unlimited data (Web access) plan	\$30	\$30	Included
Monthly total	\$149.99	\$149.99	\$99.99
Total cost (two-year contract term)	\$3835.75	\$3764.75	\$2835.75
Cost of ownership (monthly)	\$158.82	\$156.86	\$109.82

¹ Prices are as of 7/14/09, for in-store purchases, with a two-year contract, at normal retail (not promotional) rates. ² Monthly charges are as of 7/14/09, and exclude any state and local taxes, carrier surcharges, and administrative or regulatory charges.

For a snapshot comparison of 3G phone services in 13 U.S. cities, see "A Day in the Life of 3G" (find.pcworld.com/63491). And don't miss our ranked chart of cell phones at find.pcworld.com/63492.

priced newcomer such as the Palm Pre or the T-Mobile G1, which cost hundreds of dollars less than the BlackBerry and iPhone models over a two-year term. Sprint offers the Palm Pre for a monthly cost of ownership of about \$110, and you can own a T-Mobile HTC G1 for about \$133 per month.

Our chart on page 33 provides a detailed comparison of the total cost of ownership for three popular (or soon-to-be-popular) smartphones. For an expanded chart that compares eight smartphones, including the T-Mobile G1 and the BlackBerry Storm from Verizon, visit find.pcworld.com/63432.

Price Convergence

Why are the most popular smartphones so closely aligned in price? In the words of Verizon Wireless spokesperson Ken Muehe: "It's a very competitive landscape." Wireless providers see an enormous amount of money to be made from selling high-profit-margin services such as wireless broadband and text messaging to smartphone users. Analysts say that sales of services for the immensely popular iPhone have almost single-handedly buoyed AT&T's wireless business for the past two years. And of course, Sprint, T-Mobile, and Verizon are fighting tooth and nail for as big a slice of the pie as they can get.

Because of that profit potential—and with more and more first-time smartphone buyers entering the market—competition to sell smartphones and related services is intense.

Let's hope that, with the entrance of more competitively priced challengers like the Pre and the G1, the cost of ownership for smartphones will dip. But for the current \$160 per month average to go downward, a significant number of first-time smartphone buyers must resist the dazzle and social cachet of the iPhone and the BlackBerry, and opt instead for cheaper smartphones that may be a better value.

PC World intern Lauren Barnard provided pricing research for this article.

SKEPTICAL SHOPPER GINNY MIES



The Pros and Cons of Buying E-Books

WHEN AMAZON recently removed copies of George Orwell's *1984* and *Animal Farm* from customers' de-

vices and digital lockers, I suddenly remembered why I prefer physical media over virtual versions: If I buy a book or a disc, it's mine forever and I can access it whenever I want. Amazon's actions prove that's not necessarily true of e-books.

Amazon removed unauthorized editions of the books at the request of the rights holder. Later, company officials acknowledged that Amazon hadn't handled the issue well and said that it wouldn't automatically remove purchased copies of Kindle books in the future. The company issued full refunds to buyers of the titles.

But how can customers know which e-books are authorized and which aren't? Since Amazon offers hundreds of thousands of titles, something like this is bound to happen again.

Your protections are limited. The digital rights management (DRM) restrictions that Amazon places on content purchased at its store prevent you from downloading an Amazon book to a second, non-Kindle, e-book reader for backup. And you can download your copy a limited number of times (Amazon doesn't specify the number, as it seems to vary by publisher) among Kindles and iPhones.

Always download and save any e-book you purchase directly to your PC (you're allowed to do this). When you want to read one, transfer it to your Kindle via USB. That way, your copy won't be living on the cloud (in your digital locker or on your device); if Amazon executes a sweep, the copy will remain on your PC. Such a backup will work only on that Kindle, though; if you make a switch to a Sony E-Reader later on, you'll have no access to that file.

The Kindle is a handy device, but owners should shop carefully for e-books and consider no-cost options as well.

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Foxit Phantom: Business-Ready PDF

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No More Bloatware

Foxit Phantom is a complete, easy-to-use solution for reading, creating, organizing and securing PDF files. The Foxit Phantom installation file is less than 11MB and takes around 23MB of hard drive space after installation, which is only 1% of what its main competitors require. The launch speed of Foxit Phantom is much faster than the competition as well. At \$129 for the complete solution, Foxit Phantom costs far less. And unlike competitors that require separate versions for the reader and the add-ons, Foxit Phantom includes the free reader as well as advanced features that you can activate at any time. You also have the choice of upgrading your existing Foxit products to Phantom with a small upgrade fee.

Foxit Phantom Does All You Need

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Consumer Watch

ON YOUR SIDE MARLA MIYASHIRO



I RECENTLY PLACED an order for a LeapFrog Leapster2 at the LeapFrog Web site using two promo codes. However, my order reflected only one promo code. I didn't find anything on the Web site that said I couldn't use multiple promo codes. As proof, I saved the shopping cart and order confirmation pages as PDFs. I also took a screenshot of the promotion along with its fine print, which says nothing about stacking promo codes.

Wasim Rahim, Oviedo, Florida

OYS responds: One promo code was for a 10 percent discount, while the other was for a free Incredibles learning game. Rahim received the discount only—not the game. After we notified LeapFrog, a representative told us that the company would send him the game as a courtesy. But the spokesperson claimed that the legal print for all promo codes states that customers can use only one at a time.

Rahim was smart to take screenshots; he had proof that the offer didn't restrict customers to a single promo code. When we sent the spokesperson the PDF of the fine print, he acknowledged that the Incredibles code was not restricted, but countered that the second code was.

The representative soon after told us that all current promotions had the correct restrictions listed. A quick check of the site revealed that LeapFrog's fine print for the latest Incredibles game promotion does indeed explicitly state the company's promo code restrictions.

We recommend taking screenshots if you suspect that there might confusion or disagreement about the terms of your order. We also recommend checking multiple coupon-code sites to find the best deal (do a search for "storename promo code") and verifying that the code hasn't expired and has no restrictions that would make it invalid for you.

More Rebate Hassles

David Jarcho of Ridgefield, Connecticut, contacted us when he got no reply from Nuance after submitting rebate information. After purchasing Dragon NaturallySpeaking speech recognition software, he had sent in the rebate form twice by mail in 2008 and once by fax in January 2009. In June 2009, he faxed his rebate



documentation to Nuance one more time.

According to a company representative, Nuance didn't receive Jarcho's first attempts via mail and received incomplete information via fax in January. After getting Jarcho's latest fax, the company approved his rebate claim and sent him the \$50 award within a couple of weeks.

Consumers often have to submit rebate information more than once for reasons ranging from lost mail to poor customer service. We recommend making copies—both physical and electronic—of any rebate forms, receipts, bar codes, and other documentation you submit and noting when and how you sent them.

Best Buy Insignia TV Recall

In cooperation with the U.S. Consumer Product Safety Commission, Best Buy has issued a recall of about 13,300 Insignia 26-inch flat-panel LCD TVs (model IS-LCDTV26), stating that the power supply can fail, posing a fire and burn hazard. Best Buy has received two reports of fires; one person reported minor burns to the hands. Consumers should stop using the TVs at once and call Best Buy at 800/233-0462 to receive a gift card for the value of a replacement set.



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Business Center

Make Virtual Machines Work for Your Business

BY DAVID COURSEY

WHETHER YOUR BUSINESS is a cash-strapped startup with limited IT infrastructure or a growing company with rapidly changing computing needs, virtualization could help solve many tech problems. Virtualization can improve disaster recovery, load balancing, and software testing; reduce hardware costs; save energy; and reduce your data center's physical size.

Before you dive in, here are tips to smooth the move.

Decide on your goals: Do you want virtualization to provide greater flexibility in data center operations? Improve redundancy and disaster recovery? Reduce hardware and software costs? Decrease IT-department head count? Cut your electric bill? Forestall the building of a new data center?

Virtualization can help accomplish all of those things. In addition, it can allow you to run applications that require an operating system different from the one a particular machine normally uses. And it can deliver virtual PC functionality over the network, allowing staffers to work remotely.

Once set up, virtual servers are much more flexible and easier to support than an equal number of physical servers, and that means fewer physical servers in your data centers. Reducing the amount of

server hardware reduces your energy, cooling, and floor-space requirements—and the corresponding expenses will drop, too, sometimes dramatically.

Consider your applications: When build-

These eight tips can help you put virtual machines to work in your business, saving money and space, and much more.



ing a virtualization program, contact your line-of-business application vendors first. Do they support virtualization and, if so, on what platforms? Do they have hardware recommendations? Do they have user-to-user forums?

Assess VMware vs. Microsoft: In selecting a hypervisor (the software that makes virtualization possible), you may not

have a choice. If your key apps are supported by only one hypervisor or the other, or if your vendor just likes, say, VMware ESXi more than Microsoft's HyperVisor, your decision is made for you. If easy migration is key, follow your application vendors' advice. Generally they know what works best.

Make sure that you have resolved support issues before settling on a platform. Also, look at pricing; Microsoft has developed some virtualization-friendly pricing schemes.

Determine your hardware needs: The major hardware vendors offer systems tailored for use with virtualization, often prepackaged with software, sometimes at attractive prices. The systems may also come with specialized vendor support.

One way to get an idea of the hardware you'll need is to visit Dell's online Virtualization Advisor (find.pcworld.com/63494); it asks what you are running today and what you want to accomplish, and then offers a hardware/software configuration to meet that goal.

Discover how many servers you need: Some small companies run a single physical server and keep spare parts for emergencies. Other firms buy two or more servers and may use clustering to provide additional redundancy.

Generally you can restore virtual servers to the same physical server or a >>

For a complete introduction to the ins and outs of using virtualization, read "Get Started With Virtual Machines" at find.pcworld.com/63496, and be sure to consult the related articles linked therein.

different one from a snapshot. If multiple servers are available, you may be able to drag and drop an application from one server to another, while the application is running. This is an important benefit of virtualization.

Redundant servers offer considerable benefits—at the price of significantly increased costs. Gauge the risks acceptable to you and spend accordingly.

Know where to find help: Vendor support can be great, but it has its limitations. All major vendors offer forums for product discussion and problem solving among customers. Support on virtualization issues from other customers may be able to help when vendors cannot, and the price is right.

You can also hire a vendor or consultant to do much of the work for you. This is not necessary if you are already managing physical servers and are willing to experiment a bit before setting up a virtualization environment.

Very small businesses may want to hire a vendor to manage the project because they lack the necessary IT staff. Large companies might prefer to hire a consultant to do things such as computing return on investment and developing a project schedule.

Use desktop virtualization: Virtualization isn't just for server applications. For example, the "XP mode" for Windows 7 is actually a copy of Microsoft's Virtual PC that can run Windows XP alongside the new operating system.

Through desktop virtualization, a single desktop can run all of the operating systems in your company, allowing easy testing before rolling out changes or new applications to employees.

Enable remote users: A server can deliver an entire desktop and its apps to a remote PC, essentially acting as a terminal. In some industries—namely, businesses that are highly regulated and where IT needs tight control over user desktops—this approach makes sense. Just know that delivering virtual desktops is network- and server-intensive, and application performance at remote desktops may not be acceptable.

NET WORK MICHAEL SCALISI



Manage iPhones With Exchange

WHEN IPHONES FIRST trickled into my office, I was a little apprehensive. At the time they supported only IMAP and POP3 for e-mail, which can be tricky to support in an Exchange environment. Two generations later, the iPhone has become a robust enterprise-grade mobile device.

Slowly but surely, my staffers have been migrating from BlackBerrys to iPhones. Apple's handsets are simply easier to integrate with Microsoft Exchange.

Supporting BlackBerrys in an Exchange environment involves one of two scenarios:

- (1) Configure them to pull e-mail from an Outlook Web Access (OWA) server. This takes no administrative assistance, but it does make e-mail delivery slower, and the connection can break during a server outage.
- (2) Use a BlackBerry Enterprise Server (BES). This requires an enterprise data plan for each device, which can cost an additional \$10 to \$15 per month. It also means additional fees for both server and client licenses. But using a BES provides a huge amount of granularity in controlling the policies of RIM mobile devices—great for large organizations with strict policies and big budgets, but frustrating for smaller businesses that just want to enable employees' connectivity.

For businesses running Exchange, integrating the iPhone is much simpler. Both Exchange Server 2003 and 2007 natively support ActiveSync on the iPhone. (One technical note: If you already run an OWA server configured to use SSL with port 443 open on your firewall, you have taken care of the hard part.)

On the iPhone side, you merely go into the mail-account settings and create a new Exchange mail account. You then

The Apple iPhone may now be the easiest smartphone to integrate into the office. Here's how to set up its support.

specify the user's e-mail address and password. Next, the iPhone will use Auto-Discover to guess the correct e-mail server settings. If it fails, you can specify the server and domain manually.

Once that's set up, e-mail delivery is nearly instantaneous, and you can enjoy calendar, contact, and e-mail synchronization between the iPhone and the Exchange server. You can also originate and accept meeting requests.

Alternatively, you could use the Apple iPhone Configuration Utility, downloadable for Windows or OS X at find.pcworld.com/63555, which lets people create custom configuration files. You can configure Exchange, POP3/IMAP e-mail, VPN, and Wi-Fi, plus password requirements and restrictions on apps and camera use.

You can either e-mail the configuration file to users (assuming their iPhones are configured with an e-mail account) or publish it to a Web server where they can download it through Safari.

Also, you can control password policies using the Exchange System Manager. Exchange 2007 allows additional policy settings such as camera disablement.

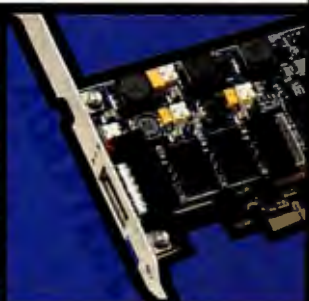
A major concern with mobile devices is how the information on them could be misused if they are lost or stolen. A feature called "remote wipe" addresses that by restoring the iPhone to its factory-default state. You can initiate a remote wipe with the Exchange Server Active Sync Web Administration tool; with an Exchange 2007 server, a user can also initiate a remote wipe through Outlook Web Access, or an administrator can use the Exchange System Manager.



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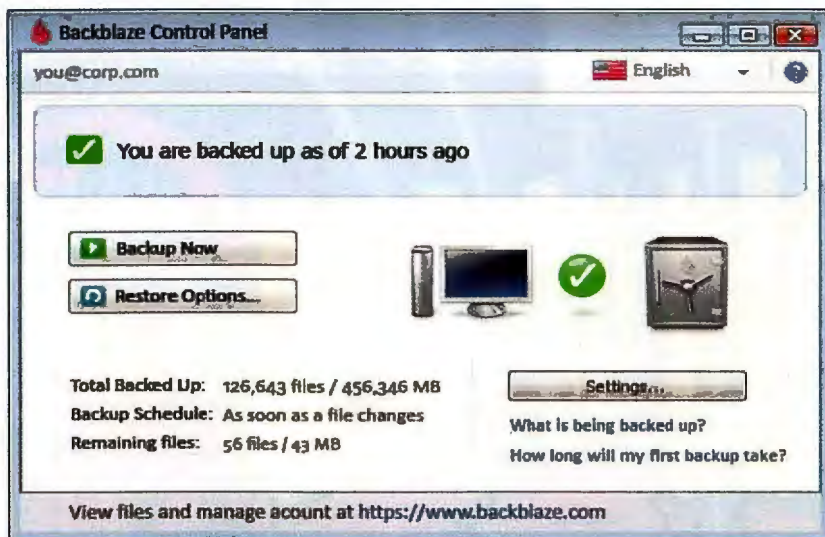
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Online Backups Save Up-Front Hardware Costs

IF YOU STILL haven't created a backup plan because of the hardware expense, you can minimize those costs by using an online service. With an online service you can pay a monthly fee instead of hundreds or thousands of dollars up front, scaling up the service across as many systems as you need.

Backup services such as MozyPro (mozy.com/pro) and Backblaze (backblaze.com) automatically encrypt data and transfer it over a secure connection. After you make the initial upload, the service's software will monitor that data for changes, building incremental backups to save upload time.

Businesses with little or no IT support will appreciate the console to control backups across many networked



BACKBLAZE CONTINUOUSLY MONITORS the files on your PC for changes and backs up new files on an as-you-go basis to save you from long, resource-hogging upload times.

computers. You can schedule backups to occur at intervals that make sense for your business. You can even throttle the upload bandwidth so that you don't slow down other online work.

Be sure to keep a local backup to quickly restore lost files. An off-site ser-

vice is great for a major disaster, for convenience, and for cost savings; but downloading everything could take a long time. Both Backblaze and Mozy offer to ship your data on DVD so that you can rebuild after a substantial crash.

—Zack Stern

Hardware Firewalls: Security for Small Businesses

THINK YOUR BUSINESS is too small for a serious security appliance? The truth may surprise you. For less than \$500, a simple unified gateway device can protect even tiny offices from the threats posed by malware and hackers.

Network intrusion is no joke: Trojan horses and other malware, or even hacker break-ins, can compromise your company's private data, as well as that of your clientele. But with a hardware firewall installed between your computers and your broadband connection, you can breathe a little easier.

For offices of up to 25 people, an inexpensive unified threat management (UTM) appliance like ZyXel's ZyWall USG 100 (find.pcworld.com/63506) deploys in minutes, even without the help of a professional network administrator. Its friendly browser-based interface makes it easy to configure for one Internet connection or two, and it supports LAN, WAN, and DMZ connections out



of the box. Two USB ports allow for a secure connection through a wireless data adapter, as does a rear-mounted PCMCIA port.

The device also includes VPN support for both SSL and IPsec VPNs, giving remote employees the ability to join the network without compromising security. A small office can support workers at even smaller satellite offices efficiently.

You can even set user-aware network policies in the UTM that set bandwidth limits based on user log-ins (no more YouTube videos after lunch, Sam!).

THE ZYXEL ZYWALL USG 100 offers unified threat management for small businesses.

To get the most out of a device like this, consult a seasoned security professional. But if you're on a shoestring, the basic quick-start installation will lock your network down speedily.

Go to find.pcworld.com/63507 and find.pcworld.com/63508 for more on UTMs.

—Robert Strohmeier ●

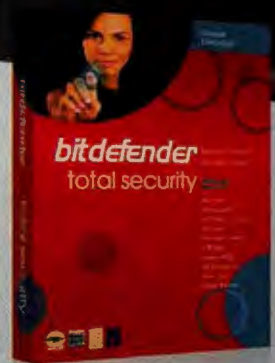


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Security Alert

Is Your PC Bot-Infested? Here's How to Tell

BY ROBERT VAMOSI

AS FIREWORKS BOOMED on the Fourth of July, thousands of compromised computers attacked various U.S. government Web sites. A botnet of more than 200,000 computers, infected with a strain of 2004's My-Doom virus, attempted to deny legitimate access to sites such as those of the Federal Trade Commission and the White House. The assault was a bold reminder that botnets continue to be a massive problem.

Botnets are rogue networks of compromised "zombie" PCs. Your machine can become infected if you visit a site and download tainted code disguised as a video, if you visit a site that itself has been compromised, or if a traditional virus or other piece of malware enters your system. Once a bot infects your PC, it calls out to its command-and-control (CnC) server for instructions. A bot is similar to a traditional Trojan horse; but rather than merely installing a keylogger or a password stealer (which it might still do anyway), a bot works with other infected PCs, compelling them all to act together, in some ways like a very large computer.

Spammers pay big money to have a bot blast their message to thousands of machines; in particular, Canadian pharmaceutical spam is big right now. Other uses for bots include attacks that shut down commercial Web sites, often paired with a ransom demand. Brisk business also exists in what's called *fast flux*: To keep phishing Web sites active, operators change domains frequently. Botnets provide a quick and easy

means to do so, and, according to security firm Kaspersky, botnet owners charge big money for that service.

In July, the ShadowServer Foundation, a group specializing in sharing information about botnets, reported that the number of identified botnets grew from 1500 to 3500 in the last

two years. Each of those 3500 networks could contain several thousands of compromised PCs—and any given PC could be infected by multiple bots.

In raw numbers, the United States and China are the homes of most of the bot-infected machines, says Jose Nazario, manager of security research at Arbor Networks. "I think it's very safe for most PC users to assume they are part of a botnet," he says. "It's a very dangerous Internet for most folks."

Detecting Infections

Botnets live or die depending on communications with their CnC servers. Those communications can tell researchers how large a botnet is. Similarly, the flood of communications in and out of your PC helps anti-malware apps detect a known bot. "Sadly, the lack of anti-virus

alerts isn't an indicator of a clean PC," says Nazario. "Anti-virus software simply can't keep up with the number of threats. It's frustrating [that] we don't have significantly better solutions for the average home user, more widely deployed."

Even if your PC antivirus check comes out clean, be vigilant. Microsoft provides a free Malicious Software Removal Tool. One version of the tool, available from both Microsoft Update and Windows Update, is updated monthly; it runs in the background on the second Tuesday of each month and reports >>

Botnets are big, bad, and widespread—but if your system is infected, you can take several simple steps to clean it and stay safe.

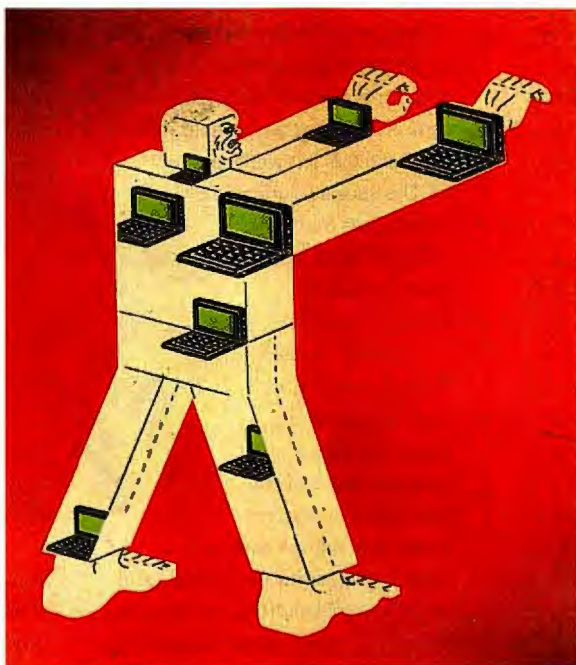


ILLUSTRATION: DAVID PLUNKERT

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Recent Virus Bulletin tests revealed that even the best and most popular antimalware applications are struggling to detect emerging threats. Read more about the tests at find.pcworld.com/63438.

to Microsoft whenever it finds and removes an infection. You can use another version, available at find.pcworld.com/63436, at any time, and you should run the utility if you notice a sudden change in your PC's behavior.

The Malicious Software Removal Tool garners results. In September 2007, Microsoft added to the utility the ability to recognize the Storm bot. Overnight the size of the Storm botnet was reduced by as much as 20 percent. Microsoft has since added other prevalent botnets to the tool's list, such as Conficker and Stribi.

Proactive options are also available. BotHunter (find.pcworld.com/63434), a free program from SRI International, works with Unix, Linux, Mac OS, Windows XP, and Vista. Though designed for networks, it can also run on stand-alone desktops and laptops.

BotHunter listens passively to Internet traffic through your machine and keeps a log of data exchanges that typically occur when a PC is infected with malware. Occasionally, to improve its definitions, BotHunter sends outbound messages to an SRI International database of adware, spyware, viruses, and worms (find.pcworld.com/63435). BotHunter first recognized Conficker data-exchange patterns back in November 2008, well before other security vendors picked up on the threat.

Future Botnets

If only to demonstrate their resiliency, bots have recently invaded cell phones, too. Trend Micro reported that the Sexy View SMS malware on the Symbian mobile OS can contact a CnC server to retrieve new SMS spam templates.

While a botnet on a mobile phone may look different from one on a PC, the idea of renting out a network of "owned" phones may be viable in the near future. Regardless of the form bots might take, we probably won't be able to eradicate the threat; we can only learn to better manage bot infestations. But in the meantime, let's clean up as many PCs as we can.

BUGS & FIXES ERIK LARKIN

A Rare Emergency Fix From Microsoft

MICROSOFT MIGHT BE feeling like the little Dutch boy this month, plugging

holes with regular patches and with rare out-of-cycle fixes in an attempt to prevent attackers from pouring through.

The out-of-cycle patch, critical for all versions of Internet Explorer on 2000, XP, and Vista, addresses IE's handling of flawed ActiveX controls created with the Microsoft Active Template Library (ATL). This serious vulnerability affects many ActiveX controls. For example, Adobe confirmed (find.pcworld.com/63452) that its Shockwave and Flash Player ActiveX controls "leverage vulnerable versions of ATL," and that it is working on a fix. The issue also affects IE on Windows Server 2003 and 2008, but is rated moderately severe on those OSs.

Microsoft's regular Patch Tuesday release closed other holes, including a zero-day flaw that had been under attack and involved an ActiveX control used by Microsoft Video (find.pcworld.com/63453). Though the patch disabled the control, which served no legitimate purpose, it didn't correct the underlying flaw. The fix, critical for XP and moderate for Windows Server 2003, doesn't affect Windows 2000, Vista, or Server 2008.

A second fix stopped attacks on Microsoft DirectShow's processing of QuickTime content (find.pcworld.com/63454). The attacks, which didn't depend on having Apple's QuickTime installed, could trigger if a victim opened or previewed

Plus: Zero-day attacks on several Adobe apps, and an update to Firefox.

a poisoned QuickTime file. DirectX 7, 8.1, and 9.0 on Windows 2000 need the fix, as does DirectX 9.0 on XP and Server 2003.

Other critical fixes addressed holes in how all supported versions of Windows handle fonts in Web pages, e-mail, and Office docs. The flaws had not been attacked prior to the patch, but they are doozies. See find.pcworld.com/63449.

A serious flaw in Microsoft Office Web Components involves an ActiveX issue that permits attacks on IE users. A wide range of Office components and versions need the fix; for the complete list of affected software, see find.pcworld.com/63456.

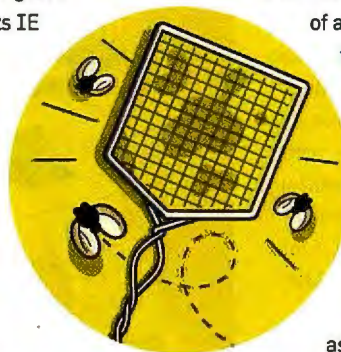
You can grab all the aforementioned fixes via Windows Update.

Adobe and Firefox Patches

Adobe issued fixes for Flash (on all platforms), as well as for Reader, Air, and Acrobat, after reports of

attacks that used poisoned PDFs to exploit Flash flaws. Grab Flash version 10.0.32.18 from get.adobe.com/flashplayer. For Reader, update to version 9.1.3 by opening the program and choosing *Tools•Check for Updates*. You'll find the latest Air at get.adobe.com/air. See find.pcworld.com/63457 for links to Acrobat updates for Mac and Windows, along with more details.

Firefox users should upgrade to the latest available version to apply fixes for holes in versions 3 and 3.5, including a serious flaw in 3.5's handling of JavaScript, plus a problem affecting Firefox 3's use of SSL certificates to encrypt secure Web connections (3.5 was already safe from that flaw). Click *Help•Check for Updates* to confirm your version. If you're still on version 3, visit getfirefox.com to download 3.5; it's a relatively painless upgrade.



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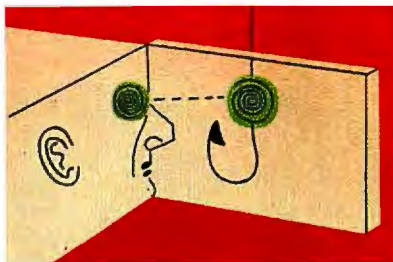
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Fake-Video Attacks Target Both Macs and PCs

INTERNET CROOKS LOVE to create attack sites and e-mail that use lures based on news items and Internet porn. When the two come together, as in the recent incident involving a “peephole” video of ESPN sportscaster Erin Andrews, the malware is sure to swarm.

Sites purporting to show the video encourage hapless horndogs to install a video player that is actually malware.

The video-player trick is another big favorite among those who make money from infecting PCs. And it doesn't stop with Windows—according to a blog post by Graham Cluley of Sophos (find.pcworld.com/63490), some attack sites



hijacking the Andrews video will check to see whether a visitor is using a Mac or a Windows PC, and launch a customized attack. The example Cluley cites tries to infect a PC with Mal/EncPk-IF malware or a rogue antivirus app. Mac users get an OSX/Jahlov-C Trojan horse.

Since attacks using malicious video codecs and players are common, it's prudent to send any such download to VirusTotal.com for a comprehensive scan by multiple antivirus engines. The check won't guarantee that you'll catch every piece of malware, but it will offer much better odds than scanning files with just the security app on your PC.

McAfee and Sunbelt have also posted alerts about the surging number of fake-video attacks. And if you're in the mood for some irony, watch the (presumably safe) video in the Sophos post about the danger of such attacks.

—Erik Larkin

PRIVACY WATCH

ERIK LARKIN



Your New Web Browser Knows Where You Are

ALLOWING YOUR WEB browser to determine your location opens the door to nifty features. Some iPhone apps (such as Yelp's) can help find nearby restaurants or other places, for example. But such functionality, available in the newest Firefox and in Safari on the iPhone, also opens the door to privacy concerns: Where you physically stand is deeply personal information that you don't want to give to just any site. I tried the new features.

Firefox 3.5 works with the Google Location Service. If you visit a site that can use your location, a pop-up asks you to allow or block the request. Allow it, and Firefox sends your IP address and data about nearby wireless access points to Google. Clicking 'remember' tells it not to ask again for that site. Google then sends its guess of your whereabouts, and Firefox sends that data to the requesting site. Google never learns which site wants the info; and though it uses a unique ID for your location requests, the tag is randomly assigned and resets every two weeks, so Google can't associate you with your browser's where-am-I's.

You can disable the location feature by typing **about:config** in the address field and then typing **geo.enabled** in the filter box. Double-click the setting to change the 'true' setting to 'false'.

To clear a given site's remembered permission to use your location (or to see whether you've already allowed it), visit that site, click the site icon next to the URL, and choose *More Information*.

Firefox and Safari on the iPhone can now report your physical location. But who are they telling?

Click the *Permissions* tab and change the 'Share Location' options. To clear out all remembered site permissions (which will also reset other things, such as whether to load images for the site), go



to *Tools•Clear Recent History*. Select a time period, and check the box for *Site Preferences* (be sure to uncheck the other items, unless you want them cleared as well).

Safari's service prompts you when you visit, via iPhone, a site that can use your location based on GPS, local Wi-Fi networks, or cell network data. The program saves your choice for 24 hours, then resets. To clear a decision before then, go to the *Settings* app and tap *General* and then *Reset*. Tap *Reset Location Warnings*. To disable location services for Safari and all other apps,

go to *Settings•General* and toggle the *Location Services* setting.

Unfortunately, neither browser tells you what the site will do with your data. And as the Center for Democracy and Technology notes (find.pcworld.com/63451), users deserve a way to see easily which sites they've okayed, and to revoke permission if desired.

At this point, few Web sites employ the location features, but to see either browser's option in action, head over to m.flickr.com and choose the *Photos taken nearby* option. ●

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Ad-Aware Community Takes Shape

With more than 400 million downloads since it was introduced in 1999, it's clear there's a vast community using Lavasoft's Ad-Aware to deal with the perils of spyware, viruses, Trojans, rootkits, hijackers, keyloggers and other rogue programs. Now, Lavasoft is upping the ante with new community initiatives that are tied into the latest version of Ad-Aware, intended to put more power in the hands of Windows users to stay safe and secure online.

Lavasoft doesn't require users to register in order to download the free version of its anti-malware Ad-Aware, so the ultimate number may never be known. "For five years after we introduced the first-to-market anti-spyware product, Ad-Aware grew entirely via word of mouth through the Internet community," says Michael Helander, vice president sales and marketing for Lavasoft. "With this new version we really want to reaffirm that grass roots connection."

A key component of that connection is the Lavasoft **ThreatWork** Alliance, a network of Ad-Aware users who volunteer to provide access to their computer-use statistics to aid the company's advance research group in evaluating threats, and building special detection and removal tools.

Customization

Users can also choose to contribute to the community by developing and sharing their own custom "skins" for the Ad-Aware interface. **Community-driven translations** will supplement the 10 currently supported translations as individuals and groups edit and share custom translations — or even create a Klingon version!

Lavasoft has also provided an API so programmers worldwide can develop **plug-ins**. The first plug-in ships with the software — the Download Guard scans downloads via Internet Explorer to prevent malware via that avenue.

While there are paid versions of Ad-Aware with additional features, the latest **free version includes anti-virus**, ensuring an opportunity for anyone to obtain the level of protection needed, regardless of economic status or location — a key factor in Lavasoft's company vision.

New Features

Also standard across all versions are several new features and functions, including:

Genotype — A completely new malware detection system, based on heuristics, proactively detects newly emerging threats by cross-referencing properties of new code to existing threat samples, ultimately meaning you stay safer and more secure online.

The Neutralizer — Lavasoft's new advanced removal tool combats malware that attempts to restore itself even after rebooting your system.

Do Not Disturb!

The Ad-Aware Pro version and a new stand-alone Game Edition feature a Do Not Disturb mode that doesn't interrupt gaming or online video viewing with security messages. The software continues to protect during the Do Not Disturb session and once that's completed, provides a full summary of the threat detected and action taken.

New user modes — Lavasoft also makes it easy for users to engage at their desired level. Ad-Aware **Simple Mode** is designed to make using the program as easy as possible, while **Advanced Mode** allows users to customize settings.

MyLavasoft — A new online social community enables Ad-Aware users to talk to each other and the Lavasoft staff. MyLavasoft is a smarter and more secure way to make communicating easy and fun.



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Reviews & Rankings



Solid-State Storage Goes Mainstream

PCW Test Center JUST ABOUT EVERYONE

has heard the hype surrounding solid-state drives, but only now are we starting to see SSDs get a foothold as a storage alternative for everyday use.

The PC World Test Center evaluated eight SSDs and found that performance diverged widely among them, as well as compared with magnetic hard-disk models.

Until the advent of SSD, PC storage relied on magnetic hard-disk technology, which has numerous moving

Higher capacities, faster performance, and lower prices are helping solid-state drives become viable for everyday use.

parts (including a spindle motor, an actuator assembly, and read/write heads that float 10 nanometers above the spinning platter).

By contrast, SSD storage consists of NAND flash-memory chips. SSD's lack of moving parts gives it an edge over regular drives on multiple levels. First, SSDs are more shock-resistant than magnetic hard-disk drives;

SSDs have fewer potential points of mechanical failure, and are able to withstand jostling and sudden impacts. Second, SSDs are silent, which makes them great for PCs that sit in living areas. They also generate less heat and use less energy, so they don't require fans, which contributes to their quiet operation as compared with a spinning hard-disk drive.

SPEEDY, ROOMY SSDs from (left to right) Corsair, Intel, Patriot, Samsung, and Super Talent. The Intel model led the pack in performance tests.

Finally, because of their compactness, SSDs can be made to fit in tight spaces.

That said, today's SSDs primarily adhere to the current 1.8-inch and 2.5-inch hard-disk sizes, and typically they use the same connectors as hard-disk drives do (first Parallel ATA, now Serial ATA-300). An SSD can fit



55 ALIENWARE M17X



56 HTC TOUCH Pro 2



62 HP W2558HC



63 TOMTOM GO 740 Live

into a laptop or desktop chassis using existing industry standards. As a result, buyers should think of SSDs not as replacements for regular hard-disk drives but as complements to them.

In pricing, SSD currently has little hope of competing with standard hard drives, and this won't change anytime soon. Expect to pay upward of \$2.75 per GB for an SSD, versus about \$0.25 per GB for a regular hard drive. Capacity remains relatively limited, too: 256GB is the current high end for mainstream SSDs. (A few outliers reach 500GB or even 1TB, but they have a stratospheric cost and come in a 3.5-inch chassis; see "1TB SSD Drive Coming Soon—For a Steep Price" on page 26.) Because of that limitation, SSD makers don't target storage-hungry users. If you need high capacity, look to standard drives; they can offer more than triple the space of SSD at a fraction of

the price. (Another possibility for desktop PC owners: Use an SSD as the primary boot volume for your apps and operating system, and use a roomier regular hard drive to store data.)

In spite of its disadvantages, SSD is breaking into the mainstream due to the proliferation of models and the lower prices that have

Instead of marketing SSDs to consumers, Samsung sells its drives to laptop manufacturers and other drive vendors for use in their products.

come in the last year from increased competition and improved production processes. Notably, Intel recently introduced its smaller and less expensive 34nm NAND multilevel cell flash memory.

SSD Pros and Cons

Performance sees improvement, too, but the benefits are not apparent across all applications. For now, SSDs have faster read speeds, but in write speeds they trail 7200-rpm magnetic hard disks (and can even fall short of 5400-rpm hard disks).

Compared with standard hard drives, SSDs are capable of reduced latency, which translates into greater speed in accessing data. For example, Intel says a typical hard-disk drive's latency is 4000 microseconds, while the company's X-25M is rated at 65 microseconds. SSDs have faster seek times than hard-disk drives do, too. Newer



drives, such as the X-25M, boost random write performance, which can have a positive impact on system and app responsiveness.

But not all SSDs are created equal. Everything from the source of the NAND flash to the chipsets and controllers to the wear-leveling algorithms used (more on that in a moment) can affect performance. Single-level cell (SLC) flash, for instance, is costlier than multilevel cell (MLC) flash, but it's also capable of greater endurance. Most consumer SSDs

today have MLC flash; when drives are significantly pricier or are sold as "enterprise" drives, the reason may be that they have SLC flash.

Although the SSD market is crowded, only a few companies, such as Intel and Samsung, make the flash memory. They supply the flash—and often the drives themselves—to other vendors, which "rebadge" the drives as their own. For example, the Corsair model on our chart is a Samsung drive inside. (Even though we list a Samsung model in our chart, the company does not sell its drive to consumers. Instead, it sells the drive to laptop makers and other drive vendors.) Next year I expect the market to thin out, with a few makers rising to the top, as SSDs aim for broader, mass appeal.

One largely unpublicized, but critical, aspect of SSDs slightly reduces the technology's attractiveness. In comparison with hard-disk platters, NAND flash memory cells can rapidly wear out with use. As a result, SSD makers employ wear-leveling algorithms to make the drive write data evenly across the flash cells. Whether the »

MORE ONLINE

To read hard-drive and SSD news, reviews, and how-tos, see our Storage Product Center at find.pcworld.com/62973.

algorithms are effective in the long run remains to be seen, however. And consumers must accept a manufacturer's word as to how well its algorithm will safeguard their data; users have no way to gauge the drive's wear-leveling effectiveness.

Another issue: Out of the box, SSDs can offer blazing speed, but over time it may degrade, depending on how you use the drive. Unlike with standard drives, with SSDs the sequential or random nature of writes will affect future performance. Sequential writes generally leave large blocks of free space that make recycling, or garbage collection of data, faster. Every OS, however, performs random writes that users can't control; in random writes, re-

maining space is very small, and that causes garbage collection to take a lot of time.

Some manufacturers, Intel among them, estimate the lifetime of an SSD in its specs (Intel says five years). Along with other SSD makers, Intel also uses the same measurement that standard hard-disk drive manufacturers use, referring to the life expectancy in terms of the mean time between failures. Among the SSD drives whose makers list this spec, the typical MTBF is between 1 million and 1.2 million hours, though at least one (Samsung) goes as high as 2 million hours, putting SSD at or above enterprise-class hard-disk drives in reliability, and far



IMATION'S M-CLASS SSD comes in a housing that allows it to work inside or outside a PC.

above consumer-class hard-disk models; manufacturers don't even list this spec for consumer hard-disk drives. (See find.pcworld.com/63547 for more about hard-drive vendors' MTBF claims.)

Hits and Misses

In our tests of eight drives, three eclipsed the rest of the field. Leading the way was Intel's X25-M. It whipped through our tests and came

out ahead or in a statistical tie with our number two, the Samsung MLC SSD. A few seconds behind them was the Corsair P256—not a surprising result given that it has the Samsung drive inside.

In the middle were Patriot's Torqx 128GB and Super Talent's Ultra SATA SSD, recently priced at \$405 and \$355, respectively.

Bringing up the rear were two Ritek models (the Ridata Ultra-S SATA 64GB and 128GB) and Imation's 128GB M-Class Solid State. All three struggled in copying 3GB of files and folders, as well as in copying a single large file; they may not have been doing parallel writing, which can be necessary in a drive for dealing with the fact that flash's erase-write cycle is intrinsically slow.

Even though the Imation drive was slow, I liked two of its features: It sports a housing for use inside and outside a PC, and it includes a USB adapter for external use. You don't get that kind of long-term flexibility from the other drives here.

Given their still-high per-gigabyte price, SSDs have mixed appeal. The greatest value potential comes when you use an SSD along with an internal, standard hard drive (clearly, a less viable option for laptop users). SSDs are strong performers, especially on disk-read-intensive tasks, and an SSD can give an aging system new life; but you should consider whether the speed gains justify the sacrifice in storage space.

—Melissa J. Perenson

PC WORLD TOP 5 SOLID-STATE DRIVES

MODEL	PCWRating	Performance	Features and specifications
1 BEST BUY Intel X25-M Solid State Drive 160GB \$450 find.pcworld.com/63498	92 SUPERIOR	<ul style="list-style-type: none"> Overall performance: Superior Copy files: 57 seconds File search: 96 seconds 	<ul style="list-style-type: none"> 160GB SATA-300 Cost per gigabyte: \$2.81
BOTTOM LINE: The class of the field, Intel's X25-M boasts top performance, and its price is down from the stratosphere.			
2 Samsung MLC SSD 256GB \$800 find.pcworld.com/63499	91 SUPERIOR	<ul style="list-style-type: none"> Overall performance: Superior Copy files: 60 seconds File search: 98 seconds 	<ul style="list-style-type: none"> 256GB SATA-300 Cost per gigabyte: \$3.13
BOTTOM LINE: Running neck-and-neck with the Intel in speed, Samsung's drive is capacious—but nearly twice the Intel's price.			
3 Corsair P256 CMFSSD-256GBG2D \$800 find.pcworld.com/63500	90 SUPERIOR	<ul style="list-style-type: none"> Overall performance: Superior Copy files: 63 seconds File search: 99 seconds 	<ul style="list-style-type: none"> 256GB SATA-300 Cost per gigabyte: \$3.13
BOTTOM LINE: If its specs and its high price seem familiar, that's because this model is actually Samsung's drive inside.			
4 Patriot Torqx 128GB SSD SATA \$405 find.pcworld.com/63501	77 GOOD	<ul style="list-style-type: none"> Overall performance: Good Copy files: 98 seconds File search: 97 seconds 	<ul style="list-style-type: none"> 128GB SATA-300 Cost per gigabyte: \$3.16
BOTTOM LINE: Patriot's lower-capacity drive provides middling performance; it stumbled on our test for copying a large file.			
5 Super Talent Ultra SATA SSD \$355 find.pcworld.com/63502	77 GOOD	<ul style="list-style-type: none"> Overall performance: Very Good Copy files: 96 seconds File search: 97 seconds 	<ul style="list-style-type: none"> 128GB SATA-300 Cost per gigabyte: \$2.77
BOTTOM LINE: This Super Talent drive has the lowest cost here, but it too was inexplicably slow at copying a single large file.			

CHART NOTE: Ratings are as of 8/10/09.

Alienware Invades With One Powerful Laptop

YOU CAN GET a lot of

PCW Test Center power for much less than you used

to with a desktop replacement laptop (aka power laptop). Of course, such a high-end model will still set you back a pretty penny.

Take Alienware's M17x. This ominous black obelisk of a laptop weighs over 12 pounds, has a virtually seamless feel (the only screws are beneath the battery), and can run games at a healthy clip (Unreal Tournament III at 84 frames per second at



ALIENWARE'S M17x power laptop is big, beefy, and stylish.

top settings and 1680-by-1050 resolution). That's in no small part thanks to a 2.53GHz Intel QX9300 CPU, 4GB of RAM, and two 1GB nVidia GeForce GTX 280M graphics processors. All that horsepower—and style—sells for \$3849. Not cheap, by any stretch, but about \$2000 less than our runner-up from Eurocom.

—Darren Gladstone

MORE ONLINE

Visit find.pcworld.com/62693 for in-depth reviews, full test results, and detailed specs for each laptop on our chart.

PC WORLD TOP 10 DESKTOP REPLACEMENT LAPTOPS

MODEL	PCWRating	Performance	Features and specifications
1 Alienware M17x \$3849 NEW find.pcworld.com/63459	86 VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 100 Good Overall design: Very Good Tested battery life: 3:04 	<ul style="list-style-type: none"> 2.53GHz Core 2 Extreme QX9300 17.0-inch widescreen 12.8 pounds BD-ROM
BOTTOM LINE: We expect a tricked-out gaming machine to perform well and cost plenty. But few look as good as the M17x does.			
2 Eurocom D901C Phantom-X \$5950 find.pcworld.com/63464	82 VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 133 Superior Overall design: Good Tested battery life: 1:19 	<ul style="list-style-type: none"> 3GHz Intel Xeon X3370 17.1-inch widescreen 12.0 pounds BD-ROM
BOTTOM LINE: The Phantom-X is versatile and packs plenty of power; however, it suffers from a lackluster layout and design.			
3 Lenovo ThinkPad W700ds \$4784 find.pcworld.com/63465	81 VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 88 Good Overall design: Very Good Tested battery life: 2:58 	<ul style="list-style-type: none"> 2.53GHz Core 2 Extreme QX8300 17.0-inch widescreen 11.0 pounds DVD±R DL/DVD±RW
BOTTOM LINE: The second screen of this huge desktop replacement notebook adds little functionality but much to the price.			
4 Micro Express N570 \$2899 find.pcworld.com/63466	80 VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 109 Very Good Overall design: Good Tested battery life: 2:08 	<ul style="list-style-type: none"> 2.53GHz Core 2 Extreme QX8300 17.0-inch widescreen 9.2 pounds BD-ROM
BOTTOM LINE: Micro Express's power-hungry but feature-starved N570 delivers the gaming goods but little else.			
5 HP HDX18 \$1890 find.pcworld.com/63467	79 GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 102 Good Overall design: Very Good Tested battery life: 2:42 	<ul style="list-style-type: none"> 2.8GHz Core 2 Duo T9600 18.4-inch widescreen 9.1 pounds BD-ROM
BOTTOM LINE: As a desktop replacement, the HDX18 performs well—and makes your actual desktop look snazzier.			
6 BEST BUY Asus W90VP \$2199 find.pcworld.com/63468	77 GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 105 Good Overall design: Very Good Tested battery life: 1:17 	<ul style="list-style-type: none"> 2.8GHz Core 2 Duo T9600 18.4-inch widescreen 13.2 pounds DVD+R DL/DVD±RW
BOTTOM LINE: Has good high-res gaming frame rates, but the short battery life and weak sound are disappointing.			
7 MSI GT 725 \$1699 find.pcworld.com/63469	76 GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 98 Good Overall design: Fair Tested battery life: 2:49 	<ul style="list-style-type: none"> 2GHz Core 2 Quad Q9000 17.0-inch widescreen 7.7 pounds BD-RE/BD-R
BOTTOM LINE: The MSI GT 725 will satisfy gamers; other users, however, will hunger for more, despite its nice power.			
8 Toshiba Qosmio X305-Q708 \$4099 find.pcworld.com/63470	76 GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 100 Good Overall design: Good Tested battery life: 1:24 	<ul style="list-style-type: none"> 2.56GHz Core 2 Extreme Q9300 17.0-inch widescreen 9.5 pounds DVD+R DL/DVD±RW
BOTTOM LINE: Toshiba's Qosmio X305 has lots of style and even more power, but it could use a more practical physical design.			
9 Apple MacBook Pro A1297 \$2799 NEW find.pcworld.com/63472	75 GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 102 Good Overall design: Very Good Tested battery life: 3:18 	<ul style="list-style-type: none"> 2.66GHz Core 2 Duo T8550 17.0-inch widescreen 8.5 pounds DVD+R DL/DVD±RW
BOTTOM LINE: This 17-inch MacBook Pro boasts better design and battery life (so long as you don't install Windows).			
10 Acer Aspire 6930 \$1699 find.pcworld.com/63474	74 GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 84 Good Overall design: Very Good Tested battery life: 2:54 	<ul style="list-style-type: none"> 2.53GHz Core 2 Duo T8400 18.4-inch widescreen 8.8 pounds DVD+R DL/DVD±RW
BOTTOM LINE: The Aspire 6930 is an excellent combination machine, providing good gaming for under two grand.			

CHART NOTE: Ratings are as of 8/6/09.

myTouch 3G Offers a Lot to Like

PCW Test Center THE MYTOUCH 3G is the second T-Mobile smartphone to run Google's Android mobile operating system. The \$200 phone has much going for it—a lightweight design, a gorgeous screen, and the 1.5 update to Android—but it's not without flaws.

Sleek and elegantly curved, the myTouch 3G measures 4.5 by 2.2 by 0.5 inches and weighs 4.1 ounces, a pocket-

able size. Nice design touches include the well-cut, light-up navigation buttons under the screen and the deep well around the navigation trackball. And you can access the microSD Card slot without removing the battery. However, the device is prone to showing fingerprints, especially on its screen.

Some critical buttons are unduly small and close together: Often I inadvertently hit the power instead of the back button. Another miss is the on-screen touch keyboard. The more I used the myTouch, the more I longed for a physical keyboard, as on the G1. Yes, I could do some limited typing with one hand, and I liked the haptic feedback as I pressed

THE MYTOUCH 3G puts a deep well around the trackball.

a key, but overall I thought the keyboard was too tightly packed. Going back to fix typos was harder than I would have liked, also.

The phone now has integrated universal search—on the Web or within individual apps. Android 1.5 can record and upload video and pictures to YouTube and Picasa, and play video in MPEG-4 and 3GP formats. You can add widgets to the home screen, as well.

Android 1.5 also has stereo Bluetooth support, and lets you copy and paste from within the browser. You get integrated Google Voice Search, too, but I found



its accuracy haphazard.

The myTouch 3G has a lot to like, but I can't help lamenting its lack of a physical keyboard. The software keyboard just doesn't cut it for long messages and e-mail.

—Melissa J. Perenson



myTouch 3G | T-Mobile

Has compact design and gorgeous screen, but no physical keyboard.

List: \$200

find.pcworld.com/63406

HTC Touch Pro 2 Is Well Designed

PCW Test Center BANKING ON THE popularity of its Fuze (aka Touch Pro) phones for AT&T, Sprint, and Verizon, HTC has launched the unlocked, \$800 Touch Pro 2 with a slicker design and a spruced-up user interface. But as with many Windows Mobile smartphones, the Touch Pro 2 in my tests exhibited a familiar sluggishness in doing certain tasks

such as launching apps or scrolling through contacts.

The design is eye-catching, functional, and well constructed. A roomy 3.6-inch, 480-by-800 WVGA display dominates the front face. Below the screen is a touch-sensitive bar that lets you zoom in and out of Web pages with a finger's flick. It worked well in my tests.

Four small buttons sit below the zoom bar: Talk, Start menu, Back, and Home/End. A power button is in the top-left corner, a volume rocker resides on the left spine, and the proprietary headphone/charging jack is on the bottom.

The horizontal slide-out keyboard is spacious, ergo-

THE HTC TOUCH Pro 2's big WVGA display looks slick.

nomie, and sturdy. This hardware keyboard is so well designed that you most likely won't use the software keyboard much.

The TouchFLO 3D bar along the bottom of the touchscreen provides shortcuts to applications and is incredibly intuitive.

For Web surfing, you have both Internet Explorer Mobile and Opera Mobile. Pages loaded reasonably quickly over AT&T's 3G network, and faster over Wi-Fi.

Music playing is hindered by the lack of a 3.5mm headphone jack; to use standard headphones you must insert



a clunky adapter (included).

Video looks great on the gorgeous 3.6-inch screen.

The Touch Pro 2 marries Windows Mobile functionality with HTC's clean aesthetics and intuitive usability.

—Ginny Mies



Touch Pro 2 | HTC

Has sophisticated design and interface, but its software can be slow.

List: \$800 (unlocked)

find.pcworld.com/63482

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- Heather Clancy,
ZDNet.com

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Color Laser Printers Offer Variety and Value

WHAT DO YOU want out of

PCW Test Center

a color laser printer? Speed? Great print quality? Cheap toner? All of the above? The three new printers this month all address those desires to some degree, and one model truly gives you everything—but at a steep price.

Debuting at number two, Lexmark's C734dn is well-tuned for mainstream business uses, with swift performance, automatic duplexing, and even the ability to print



LEXMARK'S C734DN OFFERS speed, features, and low cost.

banners. The new Xerox Phaser 7500/DN, in third place, is extremely expensive (\$3300 at press time) but also fast and versatile, with impressive photo quality and wide-format capabilities. Kyocera Mita's speedy FS-C5300DN debuts at number four. Its long-life drums make it even cheaper than usual to maintain.

—Melissa Riofrio

MORE ONLINE

For in-depth reviews of all the printers in this chart, and for information on how we test, go to find.pcworld.com/62318.

PC WORLD TOP 10 COLOR LASER PRINTERS

MODEL	PCWRating	Performance	Features and specifications
BEST BUY 1 Dell 3130cn Color Laser \$549 find.pcworld.com/61971	86 VERY GOOD	<ul style="list-style-type: none"> Text quality: Superior Graphics/photo quality: Very Good/Superior Tested speeds (ppm): 25.3 text/5.7 graphics 	<ul style="list-style-type: none"> 31 ppm text 26 ppm graphics 600-by-600-dpi maximum resolution
BOTTOM LINE: Spoil your small workgroup with this printer's speed, great output quality, and cheap toner.			
2 Lexmark C734dn \$899 NEW find.pcworld.com/63236	85 VERY GOOD	<ul style="list-style-type: none"> Text quality: Superior Graphics/photo quality: Very Good/Good Tested speeds (ppm): 27.8 text/4.4 graphics 	<ul style="list-style-type: none"> 30 ppm text 30 ppm graphics 1200-by-1200-dpi maximum resolution
BOTTOM LINE: Offices will like the speed, features, and low cost; the default color palette is oversaturated.			
3 Xerox Phaser 7500/DN \$3300 NEW find.pcworld.com/63047	84 VERY GOOD	<ul style="list-style-type: none"> Text quality: Superior Graphics/photo quality: Very Good/Very Good Tested speeds (ppm): 28.1 text/5.1 graphics 	<ul style="list-style-type: none"> 35 ppm text 35 ppm graphics 1200-by-1200-dpi maximum resolution
BOTTOM LINE: Yes, it's expensive, but it prints on paper up to banner size, at a fast clip and for a low cost per page.			
4 Kyocera Mita FS-C5300DN \$1739 NEW find.pcworld.com/63237	84 VERY GOOD	<ul style="list-style-type: none"> Text quality: Superior Graphics/photo quality: Good/Good Tested speeds (ppm): 27.1 text/6.1 graphics 	<ul style="list-style-type: none"> 28 ppm text 28 ppm graphics 9600-by-600-dpi maximum resolution
BOTTOM LINE: Speed and economy are this model's strengths; its color quality is acceptable for mainstream business use.			
5 Brother HL-4040CN \$349 find.pcworld.com/57915	80 VERY GOOD	<ul style="list-style-type: none"> Text quality: Superior Graphics/photo quality: Good/Fair Tested speeds (ppm): 19.3 text/4.2 graphics 	<ul style="list-style-type: none"> 21 ppm text 21 ppm graphics 2400-by-600-dpi maximum resolution
BOTTOM LINE: Basic office printer balances good pricing, speed, and print quality; has a sometimes-awkward design.			
6 Lexmark C780n \$899 find.pcworld.com/60051	80 VERY GOOD	<ul style="list-style-type: none"> Text quality: Very Good Graphics/photo quality: Very Good/Very Good Tested speeds (ppm): 26.1 text/3.9 graphics 	<ul style="list-style-type: none"> 35 ppm text 31 ppm graphics 1200-by-1200-dpi maximum resolution
BOTTOM LINE: For busy offices, this unit's speed and print quality are worth the cost—despite its subpar reliability.			
7 Konica Minolta Magicolor 4650EN \$599 find.pcworld.com/61205	80 VERY GOOD	<ul style="list-style-type: none"> Text quality: Superior Graphics/photo quality: Very Good/Good Tested speeds (ppm): 23.1 text/3.9 graphics 	<ul style="list-style-type: none"> 25 ppm text 25 ppm graphics 9600-by-600-dpi maximum resolution
BOTTOM LINE: The Magicolor 4650EN color laser is a decent performer; it's also both well priced and well made.			
8 HP Color LaserJet CP2025n \$499 find.pcworld.com/61877	79 GOOD	<ul style="list-style-type: none"> Text quality: Superior Graphics/photo quality: Superior/Superior Tested speeds (ppm): 17.5 text/4.2 graphics 	<ul style="list-style-type: none"> 21 ppm text 21 ppm graphics 600-by-600-dpi maximum resolution
BOTTOM LINE: For the price, you get solid overall performance—but a somewhat less solid-feeling package.			
9 Oki Printing Solutions C8800n \$2399 find.pcworld.com/63481	77 GOOD	<ul style="list-style-type: none"> Text quality: Superior Graphics/photo quality: Very Good/Good Tested speeds (ppm): 26.5 text/5.4 graphics 	<ul style="list-style-type: none"> 32 ppm text 26 ppm graphics 1200-by-600-dpi maximum resolution
BOTTOM LINE: Wide-format printing makes the C8800n special, but a printer this costly should be better designed.			
10 Dell 2130cn Color Laser \$349 find.pcworld.com/61881	77 GOOD	<ul style="list-style-type: none"> Text quality: Superior Graphics/photo quality: Very Good/Superior Tested speeds (ppm): 16.5 text/4.8 graphics 	<ul style="list-style-type: none"> 20 ppm text 18 ppm graphics 600-by-600-dpi maximum resolution
BOTTOM LINE: Your small workgroup will enjoy this capable color laser until it's time to buy more toner.			

CHART NOTE: Ratings are as of 8/5/09. Printer speeds are in pages per minute (ppm).

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System Mechanic 9: Super Toolbox for a Windows PC

SYSTEM MECHANIC 9 is a powerful and deep set of tools for analyzing and optimizing your Windows system. The program (\$50; 30-day free trial) is easy to use, offering an elegant interface and an extra-

ordinary degree of customizability and fine control.

With this suite, you can move from “fire up and forget” to drilling down to the deepest levels and tweaking each option. Though the program can provide a wealth of detail, you decide how much you want to know.

The suite’s capabilities defy easy categorization, as it combines many tools into one package. It defragments memory, makes sure deleted files are really gone, erases unused temp files and old Web caches, optimizes your startup, and on and on.

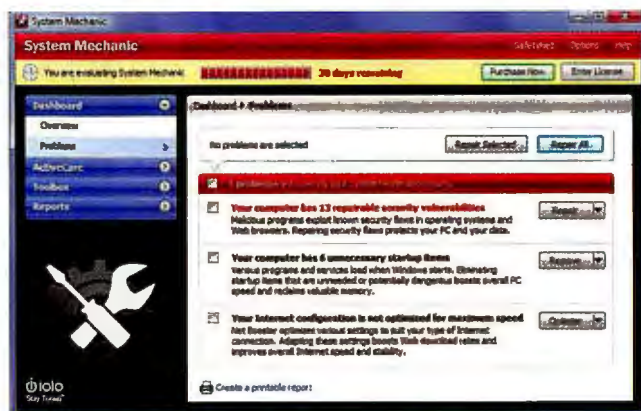
80
VERY GOOD

System Mechanic 9
iolo Technologies

Utility suite holds a wealth of PC optimization tools and options.

List: \$50

find.pcworld.com/63484



SYSTEM MECHANIC 9 provides countless options for optimizing.

The more you look, the more tools you find. Many of the features are available elsewhere, but having them all in one place is a tremendous time-saver.

The one problem I found was with the “deep search” feature for duplicate files, which is supposed to do the job in a few minutes but

actually can take much longer, especially if you have a very large and rather full hard drive, as I do.

Despite that glitch, System Mechanic 9 remains a strong, useful suite of tools, and is a great way to stay on top of all the things that can drag down PC performance.

—Ian Harac

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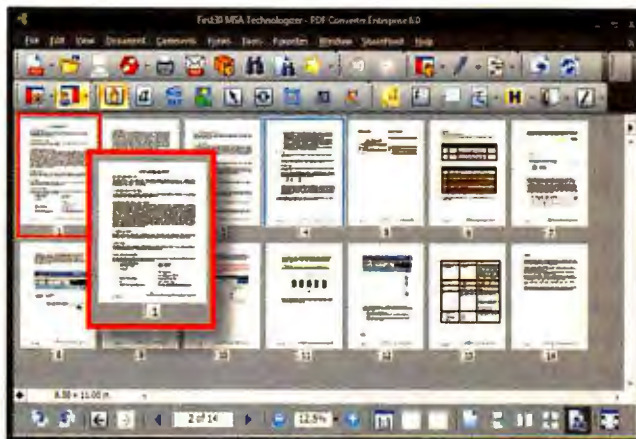
Conversion utility offers scads of features for business users.

List: \$150

find.pcworld.com/63485

No PDF tool is worth considering unless it quickly and faithfully converts documents of all sorts into PDFs. In my tests, Nuance's package did just that, and it helps you create better PDFs with less effort. I liked its new thumbnail viewer for juggling the pages in a PDF more than Acrobat Pro's equivalent, for instance.

One of the best things about PDF Converter is its ability to reverse the process by turning a PDF back into an editable Word, WordPerfect, Excel, or PowerPoint file. The new version even



NUANCE'S PDF CONVERTER Enterprise 6 has a new thumbnail view.

lets you select a single chunk of a PDF for conversion.

PDF Converter Enterprise doesn't match Acrobat Pro in every respect, though. Its new Portfolio PDF-bundling feature offers only one template versus Acrobat's four, and Acrobat's support for embedded video is better.

And you get integrated access to Microsoft SharePoint document repositories, but no support for Adobe's Acrobat.com collaborative service.

Still, this is today's best value in full-featured PDF-conversion software.

—Harry McCracken

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HP's Widescreen LCD: As Pretty as a Picture Frame

THE HP W2558HC 25.5-inch LCD offers impressive image quality, many extra features, and a pleasant design. What's not to like? Its price: \$549.

The widescreen W2558hc performed well in our image-quality tests, with sharp, readable text on black and

white backgrounds alike.

Colors looked bright. Skin tones in a portrait appeared realistic, with even shading and appropriate contrast. In our motion tests, the display showed smooth video with no visible fluttering. The unit's unusual 25.5-inch size allows it to have a 1920 by 1200 native resolution.

Extras include a built-in Webcam at the center of the top bezel; a card reader for all types of media cards; two USB ports; and on the back, ports for HDMI (two), DVI, VGA, and USB-in and -out, plus an audio-in jack.



THE W2558HC JUSTIFIES its high price with a beautiful display.

87

VERY GOOD

W2558hc | Hewlett-Packard

Expensive, feature-rich widescreen LCD shows superb image quality. Street: \$549
find.pcworld.com/63475

Four buttons inset on the bezel control the easy-to-navigate on-screen menus. Two other buttons control a built-in task light that shines from under the monitor. The W2558hc doubles as a digital picture frame, too, showing

photos stored on memory cards in the card reader.

Given the HP W2558hc's wealth of extras, excellent image quality, and distinctive design, its \$549 price may be a good deal after all.

—Kalpana Ettenson

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Radio-Connected GPS Links to Live Services

THE \$400 GO 740 Live is TomTom's first GPS device to carry a built-in cellular radio for downloading relevant travel information, such as traffic, weather, and fuel prices. But those services didn't always help my commute, and the costs add up.



Go 740 Live | TomTom

GPS unit adds connected services, but they don't always work well.

List: \$400

find.pcworld.com/63476

The Go 740 Live has a big, bright 4.3-inch touchscreen, and is less than 1 inch thick. You can link the unit to its car charger via an included cradle (supplementing the device's desk cradle).

In my tests it delivered accurate and sensible routes, announced turns well ahead of time, and pronounced street names clearly. In calculating your route, its IQ Routes technology takes into account such data as real-world speeds at certain times of the day. TomTom's Map Share feature lets you share map updates and cor-



HANDS OFF: You can give instructions to the Go 740 Live by voice.

rections with other users.

Though the Go 740 Live warned me of traffic incidents ahead, it consistently said that I was "still on the fastest route" rather than presenting me with alternatives.

Other connected services (Google Local Search, weather forecasts, and fuel prices), though not worth \$10 per

month, impressed me more.

The Go 740 Live also offers lane guidance and realistic views of complex intersections, when available (they rarely were in my testing).

Overall, the Go 740 Live doesn't make a compelling case for preferring it over the less expensive Go 930.

—Liane Cassavoy

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Buying Guide: Printer Choices, Features Abound

YOU WANT WIRELESS with that printer? A touchscreen? Web access? Or how about just good-quality prints? Whatever you seek, there's a printer to fit your needs and budget. Here's what you need to know before buying.

The first step is to appraise your printing habits. What do you tend to print—text or graphics or photos—and are the prints for home, business, or professional use? Volume and frequency matter, too: Do you print a few dozen pages a day, or are you in a group that prints hundreds or thousands of pages?

Best Model for the Job

At one extreme, if your printing consists of plain-text pages, a monochrome laser printer is the obvious choice. Monochrome lasers are inexpensive to buy and maintain, and you can find models designed to serve one person or dozens of people. Recent favorites of ours in this category include Brother's HL-5370DWT, Xerox's Phaser 3250/DN, and Lexmark's E460dn.

At the other extreme, if your interest centers on printing small batches of everyday photos at a fixed size, buy a snapshot printer. Such printers can cost as little as \$100, and you don't even need a PC to print from them. Epson's PictureMate models are fast, and HP's Photosmart line includes adaptable models that can

print on either 4-by-6-inch or 5-by-7-inch paper.

In the large middle area between those extremes, if you need to print several different types of output, you can choose a color printer that uses inkjet, laser/LED, or solid-ink technology.

Inkjet Printers

Inkjet printers excel at printing photos. Unfortunately, they tend to be slow, they may print fuzzy-looking output on plain paper, and replacement ink can be costly.

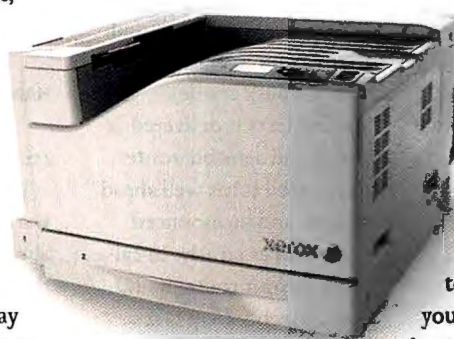
Some models contradict those stereotypes, however. HP's Photosmart D7560, for instance, is fast, and uses low-cost, high-yield replacement inks. Canon's Pixma iP4600 has separate print-heads and ink tanks to reduce costs. Office-oriented



HP'S PHOTOSMART D7560 is a fast, economical inkjet printer.

models should balance speed and economy, as HP's OfficeJet printers typically do. In contrast, Epson charges so much for ink for models in its WorkForce line that the printers' impressively high output speed becomes irrelevant. Check the Printers section at PCWorld.com for

more information on replacement ink costs, or calculate them yourself by dividing the cartridge price by the vendor's estimated page yield.



THE XEROX PHASER 7500/DN prints unusually good photos.

Color Laser/LED or Solid-Ink Printers

Color laser/LED printers deliver business-quality output at very high speeds. Few such printers can match the photo quality of a good inkjet printer, however. One

that can is the Xerox Phaser 7500/DN, an expensive color laser that satisfies the need of graphics professionals to print everything well, at media sizes up to 13 by 18 inches.

For mainstream offices, Dell's 3130cn and Brother's HL-4040CN are highly ranked models right now. See our chart on page 58 for more.

Xerox argues that solid-ink printers—with their simple, crayon-like blocks of ink—generate less waste than plastic- and metal-encased ink or toner cartridges. The solid-ink printers that we've tested have competed well with inkjet and laser models.

The MFP Option

For busy homes, small offices, or departments that want to save space by combining various capabilities (print, copy, scan, and sometimes fax) in one machine, multifunction printers may be a good choice. But space-efficient does not always mean job-efficient. If your group needs constant access to one of the functions, you'll likely be better off buying a dedicated machine to handle that function, so your MFP will be available to perform its other duties.

Beyond Printing

Extras vary. Many printers now offer wireless or even Bluetooth connectivity. Some sport touch-sensitive or customizable color displays. Tabloid-size printers can print large posters or banners. A few models from Epson and HP can print a label or burn data directly onto a CD or DVD. The hottest news: HP and Lexmark have recently announced inkjet printers and MFPs with Web connectivity.

In the end, the better you know your printing habits and the closer you examine printers' ink or toner costs, the better your odds of finding a suitable model will be.

—Melissa Riofrio

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For the latest printer news, reviews, and how-to articles, see our Printers Product Center at find.pcworld.com/63568.



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Canons Dominate the Point-and-Shoot Field

PCW Test Center THANKS TO THEIR ease of use, good battery life, and impressive

performance in our image-quality tests, a swarm of Canon PowerShots occupies five of the top six spots on our latest chart. At the top is the PowerShot SX200 IS, a versatile 12.1-megapixel pocket megazoom model.

The \$250 Panasonic Lumix DMC-FS25 crashes Canon's party at number four, offering a wide-angle Leica lens and a large LCD screen for the price. Elsewhere, Sony's slick Cyber-shot DSC-W290,



CANON'S POWERSHOT SX200 IS comes with a 12X optical zoom.

also \$250, has some interesting in-camera editing tools; Fujifilm's FinePix F200 EXR (\$400) takes vivid shots and performs well in low-light environments; Casio's Exilim EX-FC100 (\$350) has a rapid-fire mode for capturing 30 photos per second; and Panasonic's high-zoom Lumix DMC-ZS3 (\$400) can shoot high-def video.

—Tim Moynihan

MORE ONLINE

For testing details and other information about the digital cameras ranked in this chart, see find.pcworld.com/55287.

PC WORLD TOP 10 POINT-AND-SHOOT CAMERAS

MODEL	PCWRating	Performance	Features and specifications
1 Canon PowerShot SX200 IS \$350 NEW find.pcworld.com/63440	84 VERY GOOD	<ul style="list-style-type: none"> Image quality: Very Good Overall design: Very Good Battery life: Very Good Number of shots: 324 	<ul style="list-style-type: none"> 12.1 megapixels 12X optical zoom (28–336mm) 18 scene modes 4.1 by 2.4 by 1.5 inches
BOTTOM LINE: A beast of a lens, great image quality, and fun features make this camera a phenomenal pocket megazoom.			
2 Canon PowerShot SD990 IS \$400 find.pcworld.com/63441	82 VERY GOOD	<ul style="list-style-type: none"> Image quality: Superior Overall design: Very Good Battery life: Good Number of shots: 292 	<ul style="list-style-type: none"> 14.7 megapixels 3.7X optical zoom (38–133mm) 17 scene modes 3.8 by 2.5 by 1.1 inches
BOTTOM LINE: The PowerShot SD990 IS performs beautifully, but its construction feels chintzy for the price.			
3 Canon PowerShot SD880 IS \$300 find.pcworld.com/63442	81 VERY GOOD	<ul style="list-style-type: none"> Image quality: Very Good Overall design: Very Good Battery life: Very Good Number of shots: 310 	<ul style="list-style-type: none"> 10.0 megapixels 4X optical zoom (28–112mm) 18 scene modes 3.7 by 2.2 by 0.9 inches
BOTTOM LINE: Superb design, excellent picture quality, and a wide-angle lens make this model a divine travel companion.			
4 Panasonic Lumix DMC-FS25 \$250 NEW find.pcworld.com/63444	80 VERY GOOD	<ul style="list-style-type: none"> Image quality: Very Good Overall design: Very Good Battery life: Very Good Number of shots: 320 	<ul style="list-style-type: none"> 12.1 megapixels 5X optical zoom (28–145mm) 18 scene modes 2.3 by 3.8 by 0.9 inches
BOTTOM LINE: This camera serves up a wide-angle lens, appealing features, a huge LCD screen, and long battery life.			
5 Canon PowerShot SD780 IS \$280 NEW find.pcworld.com/63445	79 GOOD	<ul style="list-style-type: none"> Image quality: Very Good Overall design: Very Good Battery life: Good Number of shots: 281 	<ul style="list-style-type: none"> 12.1 megapixels 3X optical zoom (33–100mm) 18 scene modes 3.4 by 2.2 by 0.7 inches
BOTTOM LINE: The PowerShot SD780 IS isn't just beautiful on the outside; its performance and features are stunning, too.			
6 BEST BUY Canon PowerShot SD1200 IS \$230 NEW find.pcworld.com/63446	79 GOOD	<ul style="list-style-type: none"> Image quality: Very Good Overall design: Very Good Battery life: Very Good Number of shots: 352 	<ul style="list-style-type: none"> 10.0 megapixels 3X optical zoom (35–105mm) 14 scene modes 3.5 by 2.2 by 0.9 inches
BOTTOM LINE: The PowerShot SD1200 IS has lots of shooting modes and nice image quality, but it isn't tops in ease of use.			
7 Sony Cyber-shot DSC-W290 \$250 NEW find.pcworld.com/63447	78 GOOD	<ul style="list-style-type: none"> Image quality: Good Overall design: Very Good Battery life: Very Good Number of shots: 342 	<ul style="list-style-type: none"> 12.1 megapixels 5X optical zoom (28–140mm) 11 scene modes 3.9 by 2.4 by 0.9 inches
BOTTOM LINE: A wide-angle lens and a big LCD complement the Cyber-shot DSC-W290's fun and unique in-camera features.			
8 Fujifilm FinePix F200 EXR \$400 NEW find.pcworld.com/63448	78 GOOD	<ul style="list-style-type: none"> Image quality: Good Overall design: Very Good Battery life: Very Good Number of shots: 315 	<ul style="list-style-type: none"> 12.0 megapixels 5X optical zoom (28–140mm) 15 scene modes 3.8 by 2.3 by 0.9 inches
BOTTOM LINE: This excellent model offers vibrant color reproduction, but we wanted more out of its sensor modes and flash.			
9 Casio Exilim EX-FC100 \$350 NEW find.pcworld.com/63443	76 GOOD	<ul style="list-style-type: none"> Image quality: Good Overall design: Good Battery life: Very Good Number of shots: 317 	<ul style="list-style-type: none"> 9.1 megapixels 5X optical zoom (37–185mm) 20 scene modes 3.8 by 2.3 by 0.9 inches
BOTTOM LINE: Unique high-speed features help this camera take great action shots, but it's not ideal for normal video.			
10 Panasonic Lumix DMC-ZS3 \$400 NEW find.pcworld.com/63450	76 GOOD	<ul style="list-style-type: none"> Image quality: Good Overall design: Very Good Battery life: Good Number of shots: 243 	<ul style="list-style-type: none"> 10.1 megapixels 12X optical zoom (25–300mm) 21 scene modes 2.4 by 4.1 by 1.3 inches
BOTTOM LINE: The powerful zoom and other features will please casual shooters, but this model has few manual settings.			

CHART NOTE: Ratings are as of 8/9/09.

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Open-Source VLC Media Player Hits the Big Time

THE FREE, third-party VLC media player is light and fast and works on multiple operating systems, including a bare install of Windows without any special codecs.

Version 1.0.0 (aka Goldeneye) introduces many new features—the key one being

the ability to record all media, including CSS-protected content, on the fly. I streamed a Sony DVD movie, *Spider-Man 2* (Sony movies are notoriously difficult to decode), to VLC's .ps format on my hard drive, and then played the file on a networked laptop running VLC, even before the host computer had finished transcoding the disc.

The default encoding is pretty rough, but you can fine-tune it to DVD quality if you have enough network bandwidth. Note that the latest DVDs may have copy protection to prevent VLC



VLC CAN RECORD live TV from a decoder, according to its developer.

from doing such streaming, so you'll have to experiment.

You can set VLC up to stream media from a file or from a DVD as a server; and another client can stream that media without having to encode the file first.

Version 1.0.0 can play

back one frame at a time, can pause instantly, and supports Blu-ray and HD audio.

Its small size (about 17MB) and self-contained design make VLC 1.0.0 a great choice for streaming media of any kind—and a must-download.

—Steve Horton



VLC 1.0.0 | VideoLAN

No-cost third-party media player adds several useful new features.

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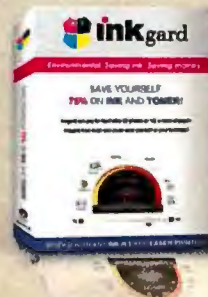
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Desktop Publisher Adds Impressive New Tools

THE LATEST VERSION of Serif's respected desktop publishing program, PagePlus X4 (\$100), introduces substantial new productivity and creation tools.

Chiefly for small-business and home projects, PagePlus is easy to use and has a large

library of fully editable templates for newsletters, business cards, Web sites, greeting cards, and so forth.

To extend the reach of PagePlus, Serif has added integrated photo editing and extra draw capabilities. The new PhotoLab, for instance, lets you edit photos within PagePlus using single-click thumbnail-based effects and adjustments, as well as more-advanced tools to control lighting, tonality, color, and other aspects of the image.

Other new features let you anchor pictures, shapes, and text frames to text (so that



PAGEPLUS X4 offers editable templates for a multitude of purposes.

they flow and stay in place relative to the text) or use dynamic guides to align elements and make items snap automatically to designated object edges or centers.

In our hands-on testing, we found we could quickly go from a blank page to a fully customized, template-

based newsletter. And the Learning Zone's instructional videos gave us a useful head start on our project.

Despite a few quirks (such as importing pictures over a network slowly), PagePlus X4 deserves high praise.

—Sally Wiener Grotta and Daniel Grotta

92
SUPERIOR

PagePlus X4 | Serif

Desktop publishing program improves its power and flexibility. Street: \$100
find.pcworld.com/63483



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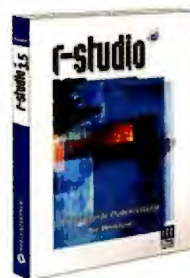
Despite the best efforts, valuable data can and does get corrupted, misplaced and "lost." Given the business-critical nature of digital data today, it is comforting to know that R-Tools, the leader in data recovery solutions, has once again fortified its **R-Studio** data recovery utility. This time, R-Tools has added support for recovery from RAID 6 as well as Windows x64 systems.

In addition, R-Studio now allows the creation of disk-to-disk copy, a capability usually provided only by disk imaging and backup utilities. What didn't change despite the addition of these features is R-Studio's price.

R-Tools also continues to buff and bolster the performance and features of other high-performance utilities in its line-up of recovery solutions. **R-Crypto** is now available free of charge for home users. This data encryption utility protects a user's confidential information and personal data against unauthorized access, whether on a desktop, notebook or removable data storage device. R-Crypto encrypts and decrypts data in real time and is fully transparent to the user. R-Tools also offers its **R-Linux** data recovery tool for Linux users absolutely free. R-Linux is designed for the Ext2FS/Ext3FS file system used in the Linux OS and several varieties of Unix.

R-Tools further has announced the latest version of its **R-Wipe&Clean** utility, with new features included to automatically keep the clutter out of applications and thereby help optimize application performance and worker productivity.

For those who need the mission-critical capability to completely restore their systems after a major crash, **R-Drive Image** allows users to quickly create a compressed disk image of a hard drive and easily back up images in various removable media such as CD-R(W), Iomega Zip or Jazz disks.



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Remote PC Searching

COPERNIC, known for its desktop search applications, is going remote—sort of. The company's free, Web-based MyCopernic on the Go service lets you search the contents of your PC remotely, from any Web-connected device, including a mobile phone. Unfortunately, it doesn't provide a full remote access service.

MyCopernic on the Go works in conjunction with the Copernic Connector, a small piece of software that you have to install on every system you want to search remotely. For any remote search, the Connector must be running, and the remote PC must be turned on and connected to the Internet.

MyCopernic on the Go is a useful way to find and access files remotely, but I'd rather use a full-fledged remote access service. LogMeIn.com (find.pcworld.com/63504), for example, offers a free service for controlling a PC remotely; and you can use it to do a lot more than search for files.

—Liane Cassavoy

84

VERY GOOD

MyCopernic on the Go | Copernic Service supports remote desktop search, but not remote access. Free find.pcworld.com/63579

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Files That Help Make Life a Little Easier

YOUR LIFE IS already complicated—your software shouldn't make it worse. Instead, surf the Web on a browser equipped with a built-in BitTorrent client that streamlines downloads. Edit photos with a simple app that won't slow your PC's pace to a crawl. And don't bother to peek outside or consult a site to check the weather; a handy utility can tell you what you need to know. Each download is free and easy.

Wyzo

If you think that the world needs a browser specifically designed for power downloaders, then Wyzo may be for you. This free browser provides a set of tools that downloaders will welcome, including multisource downloads for faster downloading and built-in BitTorrent.

The browser is particularly useful for people who have heard of BitTorrent but don't want to put up with the fuss and bother of downloading a BitTorrent client and learning how to use it. You can search for torrents from within Wyzo and then use the browser to download and handle torrents, too. Wyzo provides plenty of other extras as well, most notably the ability to navigate the Web using mouse gestures, and the integration of CoolIris, a browser add-in that is designed specifically for searching for and viewing video content. If you live to download and are looking for another Web browser, Wyzo is certainly worth a try. find.pcworld.com/63570

—Preston Gralla

Fotografix

This no-frills photo editing program doesn't skimp on features. It comes in at under 1MB fully installed, including all its brush shapes and macro scripts; and it uses available RAM sparingly, making it well suited to netbooks.

Its dialog boxes are plain and to-the-point. But don't think you won't find all the tools you need to do basic image fixes—color correction, brightness, contrast—and beyond. Fotografix supports layers, and it packs a modest selec-

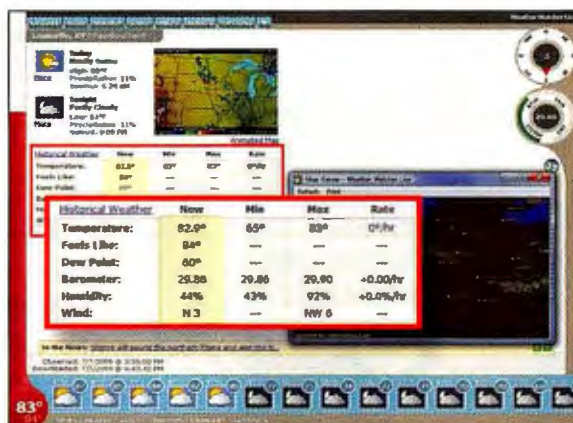
tion of popular tools, including tools to turn a color photo into a green "night vision" image or to solarize a shot. In keeping with its low-key approach, the program does the few things it can do very well, and launching it won't cause your PC to grind to a halt. find.pcworld.com/63571

—Andrew Brandt

Weather Watcher Live

Weather Watcher Live lets you check weather conditions without exposing yourself to the elements outside. The program filters information according to your preferences, and consolidates it in a single place for easy perusal. No need to spend time obsessively reloading weather sites.

It locates weather stations that are closest to you, and provides a plethora of data, includ-



WEATHER WATCHER LIVE tells you almost everything you could possibly want to know about the weather outside.

ing temperature, wind speed, wind direction, and humidity, as well as the useful "feels like" temperature, which takes into account humidity and wind chill. Small taskbar icons show the current temperature and weather (and you get several options for formatting all the data).

Weather Watcher Live has a nicely configurable system for alerting you to impending weather disasters. You can set it to ping you if it encounters specific keywords, such as "hurricane." In addition, you can set up an alarm sound; so if my computer ever begins barking "Danger, Will Robinson!" I will know that bad weather is on its way. find.pcworld.com/63572

—Ian Harac

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1

PC won't boot?
Dead battery in your iPod?
Water in your cell phone?

2

Don't scrap your
broken tech.

3

Fix it yourself with our
step-by-step repair guide.

Heal Your Hardware

You know to call 911 in a medical emergency, but what should you do when your gadgets face a similar life-or-death scenario? If you spill coffee on your laptop, for instance, reacting quickly could save your hardware and data. The correct procedure—such as dis-

mantling your laptop's keyboard or installing an inexpensive replacement battery in your iPod—can save your faltering hardware, giving it another chance to age gracefully. And the laptops, cameras, cell phones, and iPods of the world will thank you. >>

{ BY ZACK STERN * ILLUSTRATION BY PAUL ROGERS }



1

Pry open the case with a small plastic wedge.



2

After lifting the latch that holds the battery cable, you can remove the battery safely.



3

Once the new battery is in, seal everything back up; the pieces will snap into place.



Replace an iPod Battery

iPods sure look svelte and stylish without a battery door, but the omitted hatch makes the whole thing worthless if your battery gives up the ghost. All batteries degrade through time and use; expect your iPod's to last between one and three years.

Today's batteries work best when kept plugged in as much as possible, rather than being allowed to run down, and your iPod will last longer if you keep it charged as often as you can.

Once the iPod's battery can't keep a charge, you can pay Apple or a repair shop to replace it. But you can do it yourself for about half as much money, and in many instances you'll get a better-performing battery than the company originally provided.

Most iPods open in a similar way: The front upper half with the screen lifts away from the metal backing. Many sources of replacement batteries provide instructions for specific iPod models. I purchased a new battery for my iPod Video (fifth generation) through Juice Your iPod (ipodjuice.com) for less than \$30.

First, turn off the iPod and lock the Hold switch. You'll need to wedge something between the two halves to release the internal latches. A tiny flathead screwdriver would be likely to gouge the plastic front or the metal backing. Some battery kits include plastic tools that are safer; guitar picks can also do the job.

Carefully, but with the necessary force, work a plastic wedge into the seam along the side. Aim the tip toward the device's back; the metal backing cradles the front, so that's the only direction for the tool to travel. Once your tool is inside, gently work it around the iPod's edges. The case might try to snap shut where you just opened it, so I like to leave extra guitar picks in place.

Separate the metal backing from the front carefully—a thin ribbon cable connects them. Use a small screwdriver to lift the plastic latch holding the battery cable to the iPod. Once you've freed the battery, remove and replace it. Seal everything back up; the pieces will snap back into place. Last step: Recharge the iPod.

Revive a Stuck LCD Pixel

LCD monitors contain millions of pixels, each one composed of three subpixels: red, blue, and green. When all three are on, a pixel looks white. Other combinations create other colors. A pixel can become stuck showing one hue. But you can fix this.

1 Determine whether the pixel is just stuck or completely dead. If it shows only black, it's

probably inoperable. If it shows a solid color, though, it may be stuck, and you may be able to shock it back into operation.

2 Make sure that your LCD is clean—spray a few blasts of compressed air, and follow up by wiping with a scratch-free cloth and screen cleaner.

3 Verify that your PC is outputting the image in your

LCD's native resolution so you can identify pixels more easily. Open *Start>Control Panel>Display*, click the *Settings* tab, and adjust the resolution. (Consult your display's documentation, if necessary.)

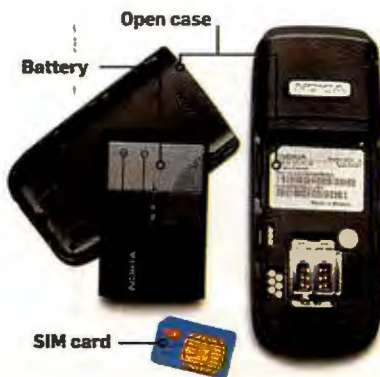
4 Download and install UDPixel (udpix.free.fr) to identify and fix the problem. (The utility also requires the .Net Framework—download it from find.pcworld.com/63486.)

5 In UDPixel, increase the Run cycle option to 4 seconds,

and click the *Run cycle* button. The display will cycle through red, green, blue, black, white, and yellow. A stuck pixel should be visible against every hue but the one it's stuck in; unchanging dots are problem areas. Click to stop the color cycle.

6 For multiple pixels, increase the Flash window number by 1 for each stuck pixel.

7 Otherwise, click *Start*; a small, 5-by-5-pixel box will appear. Reposition the box around the stuck pixel, and wait 15 to



Step 1: Immediately take your phone apart to air it out.



Step 2: To absorb moisture, submerge the phone in a bowl of uncooked rice.

Dry a Submerged Phone

You don't feel much like talking now that your fancy new phone is at the bottom of the hot tub, ocean, or—shudder—toilet. But if you retrieve your handset quickly, you might be able to get it working again—if you take action right away.

Step 1 Remove the battery immediately. If the phone is still on, don't bother turning it off first (or saying "goodbye;" whoever you were talking to has probably hung up anyway). If the battery doesn't pop out easily—I'm looking at you, iPhone—at least power it off as soon as possible. Pop out the SIM card, too, if it has one.

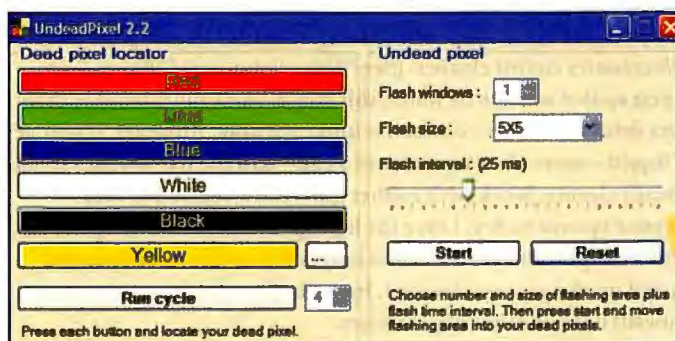
After quickly removing the power source, you can spend a little longer stripping the phone down further. If it's an iPhone, open it by wedging a guitar pick in the seam around its sides. (For more details, visit iFixit at find.pcworld.com/63487, or search on "take apart iPhone"; you should find videos such as those from Direct-Fix, find.pcworld.com/63488.) On most other phones, remove the plastic shell with an eyeglass screwdriver. Look beneath stickers if the screws are hidden from view.

Wash out the phone, especially if it met chlorinated water or saltwater, which can conduct electricity and corrode parts more easily than tap water. Use electronic circuit cleaner fluid to wash the inside. A bottle from an electronics store costs about \$8. (An online source is CriticalCleaning.com.) Alternatively, use rubbing alcohol.

Step 2 Let the phone air-dry for a couple of hours on a sunny windowsill or other warm area. Don't use a hair dryer—excessive heat can cause more damage. Then submerge the phone in a bowl or plastic bag full of uncooked rice; seal the bowl airtight with plastic wrap (a bag should be resealable). The rice will absorb moisture and help the evaporation process; just keep it out of direct sunlight to avoid condensation. Leave the phone sealed up for at least a couple of days. If you use a SIM card, you can pop that card into an unlocked handset to make calls while you're waiting. (See find.pcworld.com/63489 for details on how to unlock a cell phone.)

Remove the phone from the bowl or bag and, using a can of compressed air, gently spray off any rice dust. (Push the button in a series of quick blasts, instead of holding it down.) Reassemble the phone, add the SIM if needed, and make a call.

If the phone won't come back to life, you're probably out of luck. But the SIM card (if your phone has one) should still have your contacts stored on it. Try inserting it in a new phone, or bring the old hardware and SIM to your carrier for help; its technicians may be able to recover the phone's address book.



If your LCD has a high refresh rate, you can decrease the flash interval to match. If you don't know the rate or are confused, leave it.

the stylus directly over the uncooperative pixel. Turn off the screen, and gently (carefully) apply pressure for 5 to 10 seconds. Turn the screen back on, and check the pixel.

11 If it's still stuck, repeat steps 9 and 10, and even step 7. If you get no results, try wrapping the rounded, plastic end of a marker pen in a scratch-free cloth, and gently tap the afflicted area a few times.

If you're lucky, one of these tricks will revive the pixel. ➤

20 minutes. Click *Reset* to turn it off, and repeat the color cycle to see if the pixel has cleared.

8 If the problem persists,

check your LCD warranty to see if you can replace the screen.

9 If you can't, try applying direct pressure. Wrap the tip of

a PDA stylus or similar object in a scratch-free cloth, and use UDPixel to find the trouble spot.

10 Align the covered tip of

Danger!
You have too
much darn
liquid in
your cup.



Clean a Spill on a Laptop

When liquids meet electronics, you can't waste time. Conductive liquids cause most of the initial damage. Immediately unplug the laptop from its power cord, and pull out the battery. Don't bother closing programs or saving data.

Working quickly, remove all cables and attachments, plus any swappable optical drive or PC card. Tilt the laptop to get most of the liquid out the same way it came in, but be careful as you turn the machine over. Keep liquid away from the LCD. If liquid is on the surface, however, dab the outside with a clean towel.

Depending on your available tools and disassembly skills, remove more parts. Unscrew the outer case, and remove the plastic shell to expose the internal circuits. You can disassemble parts even further, separating individual components to help them dry. Do as much

of this as you are comfortable with.

If advanced disassembly unnerves you, consider taking the laptop to a good local repair shop at this stage. But even without further assistance, your first aid may save your system.

If you do disassemble the PC (articles such as find.pcworld.com/63541 offer hints), consider cleaning the affected parts with electronics circuit cleaner. (See "Dry a Submerged Phone," on page 75.) If all you spilled was a little water, this step is likely more trouble than it's worth. Other drinks are more conductive and corrosive. However, if you've spilled a lot of liquid—more than a quarter of a cup—dab the parts with a fresh towel full of circuit cleaner. Work with rubber gloves in a ventilated area.

Now wait for your system to dry. Leave the laptop disassembled or open and upside-down for a couple of days. Wait even longer if you can. Avoid using a hair dryer to speed up the process. Instead, leave the laptop in a warm room, next to a windowsill or in another dry location.

Reassemble the laptop and turn it back on. If the keys are sticky, turn the system off; disassemble the keyboard for fine cleaning with electronics cleaner.

If the laptop won't turn on, your hard drive may still work. Remove the drive, put it in another case or hook it to an adapter, and connect it to a different PC. Your last resort: a data recovery service like Drive Savers (drivesavers.com).



Tilt the laptop to let the liquid out.



Remove the laptop's battery.



If you can, remove the keyboard.



Swab and spray compressed air.

For still more
ingenious re-
pairs and hacks
for your devices,
see 'Easy
Hardware
Hacks, Fixes,
and Upgrades'
at find.pcworld.com/63546.

Reseat Loose Components

Your PC was working fine yesterday, but then you moved it, and now it won't boot. A loose component could be the culprit. The jostling a system endures during a move—especially one involving a long car ride—can unseat internal components from their slots.

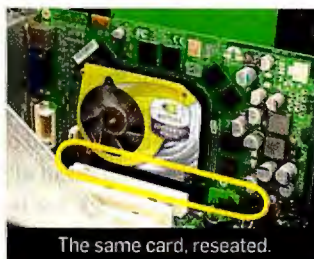
Ground yourself. Before you unplug the computer, touch metal. Then move your system to an uncarpeted area, if necessary, before opening the case. And wear an anti-static wrist strap if you have one.

Open the case and begin hunting for the offending part. Perhaps something looks physically amiss, hanging out at an odd angle. If so, you know exactly where to zero in. More often, however, you'll have to fix the problem by unplugging and reattaching parts.

Start with the PCI cards and RAM. Unscrew each PCI or other card you use, in turn, and lift it straight out of its slot. Watch for a plastic release tab or other lever that you might have to bend first (these are most common on slots for video cards). Handle all components by their edges; oils in your skin could cause damage if you directly touch exposed surfaces.



A board with a loose card.



The same card, reseated.

Before & After

The circled areas in these photos show a loose card and the same card reseated.

Once you've cleared the slot, push the card straight back in. It should slide down without your having to rock it in any direction, landing with a satisfying thunk.

Repeat these steps with RAM. Most motherboards

release their RAM modules if you pull apart levers on the modules' edges. Do that, and lift the RAM straight up. Leave the levers in the open position once the RAM is out.

Push the RAM module straight down, again without rocking, to reinstall it. The levers will snap to their closed position.

Be gentle; don't force in any PC parts.

Close the case, and try booting up the PC. If it still won't start, open it back up, and unplug and then reconnect all of the internal cables. If you still have problems, try connecting only the most basic cards and components, such as the original RAM. If this works, successively add the disconnected parts back in to see if one of them—or its slot—is malfunctioning.

Remove a Mini CD from a Slot-Loading Drive

If you think it would be a good idea to print your business card on a specially cut, rectangular mini-CD, think again. Your contacts might never forget the headache of having the disc jam inside a slot-loading optical drive. If such a jam happens to you, follow these steps to release the disc.

1 Try to clear a stuck mini-CD or mini-DVD the simple way. Tilt the drive so that its slot points downward. (This is easy if the computer involved is a laptop, as is most often the case.) Then try pressing the eject button and gently shaking the machine. These motions—with an assist from gravity—might release the disc.

2 If the disc remains stuck, attach a piece of two-sided tape to a thin, sturdy business card or a plastic gift card. Slide it, sticky side down, three quarters of the way into the slot above the disc, and press down to snare the disc. Lift the card up slightly, and pull it and the attached disc out of the slot. Work carefully, and don't rummage around with more drastic tools (such as paper clips) that could damage the drive.

Strange-shaped discs usually work in tray-loading drives, but some slot loaders can also accept them. Check your computer or optical-drive manual to make sure in advance. >>



With the slot pointed down, shake gently.



Attach double-stick tape to a sturdy card. Insert this card into the CD slot, above the disc, press down, and pull the CD out.

Clean a Clogged Port

Over time, ports on your electronic equipment can get clogged with dust and other debris. And if you're having trouble getting USB or other devices to work with your PC, cleaning any grime from the connecting ports is a good first step.

1 Turn off the hardware first. If you can see that the port is severely clogged—say, with peanut butter or another thick, child-friendly substance—gently dig the gunk out with toothpicks. But remember: Ethernet, serial, and other jacks rely on fragile pins, so try to move in and out on the same path instead of swirling around the sides.



Spray air to clean.



Swab to clean.

2 For less sticky situations, use a can of compressed air (actually pressurized gases) to blast out loose bits. These cans sell for \$5 to \$10 at any computer store. (Keep them away from children: The gases are dangerous to inhale and come out extremely cold.) Fire at the target in short bursts.

3 Finish cleaning with a cotton swab dipped in rubbing alcohol or electronics cleaner. Leave the device turned off for a couple hours to dry.

Dirty PC!
Here are the areas to check.



Clean a Dusty PC

If your desktop PC's case gets dirty as time goes by, grime can clog the fans that keep internal parts cool. If airflow is blocked, those parts could overheat.

First, shut everything down,

and unplug all cables besides the power cord. Touch a metal part of the case—such as the PCI slot cover—and then unplug the power cable. This will discharge any potential static externally, instead of damaging electrically sensitive components inside. Wear shoes, and work in an uncarpeted room.

A few more precautions can add further protection. Use a layer of rubber (such as mouse pads) between the PC and your worktable. Wear an antistatic bracelet, and connect it to a metal part of the PC chassis.

Open the PC case to clear out any grime. Many cases have side doors held in place by a single Phillips-head screw or thumbscrew; consult your manual for specific directions.

Pull out any loose clots of hair, dirt, or other obstructions. Then use a can of compressed air to blast anything else away and out of the PC. Keep the can upright, and press the trigger in a series of short bursts. Use the nozzle straw to direct the flow close to your target.

Blow grime up and out of the case if possible, but focus your

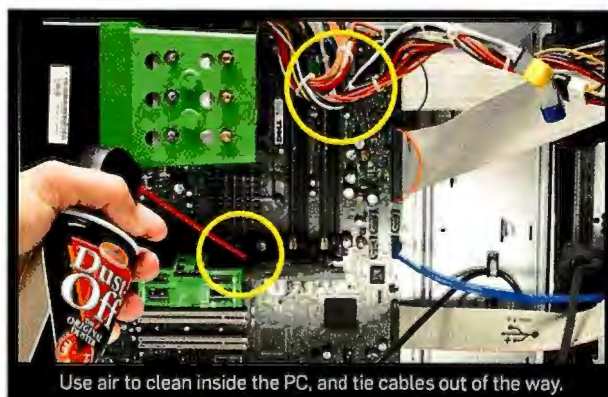
attention on clearing clogs at vented areas. Blast through grating, and blow from inside the PC, out through the power supply's fan, until you no longer see any dirt being cleared away.

While you're inside, make sure that internal cables are clear of vents. Use cable ties to fix them to the sides. Reclose the case, and reconnect everything.

To slow future dirt accumulation, try to keep your PC off the floor, since that's where much of the grime originates. Repeat this cleaning process annually, especially if you have pets.



Safety tip:
Touch metal on a case when unplugging a power cable.



Use air to clean inside the PC, and tie cables out of the way.

Clean Your Dirty Camera



Condensation:
Remove lens, and
open all doors; let
stand overnight.

tripod will keep your hands free, and the downward angle will permit loose particles to fall off. Within the DSLR's menu system, enter the mirror-lock cleaning mode to lift the mirror away from the sensor. Use a battery with a strong charge; if the camera loses power in this process, the mirror will snap closed, causing damage if you're swabbing.

Use an air bulb to clear the image sensor. Compressed air is too powerful for this job. Position the nozzle about an inch away from the sensor. Squeeze the bulb in short blasts.

Perform deeper cleaning with a swab and a solution made specifically for your camera. A few sites—among them, Copper Hill Products (find.pcworld.com/83493), Photographic Solutions (photosol.com), and VisibleDust (visibledust.com)—sell these supplies. Unwrap a disposable swab, and add a drop or two of solution to it. Gently but firmly drag the wand horizontally across the sensor in a single sweep. Twist the wand over to its unused side, and gently swipe back in the opposite direction.

Take a test photo. Magnifiers and other tools can help you get a closer look at the results of your cleaning efforts, but snapping a photo works best. Attach a lens to the DSLR, and shoot a picture of a blank background—for example, a piece of paper—with as small an aperture as possible. (Set the camera for aperture-priority, and expose the photo normally.) On your PC, zoom in on the picture, and look for splotches or droplets. If you see any, repeat the cleaning steps.

Avoid exposing your camera to sudden changes in temperature. A quick transition from, say, cold outdoor weather to a warm house can cause condensation. Seal the camera in an airtight bag or two, and leave it alone indoors until it gets acclimated.

Deal with condensation promptly. Remove all possible parts—battery, memory card, lens—and leave camera doors open. Let the condensation evaporate overnight on its own. ●

Point-and-shoot and DSLR cameras have a knack for attracting dirt, and that grime can show up in pictures. Sand and moisture at the beach can render a good camera unusable. Here's how to clean it up.

Wipe down the body and the LCD screen, if they are dirty, with a soft cloth. If needed, apply a mild alcohol-based cleaner to the cloth. Be careful as you work around buttons and openings not to let liquid get inside.

Pay special attention to cleaning a dirty lens. Puff away loose, abrasive materials with an air bulb. Use a scratch-free cloth, a lens-cleaning solution, and a light touch to clean the outside glass. If you haven't yet, screw in a clear filter to protect DSLR lenses from scratches. Clean the inside of such lenses by first squeezing air and then lightly swabbing with a lens-specific cleaner.

Handle the sensor plate with care. The CMOS or CCD in the camera body can be blighted by dust particles. Point-and-shoots seal foreign matter out, but changing DSLR lenses invites dust. And be warned: Canon, Nikon, and some other manufacturers don't support users cleaning their own hardware; if you scratch the sensor plate, you'll have to pay for the repair.

Mount the DSLR on a strong tripod, if possible. Then tilt the camera slightly downward prior to cleaning; the



Mount camera on tripod: tilt down.



Squeeze air bulb on lens 1 inch away.



Swab lens with cleaning solution.

Mode for cleaning:
Make sure DSLR
is in mirror-
lock mode.





Can You Trust Free Antivirus Protection?

BY ERIK LARKIN ~ ILLUSTRATIONS BY ANDREW BANNECKER

Lots of companies offer software that's supposed to stop worms, viruses, and other malware for free. We tested nine such security programs to find the ones you can really depend on.

Free antivirus programs vary just as much as their paid counterparts do in the quality of their protection. And frugal PC users on the hunt for no-cost antivirus software—already faced with tons of options—will have even more to choose from when new free offerings from Microsoft and Panda join the programs

currently available from Alwil (Avast), AVG, Avira, Comodo, and PC Tools.

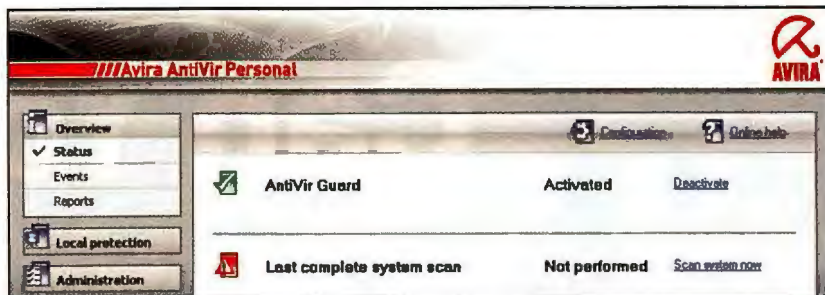
To help you figure out which free antivirus app is right for you, we put packages from all of those companies through their paces. Our testing partner, AV-Test.org of Germany, employed its vast “zoo” of collected malware to test detection rates and

scan speed. We then poked and prodded the apps to see which ones made stopping malware an effortless task, and which ones made it feel more like drudgery.

When the results came in, Avira's Antivir Personal claimed the top spot. It excelled in malware detection tests and boasted the top scan speed. We weren't fans of its interface, but »

function matters more than form here. Even the shiniest security tool wouldn't be worth a darn if it couldn't keep a PC safe. As such, our detection, disinfection, and speed tests account for the lion's share of each app's final score.

Despite Avira's number one finish, some of the other programs still merit consideration. For example, if you dislike Avira's daily pop-up ad, you might opt for Avast's Web traffic scanning and less-intrusive ads—but then you'll have to deal with an even worse interface. Meanwhile, AVG's tool is a good deal



AVIRA ANTIVIR PERSONAL is a great defender, but its interface is not novice-friendly.

easier to use, but its protection lags a bit behind the other two programs'.

And then there's Microsoft's Security Essentials, which uses the same anti-virus engine as the company's canceled

OneCare paid suite. It isn't yet publicly available as of this writing, and won't be done until the end of the year. But since it promises to shake up the world of free antivirus, we ran tests on the

Free Antivirus Software Compared

Avira's AntiVir Personal surpassed all competitors thanks to its excellent malware detection and impressive scan speed.

FREE ANTIVIRUS PROGRAM	PCW Rating	Performance score	Antivirus and antispyware detection				Adware detection	Malware cleanup	
			Overall malware detection	Heuristic detection with two-week-old signatures	Rootkit detection (active and inactive rootkits) ¹	Rootkit removal ¹	Detection of adware samples	Successful elimination of malware ²	
1 Avira AntiVir Personal find.pcworld.com/63548	92 SUPERIOR	Superior	98.9%	52.7%	100.0%	100.0%	92%	50%	
BOTTOM LINE: Avira AntiVir Personal offers great, thorough protection and top-notch scan speed, but some nontechnies might find its interface frustrating.									
2 Alwil Avast Antivirus Home Edition find.pcworld.com/63550	91 SUPERIOR	Superior	98.2%	46.1%	95.0%	90.0%	92%	85%	
BOTTOM LINE: Avast Antivirus Home Edition provides solid antimalware protection and a good set of features, but its outdated interface needs a makeover.									
3 AVG 8.5 Free find.pcworld.com/63551	86 VERY GOOD	Very Good	95.8%	47.2%	90.0%	80.0%	84%	85%	
BOTTOM LINE: Though AVG 8.5 Free has a good, straightforward interface and useful blocking of Web-based attacks, its malware blocking is below average.									
4 Microsoft Security Essentials find.pcworld.com/63552	86 VERY GOOD	Very Good	97.8%	52.1%	100.0%	100.0%	93%	50%	
BOTTOM LINE: An effective but somewhat slow utility, Microsoft Security Essentials will be a solid contender when it comes out of beta around the end of 2009.									
5 PC Tools Antivirus Free Edition find.pcworld.com/63553	69 FAIR	Fair	51.8%	33.2%	90.0%	70.0%	38%	85%	
BOTTOM LINE: PC Tools Antivirus, which neglects to detect spyware, allows far too many pieces of malware through for it to realistically protect any PC.									
6 Comodo Internet Security find.pcworld.com/63554	68 FAIR	Fair	74.8%	41.4%	80.0%	80.0%	87%	40%	
BOTTOM LINE: Comodo Internet Security is not a good antivirus choice, owing to its lackluster malware detection and its tendency to produce false positives.									

CHART NOTES: ¹Test conducted at default settings. ²Cleanup of malware files and Registry files. ³Time to scan a 741MB file; lower is better.

current beta to give you an idea of how well the final version might work.

Rounding out your primary-care options are PC Tools Antivirus, Comodo Internet Security, and the new Panda Cloud Antivirus. Panda's use of online servers to analyze potential malware holds promise, and the app did better than any other in malware detection. Its unfinished-beta state and its unique approach, however, prevented us from giving it a full score and ranking. We did rank the PC Tools and Comodo apps, but both fell flat in detecting malware.

We also tried two free products that are designed to supplement existing security. PC Tools Threatfire proved a real winner with its excellent, proactive

malware detection. It can capably spot a nasty intruder based solely on what the file tries to do, without the need for signatures. It can work in tandem with any of the free antivirus apps we tested.

ClamWin represents the open-source entry in the free-antivirus competition. It scans only when you tell it to, and it won't automatically run a check when you save or run a file. You could use it for a second-opinion scan—but its rock-bottom malware detection means you wouldn't get much extra protection.

Avira AntiVir Personal

Avira AntiVir Personal's excellent detection, disinfection, and scan speed earned it the top spot. Its interface could be better, though, and you have to put up with daily pop-up ads.

In AV-Test.org tests, AntiVir's 98.9 percent overall malware detection rate was the best among the software on our chart (Panda's unranked program outperformed it). AntiVir was also tops in proactive-protection tests that use two- and four-week-old signatures to simulate detection of new, unknown malware, with rates of 52.7 percent and 45.5 percent, respectively.

The strong performance continued in disinfection. AntiVir found and disarmed all of the rootkits and other infections tossed at it, but (like all the free software here) it tended to leave remnants, such as relatively harmless Registry changes, in place.

Avira's program was not just the most thorough tool, but also the fastest. It led in speed tests for both on-demand scans (which you schedule or start) and on-access scans (which occur automatically during tasks such as copying files).

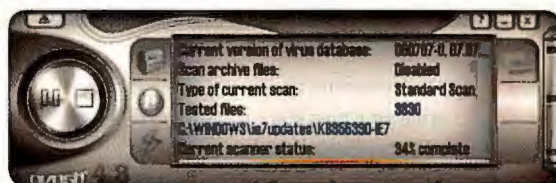
If AntiVir's interface were as polished as its malware-fighting ability, it would be a no-brainer recommendation. But its pop-up ads for Avira's paid ID-theft protection could easily annoy many users, and at times its interface feels

better suited to advanced users.

For example, the program's installer prompts you to select among 'extended threat categories'. Some are obvious, such as games or jokes, but you might be forgiven for not knowing whether to pick 'unusual runtime compression' (listed in Avira's online help as 'Files that have been compressed using an unusual tool and are therefore suspicious').

In a similar vein, its detection pop-ups offer too many choices and don't suggest the option most fitting for the average user. It checks the 'Deny access' option by default, but that choice would leave the discovered malware sitting on your PC; you would continue to receive warnings until you opted to delete or quarantine the discovery (you can also choose to rename or ignore the file).

Such less-than-friendly default behaviors make Avira's AntiVir a better choice for tech-savvy users who know how to muck about in the settings. If you're willing to put up with a some-



AVAST'S scanning interface resembles a music player.

what clumsy interface and the recurring pop-up ads, in return you'll enjoy top-notch, free protection against malware. It's not a bad trade-off by any means.

Alwil Avast Antivirus Home Edition

Avast Antivirus Home Edition, developed in the Czech Republic, offers capable malware detection and fast scan speed, both of which helped propel the app to the number two spot. Its clunky interface badly needs updating, however.

In AV-Test.org detection tests, the program blocked a respectable 98.2 percent of samples out of a malware "zoo" consisting of about a half-million files. That wasn't enough for Avast to top Avira >>

	Scan speed ¹		Design score
	On-demand (in seconds) ²	On-access (in seconds) ²	
	17	28	Good
	18	38	Good
	87	50	Good
	69	77	Very Good
	96	38	Good
	20	63	Good

and the unranked Panda Cloud Antivirus, but it's still a good showing. Avast didn't do quite as well in proactive-detection tests, which simulate how well a program would fare against new and unknown malware: Its catch rates of 46.1 percent (two-week-old signatures) and 41 percent (four-week-old signatures) put it in fourth place.

The app was relatively nimble at on-demand scans (which you start) and on-access scans (which occur when you save or use a file), placing second in each test. It issued just one false positive (labeling harmless software as malicious).

In disinfection, Avast nearly matched the top performers (Avira and Microsoft), removing 90 percent of the rootkits used in our tests. All three apps, however, also left behind Registry entries and failed to reverse all of the

changes that the malware had made.

While Avast does well as a malware blocker and remover, it fares poorly as a program that people have to interact with. Its outdated interface has sections that look entirely different depending on whether you're running a scan, checking status, or changing settings. The scanning interface mimics a music player, but you probably won't be singing its praises. Be sure to read the how-to guide that pops up the first time you

use the program, unless you enjoy scratching your head and growling at your monitor.

The Avast product is the only one here that requires you to register within 60 days to receive a free license key. It's also the only app that scans Web traffic for malware (AVG's Link-Scanner scans Web traffic for the attacks that can presage

malware, but not for the malware itself), and it scans e-mail traffic as well.

Avast Antivirus will do a decent job protecting a PC, but if you're willing to put up with a less-than-perfect interface (and some ads), you're better off going with Avira's top-notch blocking.

AVG 8.5 Free

AVG Technology's AVG 8.5 Free antivirus app has solid features and a generally polished interface, but its relatively



AVG 8.5 FREE offers a polished, straightforward interface.

Something—But Not Everything—For Nothing

While free antivirus programs give you some value, they don't have everything that a paid security application can offer.

You won't have anyone to call if things go haywire, or if you need disinfection help. Most free apps give support only on online forums, though Avast offers e-mail support (and Microsoft plans to when Security Essentials launches); Avast users can submit online support tickets, too. AVG gives paid phone support, but the \$50-per-call fee costs more than most paid antivirus apps. Do-it-yourselfers can try sites like Wilders Security Forums (www.wilderssecurity.com), but even there you shouldn't expect to talk to anyone for help



with a free antivirus app.

Aside from the Microsoft and Panda tools, which check online databases, free apps have less-frequent signature updates than paid products do, which can leave a window of opportunity for brand-new baddies to evade detection.

Some free utilities have

fewer options than paid apps from the same company do.

For example, Avira's paid program will scan http traffic to catch Web malware before it hits your hard drive, but the company's free version won't.

Finally, some free programs give you stuff you don't want. The AVG and Comodo apps

install browser toolbars (you can opt out), and many free apps display ads urging you to buy the paid versions.

Still, in choosing a no-cost antivirus utility, you can get decent protection and save yourself at minimum \$30 every year. For many people, that isn't a bad trade-off.

lackluster showing at malware detection pulled it down to third place.

AVG detected 95.8 percent of AV-Test.org's malware zoo. Though that isn't a terrible result, it doesn't stand up well against the detection rates of the top performers, Avira and the unranked Panda app. Hampering AVG's overall score was its 95.3 percent detection rate for Trojan horses, the most common type of malware in the set, as well as its surprisingly poor 88.8 percent detection rate for spyware that tries to steal financial-account passwords.

AVG's proactive detection and scan speed were both in the middle of the pack. The software was third in tests that evaluate the program's ability to block new and unknown malware. It ranked the same for on-access scan speed, which comes into play when you open or save a file. For on-demand scans it was a lot pokier (sixth out of nine), but since you can schedule the scans for when you're not around, a slower speed isn't as problematic here.

In one test, it detected and disabled all ten malware infections. It tended to miss less-critical things such as Registry changes or blocked access to the Windows Task Manager, but so did all the other free apps. AVG also did well in avoiding false positives, making only one boy-who-cried-wolf mistake.

The LinkScanner component will try to detect and stop attacks on Web pages while you surf, and it will provide safety ratings for search results (you can download LinkScanner by itself at find.pcworld.com/63505).

The program can scan e-mail, too, something only Avast and ClamWin also offer. But while that is a beneficial extra, the program's AVG toolbar with search options doesn't afford any additional protection; you can safely skip it during installation. You'll likely find most of the default settings appropriate, except for the daily full scan at noon. You can choose another time of day in the installation wizard, but to change it

CLOUD-BASED SCANNING

Panda Cloud Antivirus

Panda Cloud Antivirus was the best app here at blocking known malware, but its work-in-progress status and its unique methods kept us from ranking it. At this writing, it's easy enough to install and use, but Panda is still adding features, and bugs may remain.

Rather than using your PC's processing power, this cloud-based app sends data about potential malware to Panda's servers for analysis. In AV-Test.org's tests, that approach seemed to work well, producing an impressive 99.4 percent overall detection rate. However, that approach also meant that the app could not work with our proactive-protection tests. The same goes for our on-access scan tests; Panda (find.pcworld.com/63510) uses multitiered scanning that only blocks access and does an immediate scan for programs that attempt to run. Files on a hard drive (preexisting and newly copied) are tagged for background scans only during idle time. (The app checks downloads right away, but doesn't block the files before the scan.)

On a full on-demand scan, it offered middling speed, coming in fourth. It was reasonably good at cleaning existing malware, and it detected all ten test infections. But it failed to disable one infection, and it failed to remove Registry entries and other largely harmless junk after every cleanup attempt.

For now, we can't give Panda's app a complete score, but its impressive ability to detect malware makes it well worth keeping an eye on.



PANDA'S app was tops in blocking malware.

to a weekly scan you'll have to adjust the settings after installation.

AVG displays an ad for its paid product at the bottom of the main program window, along with an occasional pop-up ad. Neither is especially intrusive, and the interface is generally straightforward enough for use on a daily basis.



MICROSOFT SECURITY ESSENTIALS is effective and easy to use.

AVG 8.5 Free is well-rounded overall, but its second-tier malware detection rate should make you consider one of the better-performing programs first.

Microsoft Security Essentials

While it was still in beta as of this writing, Microsoft Security Essentials shows promise: In our tests it was decent at detecting malware, particularly in proactive tests. The main drawback of the tool, which will launch by year's end, seemed to be its slow scan speed.

Since Microsoft says the tool is feature-complete and simply undergoing fine-tuning now (and since it had a limited public beta release in early summer), we decided to test it and rank it alongside the other apps. Keep in mind, though, that its performance may change before its final release.

One thing we hope will change is its relatively poky scan speed. It was the >>



PC Tools Threatfire

PC Tools Threatfire is not a stand-alone anti-virus program. It supplements your existing security with effective behavioral analysis that can stop malware based on what the file tries to do on your PC.

Other programs employ behavioral or heuristic techniques, too (the latter looks for partial matches with known malware). But behavioral detection like the approach that PC Tools has implemented here can be particularly tricky, as it's prone to accidentally flagging harmless software.

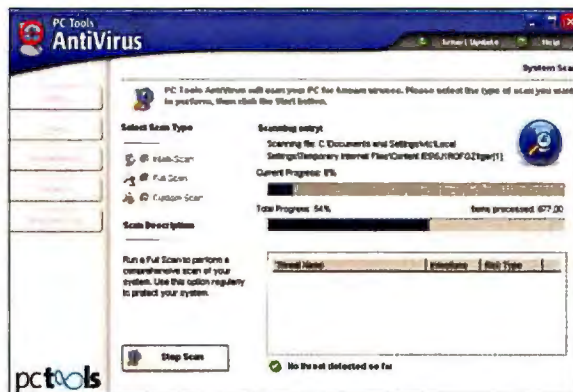
In AV-Test.org's behavioral-detection tests, most apps have only about a 30 percent to 60 percent detection rate. Not so for Threatfire: It warned about all 15 of the malware samples used, and it blocked all but one of them. What's more, it didn't put up any false-positive warnings.

Threatfire defaults to a good level of sensitivity, but we suggest turning on the option in *Settings*•*Quarantine* to create a system restore point automatically before quarantining anything. As for extras, an activity monitor provides details about running programs, and a mostly just-for-show threat monitor maps global outbreaks.

Though Threatfire (find.pcworld.com/63580) is made to run with other apps, and we had no problems in our tests, it has conflicted with AVG in the past. That aside, we recommend Threatfire as a strong extra layer of defense.



THREATFIRE can map malware outbreaks.



PC TOOLS ANTIVIRUS fell short in malware detection tests.

Microsoft can improve the detection and rev up the scan speed before the final release, Security Essentials could turn out to be a real contender.

PC Tools Antivirus Free Edition

PC Tools Antivirus Free Edition does a remarkably poor job of keeping a PC safe, largely because it holds to a now-archaic distinction between spyware and other forms of malware.

In an age when a single baddie might spread like a worm, steal passwords like spyware, and allow backdoor-style remote control of an infected PC, most security vendors recognize that labels such as "Trojan horse" or "spyware" are secondary to the idea of keeping everything bad off PCs. Hence today's use of *malware* as a catch-all term.

However, PC Tools says that its free program will not detect what it deems spyware (a critical point not emphasized on the company's Web site). And that limitation may account for its awful detection and blocking results: The app left the door wide open for about half of the malware in our tests.

And while the app purports to protect against Trojan horses, a common malware type, it detected only 46 percent of such software in AV-Test.org tests. It did better in detecting worms, but its catch rate of 83 percent for the self-spreading malware still didn't compare with the detection results we saw from Avira, the overall leader of the group.

Unsurprisingly, the poor performance carried over to heuristic tests, which use two- and four-week-old signatures



to simulate how an app will handle new and unknown malware. PC Tools Antivirus came in last, with results of 33 percent and 36 percent. It was fine in detecting and removing existing infections, missing only one out of ten—but most of the tested apps got them all.

While the program installs smoothly and looks relatively good, it doesn't schedule a scan by default, nor does it automatically update. The software will notify you once a day (by default) if an update is available, but to make it do the updating by itself, you will need to turn on the Smart Update feature.

In short, there's no reason to choose PC Tools Antivirus when other free apps can truly keep your PC safe. Fortunately, the company's behavior-based Threat-fire supplemental utility (see page 86) is as good as its Antivirus is bad.

Comodo Internet Security

Comodo Internet Security has both a firewall and an antivirus utility in its free package. While we can't speak for the firewall's effectiveness (we didn't test that feature), its antivirus component leaves much to be desired.

After downloading the package, you can install the antivirus app, the firewall, a 30-day trial of Comodo's LivePCSupport, or any combination. We installed only the antivirus portion. Considering its test results, you probably won't want to install it on your PC.

Only PC Tools Antivirus (which purposely fails to detect what PC Tools considers spyware) and the not-ready-

for-prime-time ClamWin did worse than Comodo's 74.6 percent malware detection rate. Letting one out of four invaders go unnoticed just doesn't cut it. Comodo also neglected to catch some samples in the WildList test, a low-level baseline that uses known malware; most antivirus apps catch all of the WildList set, but Comodo missed a lot. Worse, Comodo issued tons of false

positives, flagging 62 pieces of harmless software as malicious. The next worst app, ClamWin, produced 6 false warnings, and some rivals had none.

The installation also leaves a bad impression. By default it installs a Hopsurf browser toolbar, and it prompts you to change your search engine to Ask.com and your home page to Hopsurf.com.

Also annoying is the program's Defense+ layer of security, which feels like a throwback to an age when security tools repeatedly prompted you to decide whether a program could take a certain action. Such protection can be effective if you're willing to deal with countless interruptions and risk making a bad decision, but you'd probably end up disabling it instead.

Our experience with Comodo Internet Security's antivirus component leaves us little reason to recommend it. Other free apps are much better. ●

OPEN-SOURCE

ClamWin

ClamWin Free Antivirus isn't just free; it's also open-source, with no proprietary aspects. But in blocking malware, it doesn't get the job done.

ClamWin doesn't offer real-time protection, and it won't check files as you access them; its scans are on-demand only. It missed almost half of the samples in AV-Test.org's zoo. Against malware made to steal online-banking passwords, it was nearly impotent, missing more than two-thirds of such samples. In proactive tests meant to find how well a program can detect new malware, it did better, nabbing roughly one-third of the samples while using two-week-old signature files. But that still wasn't a satisfactory result.

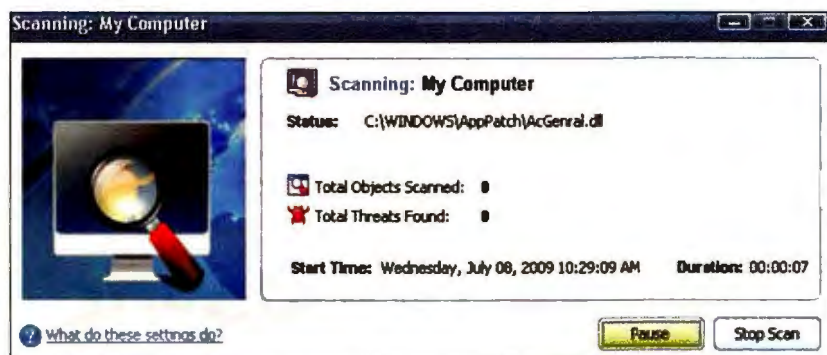
Its six false positives were more than any other program save for Comodo Internet Security. It was the second-slowest app in scanning, and it put up the worst numbers for disinfection, detecting only six out of ten infections and cleaning only five. In a rare shining performance, it identified all ten active rootkits—but it did the worst job of removing them, cleaning up just four.

ClamWin (find.pcworld.com/63583) adds a right-click option to scan a specific file—slowly—and by default it reports only malware; to get an option to clean it, you must change the settings.

Although running an extra on-demand scan can be good as backup for your regular antivirus application, ClamWin's poor detection rate means that you are better off running an online scan from a commercial software maker, such as BitDefender or F-Secure, and avoiding this open-source project.



CLAMWIN missed lots of malware.



COMODO INTERNET SECURITY trailed the rest of the pack in detecting malicious software.



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The Best Ways to Back Up Your Data

Nobody likes backing up, but one day, it'll save your bacon. Here are the most efficient methods of protecting your stuff, no matter what your situation. »

• BY LINCOLN SPECTOR
PHOTOGRAPHS BY ROBERT CARDIN



Your hard drive might crash.

Thieves might steal your laptop at a café. You might realize on Friday that you need the now-departed Wednesday version of an important document that you altered on Thursday.

At times like these, having a secure, up-to-date backup of your hard drive can be a lifesaver. Here are seven practical strategies, including using USB storage, backing up via the Internet or through your local network, backing up Windows itself, and preserving huge media files like songs and videos.

What to Back Up

Your hard drive may contain hundreds of thousands of files. Many of them should be backed up every day, others only occasionally, and still others—including temp files, the hibernation file (hiberfil.sys), and your browser cache—not at all. Let's look at the different kinds of files individually.

YOUR DOCUMENTS: You should back up your word processing files, spreadsheets, and similar documents every day. Any basic backup program can perform incremental backups, in which the program copies only the files that have changed since the most recent previous backup. (Good backup programs also perform versioning; that is, they keep several iterations of the same file on hand and enable you to choose which version to restore.)

YOUR RECENT DOCUMENTS: If your backup program can handle incremental backups, you don't have to worry about recent documents as separate entities. But if you often work on these files on other people's computers, you may want to carry a copy of them on a flash drive or store a copy of them online.

APPLICATION DATA: Apps create and maintain data files such as e-mail messages, browser favorites, calendar entries, and contacts that require daily backing up. Most programs store them in a hidden folder inside your user folder (in XP, C:\Documents and Settings\your name\Application Data; in Vista, C:\Users\your name\AppData). Also, in XP, Microsoft stores Outlook and Outlook Express data in C:\Documents and Settings\your name\Local Settings\

Application Data). Fortunately, any well-designed backup program intended for everyday, nonexpert users (as opposed to IT departments) knows where to look for Outlook data.

MEDIA: If your backup medium is sufficiently roomy and fast, you can back up your photo, music, and video files every day. But these large files may require a separate backup strategy.

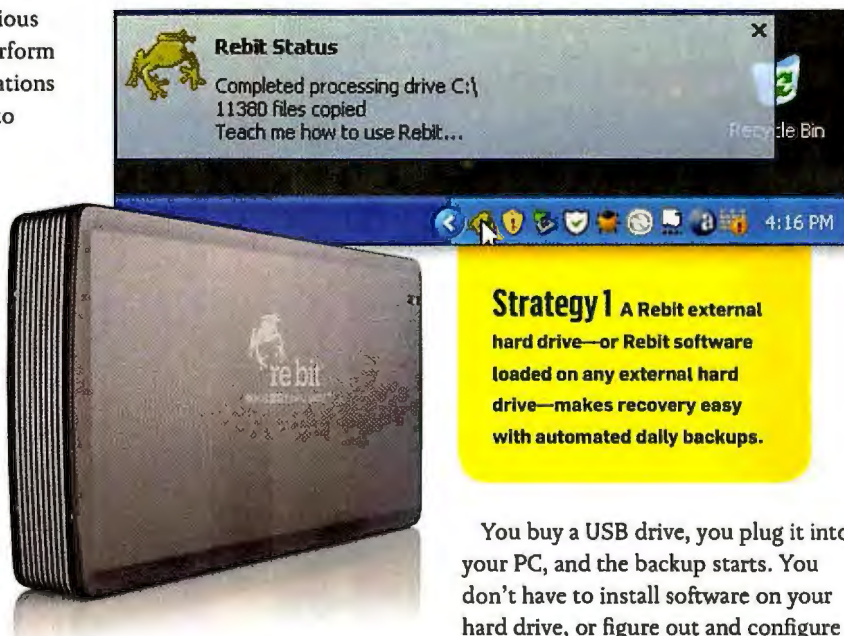
HEIRLOOMS: Files that you want to keep forever—family photos, the special anniversary card you made for your parents, and so on—need backing up and extra protection.

YOUR SYSTEM: You can always reinstall Windows and your apps, if you have the original discs or can download the programs. But if Windows becomes unusable or your hard drive crashes, switching to a system backup (also called a *disaster recovery backup*) that you create a couple of times a year can get your machine up and running smoothly without much effort.

You can separate and store various types of data on different hard drives (or partitions—see find.pcworld.com/63512 and find.pcworld.com/63513). But Windows doesn't make the procedure easy, and the strategies I discuss don't require this separation.

Strategy 1 Employ the Easiest Backup of All

- **GOOD FOR:** Your documents (including recent documents), application data, and media files, and the system as a whole
- **FREQUENCY:** Daily
- **RECOVERY FEATURES:** Versioning and full-system restore
- **AUTOMATIC OFF-SITE STORAGE:** No



You buy a USB drive, you plug it into your PC, and the backup starts. You don't have to install software on your hard drive, or figure out and configure backup sets, or even tell the program to launch. This fully automated backup knows what needs backing up and what doesn't. (Okay, you do have to remember to plug in the drive. And it's true that you could get the same result by buy-

ing software and installing it on an existing hard drive.)

It's the latest in backup software; and if done properly, it can serve as the ultimate no-brain backup.

But that's a very big *if*. Some plug-in-and-back-up setups have major flaws. For instance, even though the Seagate Replica drive claims to back up all partitions on a drive, *PC World* couldn't get that feature to work during our review.

Other automated backup drives have serious limitations.

SanDisk put a backup button and a very good data-backup program (one that can back up and restore files, but not Windows) on its Ultra Backup line of portable drives (find.pcworld.com/63511). However, because the Ultra Backup line consists of flash drives, you don't get many gigabytes for the price. SanDisk's 64GB Ultra Backup sells for \$160—the same amount that you'd pay for a 500GB HP SimpleSave hard drive, and roughly \$20 more than you'd pay for a 320GB Clickfree portable backup hard drive (find.pcworld.com/63514). (On the other hand, the Click-free software can't perform versioning, a serious shortcoming.)

But Rebit (www.rebit.com) offers the easiest backup of all. You don't have to decide which files and folders to back up. The first time you plug in the drive, it backs up everything on your regular hard drive—data, applications, even Windows.

Because Rebit backs up everything, you can recover your entire system after a hard-drive crash or other disaster simply by booting from a special CD (you can download the .iso file from Rebit's Web site when the time comes).

Rebit makes recovering a specific file easy. Right-click a file in Windows Explorer, select *My Rebit*, and pick a version of the file from your backup. Or double-click the Rebit system tray icon for the Windows Explorer-like Rebit Browser.

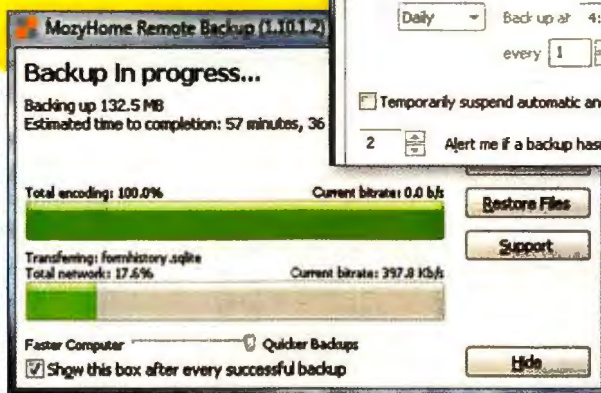
Rebit is designed for real-time, around-the-clock backup. The program backs up a file as soon as you change it, so you never have to think about backing up. Of course, constantly creating backups will slow the computer noticeably. And keeping backup media plugged into your PC 24/7 puts it at risk of power surges, malware, and thieves because your backup is as exposed to those threats as your primary system is.

Fortunately, you don't have to keep the Rebit drive plugged in. If you can remember to plug it in once a day, it will back up everything that has changed since you last had it attached.

Rebit portable and desktop drives are available in various storage capacities. The company recommends buying a drive

that's at least 25 percent larger than the one you want to back up. But don't get too big a drive: You can't use a drive running Rebit for any other purpose, such as extra storage. Other simple backup drives, like HP's SimpleSave, do allow

Strategy 2 The MozyHome online service guarantees you access to a daily system backup stored in a safely remote location for a low monthly fee.



you to use part of the drive for backup and part of the drive for extra storage, but HP's software can't handle versioning. Putting the drive to work for multiple uses raises

other issues of data safety: The data simply being stored on the drive won't be backed up, and the files that are backups of content on your primary drive must share space with actively used data that could become infected on its own.

If you already have an external drive of the right size, you can buy the Rebit software by itself for \$50 (though I've seen it for less than \$30) and install it on your own drive.

Strategy 2 Automate Your Backup, and Store It at a Safe Distance

- **GOOD FOR:** Your documents (including your recent documents), and application data
- **FREQUENCY:** Daily
- **RECOVERY FEATURES:** Versioning but no full-system restore
- **AUTOMATIC OFF-SITE STORAGE:** Yes

A backup continuously connected to your computer is vulnerable to the same dangers that might threaten your PC, as is a backup kept in the same building as the PC. But if your system rarely lacks a fast Internet connection, an online backup service can perform completely automated backups that it saves to a server miles from your PC. You don't have to purchase hardware or plug anything new into your computer, »

though you must install software. This arrangement gives you access to your data from any Internet-enabled computer.

Backing up Windows and applications online is impractical, however, so online services don't offer that option.

A number of online backup services, such as Comodo (find.pcworld.com/63516) and SpiderOak (spideroak.com), are available. But I recommend Mozy (mozy.com) for its versatile software and low price. As with Rebit, you can right-click a file in Windows Explorer and restore any version of it that Mozy has on hand. The MozyHome (mozy.com/home) service costs \$5 per month per computer, with no storage limit per PC. The company also provides a professional service (mozy.com/pro).

Internet backup services share some inherent flaws, starting with their being horribly, horribly slow. Your first, complete backup can take days or even weeks (you can work while it backs up). The agonizingly unhurried upload speed may explain why Mozy offers unlimited storage per PC. Anyone trying to back up 500GB of video over the Internet would soon give up. In general, if you

Strategy 3 Back Up the Whole Family on Your Home Network

- **GOOD FOR:** Your documents (including your recent documents), application data, and media files
- **FREQUENCY:** Daily
- **RECOVERY FEATURES:** Versioning (which is switched off by default) but no full-system restore
- **AUTOMATIC OFF-SITE STORAGE:** No

Getting yourself in the backup habit is hard enough. Getting your family on board is nearly impossible. So why not set up a single centralized backup for everyone in the group?

If you connect several computers to one another and to the Internet through a router, buy a network-attached storage (NAS) drive—a box containing one or more hard drives that you plug into your router via ethernet.

Anyone on the network who has the right permission can access those hard drives.

Besides performing large-scale backups, NAS drives can store photo, video, and music files, and you can access that content even from outside your network. (If you store media files on a NAS drive, you must back those up; see Strategies 4 and 7.) Many NAS drives also work as print servers, giving connected PCs easy access to any network printer.

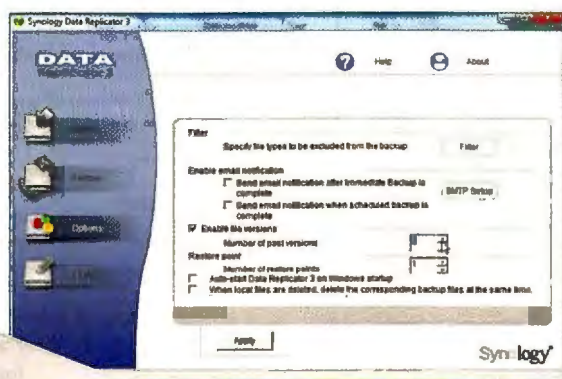
Most NAS drives come with software for backing up. Every PC on the network has instant access to a huge drive that can hold vast video files or anything else. And the drive is always on and always attached, so backups can run automatically.

I recommend the Synology DS209j (find.pcworld.com/63530) for home use because of its powerful yet easy-to-use data-backup program.

Synology sells the DS209j with or without drives; an empty unit (that you add your own drives to) costs about \$215. A DS209j with two preinstalled 500GB drives configured as a RAID is about \$420. The two-bay DS209j supports RAID 0 (for striping data across two drives) and RAID 1 (for mirroring, preferred for data preservation) configurations.

Higher-end NAS devices—for example, the Seagate Black Armor NAS 440, the Synology DS509, and the Western Digital ShareSpace—have four drive bays, possess even greater storage capacities, and support RAID 5 for disk parity. These devices scatter and replicate data across the four disks in such a way that, if a drive fails, the data on that drive can be rebuilt based on the data replicated elsewhere.

The device is easy to set up, but if you are buying your own hard drive, you should check Synology's Web site (find.pcworld.com/63518) to ensure compatibility. Once the hardware is up



Strategies 3 & 4 A network-attached storage drive provides the best backup method for local systems that share a network, as well as for large multimedia files.

use online backup, consider finding another medium for your large media files (see Strategy 4

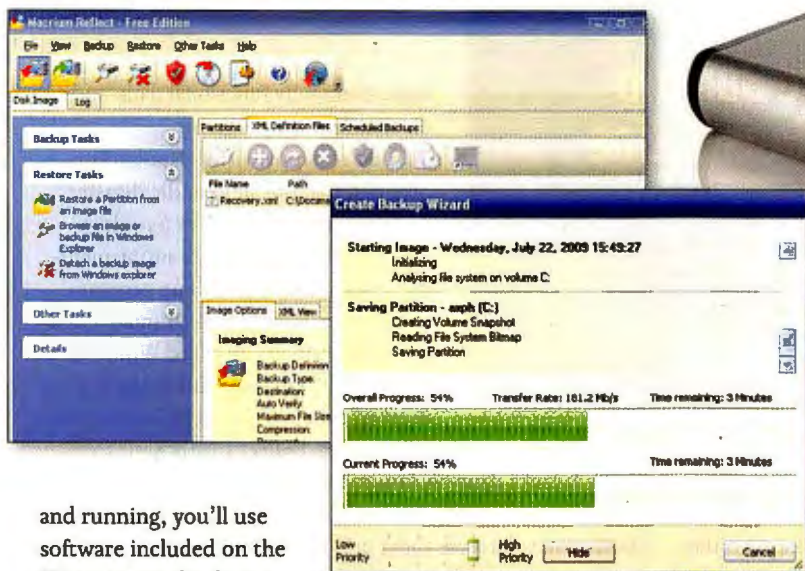
for advice). But I do use the Internet to back up photos.

For similar reasons, I don't recommend online backup services for people who work with music or video files. If you're editing a movie, for example, the daily backups will be much too large for a once-a-day upload to manage.

Another issue: Can you trust an online company for long-term data storage? I sure wouldn't. See "Will Your Data Disappear When Your Online Storage Site Shuts Down?" (find.pcworld.com/63517) for some nightmare scenarios.

Also consider cost. Though \$5 per month per machine may sound cheap, with multiple systems the charges add up.





Strategy 5 Macrium Reflect software (left) or a CMS ABS Plus hard drive loaded with CMS BounceBack Ultimate (above) creates an image backup to handle disaster recovery.

and running, you'll use software included on the CD to set up the device for your users, assigning a separate safe backup location to each. You must install the backup program, Synology Data Replicator, on every system.

On its own, Data Replicator is one of the easiest, simplest, and most sensibly designed data-backup programs I've ever worked with. Its what-to-back-up options, though few, are the right ones and are easy to understand. The software backs up files by copying them, so you don't need Data Replicator to recover a file (using it will make the recovery easier, however).

The scheduler is easy to set up and doesn't overwhelm you with options. It won't work properly if the backup drive is unavailable, but that's no problem with a NAS drive. You can use this program with a local—versus network—external drive, too, but I wouldn't try scheduling with such a setup.

By default, Data Replicator keeps only the latest version of each file; the Options box lets you turn on versioning and set how many versions to keep. A NAS drive stays on all the time, but it uses considerably less energy than a computer, so if you currently keep a PC on continuously for network access, NAS is a relatively green option. According to Synology, the DS209j pulls 36 watts when in use and 15 watts when idle.

Strategy 4 Save Your Entertainment

- **GOOD FOR:** Photos, music, and video files
- **FREQUENCY:** Daily
- **RECOVERY FEATURES:** No versioning or full-system restore
- **AUTOMATIC OFF-SITE STORAGE:** No

How many gigabytes of multimedia files do you have? If you back up to an external hard drive or a NAS drive, large media files don't cause problems. But if your backup media has limited capacity (like a flash drive) or is slow to upload (like the Internet), you may want to find another way to protect your folders of digital pictures, music, and video.

The best approach for you depends on how often your files change. If you edit them regularly, they are current docu-

ments and should be part of your daily backup routine. In that case, go with NAS backup (see Strategy 3).

Things are simpler when you're dealing with files consisting of photos and videos that seldom change, or of music bought online. (In the case of music ripped from CDs, the original CD functions as a reliable backup version.) Incremental backups and versioning aren't issues here. You just need to make sure that the files exist in more than one place.

How you use these files protects you to some extent. You likely copy your music to a portable media player that may permit you to copy the files back. (The iPod doesn't allow this, but if you enter 'transfer from iPod to computer' into any search engine, you'll find plenty of workarounds.) Posting your pictures on a photo-sharing site such as Flickr creates a temporary backup; but note the site's rules governing capacity, retention of original full-resolution images, and export of full-resolution images from the site back to your PC.

If you don't back up your music, photos, and videos daily, you need to copy them to something other than your internal hard drive. DVD-Rs and DVD+Rs cost little and work well, but an external hard drive is faster and holds everything without swapping. Either option works, so decide based on how much data you need to safeguard and how patient you are.

Strategy 5 Prepare for the Big Disaster

- **GOOD FOR:** The system as a whole
- **FREQUENCY:** Once or twice a year
- **RECOVERY FEATURES:** Full-system restore but no versioning
- **AUTOMATIC OFF-SITE STORAGE:** No

In a worst-case scenario, you lose a lot more than just your data. If your hard drive crashes and has to be replaced, or if Windows becomes corrupted and unusable, you'll have to start from square one—reinstalling Windows, removing the garbage that came bundled with your PC, reinstalling your »



More Backup Options Online

REBIT IS AMONG several hard drives that integrate software to simplify backing up. We examine the alternatives, including models from CMS Products, HP, Seagate, and Storage Appliance, at find.pcworld.com/63558.

programs, reinstalling your drivers, reconfiguring Windows, and restoring your data from a recent backup.

But if you have a system—or disaster recovery—backup, you can restore everything in one go. If the system backup is older than your data backup, you'll still have to restore your data, but that's a lot easier than setting up everything from scratch.

If your regular, daily backup program offers disaster recovery (as Rebit does), you have a system backup in place already. But Windows tends to get corrupted very slowly, so it's a good idea to create and set aside a permanent system backup when Windows is healthy. Rebit doesn't offer this feature.

Unfortunately, backing up Windows and your applications isn't as easy as backing up data. The only reliable way to proceed is to back up the entire drive. When disaster strikes, you'll need to restore the drive in its entirety.

You have two ways to back up an entire drive so that you can restore even Windows: cloning and imaging. Cloning involves transferring an exact copy of your main hard drive to another drive. To restore Windows, you can either clone in the other direction or physically swap the drives. CMS Bounce-Back Ultimate (find.pcworld.com/63515), also included with CMS ABS Plus hard-disk drives, is a popular cloning product.

Imaging involves copying a drive's structure and contents into a compressed, but still very large, file on another drive. To restore the image to its full size, you must use the same image-backup software that you created it with.

I prefer imaging because I can save multiple image backups onto one drive, enabling me to protect multiple PCs for less money or to keep more restore options for a single PC. Imaging also lets me back up to DVDs, saving even more money—though it does entail swapping discs, quite possibly for hours on end.

Aside from Rebit, the major commercial imaging programs available today—Ghost (find.pcworld.com/63519), Macrium Reflect (find.pcworld.com/63522), and True Image (find.pcworld.com/63520)—all provide incremental backups and versioning, and these features

make them fully functional data- and disaster-backup programs.

If you're happy with a data-backup program that doesn't handle disaster recovery, such as Mozy or Synology Data Replicator, consider supplementing it with an image-backup program. Vista Business and Vista Ultimate come with a built-in utility called Windows Complete PC Backup and Restore. For users of other Windows OSs, I recom-

mend the free version of Macrium Reflect (find.pcworld.com/63521). It lacks daily-backup capabilities, but it's easy to use, makes images, checks them for errors, restores them, and allows you to browse them in Windows Explorer for selective restores. You can also use it to create a bootable CD for recovering your hard drive even if Windows won't boot.

The best time to make an image backup is immediately after you set up a new PC. The second best time is today—if you are satisfied with the way Windows is currently running. Retain your first backup for as long as you keep that PC; it's a better recovery tool than the one that came with your PC.

Making additional image backups every so often—after installing a big application, say, or a service pack upgrade—is wise. Or make one every three to six months. You don't need to keep them all; just the first one and the last one or two.

Strategy 6 Store Items for the Long Haul

- **GOOD FOR:** Heirlooms
- **FREQUENCY:** Once a year
- **RECOVERY FEATURES:** No versioning or full-system restore
- **AUTOMATIC OFF-SITE STORAGE:** No

With proper archiving, your photos, videos, and other digital memorabilia could last a long time. Archive your valuable files about once a year, saving them to long-lasting media manually. Make multiple copies of the backups, and check to confirm that you can read them on another computer. Keep a copy for yourself and send others to relatives.

Consider putting one in a safe deposit box.

Obviously, since properly testing an archiving strategy would take at least 50 years, and my deadline is much shorter, I can't guarantee that any of my suggestions will work. Still, a few wise choices can improve your odds of success.

Archival media should satisfy the following criteria.

The media must be unerasable: According to the law of data entropy, whatever can be erased, eventually will be

Strategy 6

For archiving heirloom files, use special discs such as MAM-A's Archive Gold or Delkin's Archival Gold (right).



erased. (But beware of the corollary to that unalterable law, pointed out by PCWorld.com community member JimH443: "That which cannot be erased will be misplaced.")

Media and mechanicals must be separate: Hard drives hold a vast amount of data—up to 2TB on a single drive—but like other mechanical devices with moving parts, they can break. A well-made, properly stored CD or DVD (see find.pcworld.com/63524 for more on how to store discs) frees you from having to worry about mechanical-component failure. If you expect moving parts to last for decades, you'll be disappointed.

The media must be inexpensive: The cheaper copies are, the more likely you are to make multiple copies, which in turn will increase the odds that at least some will survive.

The media must be ubiquitous: If everyone uses the medium now, chances are better that someone will be able to use it in the 22nd century—or at least later in this century.

The media must be robust: It needs to survive for decades.

CD-Rs, DVD-Rs, and DVD+Rs meet the first four criteria, but—despite various claims of longevity based on laboratory aging—no one knows how robust they'll be in the long run. Representatives of leading data-recovery companies DriveSavers and Ontrack told me that they occasionally see optical discs with symptoms possibly related to age and poor manufacture, but that it isn't a common problem.

Your best bets among optical discs are relatively expensive archival discs such as Delkin's Archival Gold (find.pcworld.com/63526), Kodak's Gold Preservation (find.pcworld.com/63523), and MAM-A's Archive Gold (find.pcworld.com/63525). The makers of these discs claim to use higher standards for them than for run-of-the-mill data discs; and all use gold rather than silver in the disc's manufacture to increase longevity (see find.pcworld.com/63528). But archiving concerns extend to other issues such as whether the file format will be readable in 50 or 100 years. Your chances are better if you stick to popular formats such as .jpg, .mp3, .doc (but not .docx), .txt, .html, and .pdf. And the more formats you can save the file in, the better.

You should store the discs in jewel cases, upright, away from direct sunlight, humidity, and extreme temperatures.

Another possibility is to burn a copy to Blu-ray Disc. Blu-ray doesn't yet enjoy the same reach that DVD and CD have, and it remains pricey (about \$25 for a 50GB disc). But Blu-ray far exceeds DVD and CD in capacity, and the format is gaining acceptance rapidly. Only Buffalo, LG, and Pioneer market

Blu-ray burners today, but LG's NAS NB41 (find.pcworld.com/63527) packs four drive bays and a Blu-ray Disc burner.

With a little luck, your great-grandchildren will enjoy your mementos from the early days of digital photography.

Strategy 7 Back Up the Backup

- **GOOD FOR:** Your documents (including recent documents), application data, media files, and heirlooms, and the system as a whole
- **FREQUENCY:** Daily
- **RECOVERY FEATURES:** Not applicable, since this is just a copy
- **AUTOMATIC OFF-SITE STORAGE:** No

You should never have only one copy of anything, including your backup. Multiple backups add to your protection.

If you follow more than one of the strategies above, you'll have multiple backups. For instance, the image backup you create to protect Windows and your applications adds supplemental data protection.

I endorse having more than one image backup, as well. Archiving your digital heirlooms introduces additional copies of files that should also be part of your regular, daily backup routine.

A few other options deserve mention.

A NAS drive such as the Synology DS209j permits you to back up your backup. You can plug an external USB drive into the DS209j and back everything up on it. Taking this step is essential if you use the NAS drive to store shared media that is

unavailable on your local PCs, but it's a good thing to do even if you're simply backing up the backup.

You can use different backup programs and media to cover yourself in interchangeable ways. For instance, you might back up to an external hard drive with one program one day, and over the Internet via a service like Mozy the next.

You should protect immediately important files (as opposed to long-term important ones) as you go, by e-mailing them to yourself—preferably to an account that you access via the Web—as you work. For instance, I just now used Microsoft Word's Mail To feature to e-mail this article to my Gmail account. It will stay on Google's server until I delete it.

Get in the backup habit, and you'll be glad you did. Avoid backing up, and you'll eventually regret it. ●

Strategy 7 For backing up your backups daily, an external NAS drive such as these from Seagate (below left) and Western Digital works quite well.



Here's How

Ditch Cable and Satellite for Free Internet TV

Between Internet video and over-the-air broadcasts, you can save big bucks on TV entertainment.

BY LINCOLN SPECTOR

YOU PAY A hefty cable or satellite TV bill each month—but what do you get for that money? A lot of stations you don't watch, interspersed with a few you like, containing entertainment that you can also find on the Internet. In fact, between the Net and old-fashioned, over-the-air broadcasts, you may have little reason to keep spending money on extra stations.

Of course, dumping your cable or satellite TV setup has some potential drawbacks. For one thing, you might not get good over-the-air signals in your area. If your cable company also supplies your Internet access, dropping the cable means losing the discount for two services from one provider. And you'll have to make some up-front investments in your new setup before you can start saving money. But for a lot of people, those investments will be more profitable than stocks bought two years ago.

To approximate your cable or satellite experience, you'll



THE BELKIN POWERLINE AV+ Starter Kit has the basic hardware you need to transmit TV signals through your home's electrical wiring.

need a digital video recorder that can receive over-the-air broadcasts (in the world of digital broadcasts, you can't time-shift with a VCR), and a device for sending Internet video to your TV set. In the pages that follow, I'll describe three strategies for acquiring these capabilities.

Getting Entertainment Into the Room

First, however, you'll need to have an Internet signal in the same room as your television; and you'll need a TV antenna as well. See find.pcworld.com/63458 for anten-

na purchasing suggestions.

Now, about the Internet connection: If you're thinking "No problem, I have Wi-Fi," think again. Most Internet-capable entertainment devices use ethernet,

not Wi-Fi, and for a good reason: Wi-Fi isn't always reliable enough for video, especially in high definition, and especially if your TV is located far from the router.

That's why I recommend Powerline AV, a standard for sending network signals over your home's existing AC power wires. I tried Belkin's Powerline AV+ Starter Kit, and found it ridiculously easy to set up. It really is plug-and-play. You can find the Starter Kit for about \$140 if you go bargain hunting. See find.pcworld.com/63460 for more information.

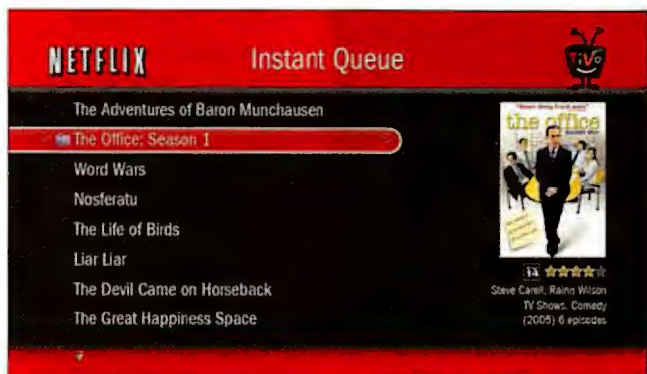
First Strategy: A DVR With Internet Access

Here's the simplest solution: You buy a set-top DVR box, plug the device into your antenna, Internet, TV, and power outlet, and it's ready.

Your choices are limited, however. Only two companies make DVRs that can



THE INTERNET-CONNECTED TiVo HD digital video recorder delivers great entertainment for about \$250 plus a \$13-per-month subscription.



IF YOU ARE a Netflix subscriber, the TiVo HD DVR gives you quick and easy access to instantly viewable TV programs and movies.

receive over-the-air broadcasts, and only one of those, TiVo, produces DVRs that can use the Internet for more than updating firmware.

I looked at the TiVo HD (find.pcworld.com/63461), the lowest-cost DVR that meets the requirements. You can find one for about \$250, but that price comes with a big caveat: The device won't work without a \$13-per-month subscription fee. Though that amount is a lot less than what cable costs, it still seems counterintuitive to pay a monthly fee to avoid paying a monthly fee. TiVo offers other payment options, including \$400 for a lifetime subscription.

The TiVo HD is a fine recorder that provides an easy-to-use interface and powerful search capabilities. It also serves up an impressive selection of Internet-based entertainment. If you subscribe to Netflix (yes, another subscription), you can choose TV shows and movies from the Watch Instantly collection. Pay-per-view options include choices from Amazon Video On Demand, Walt

Disney Studios, and the arthouse-oriented Jaman. The free fare includes YouTube, which TiVo unfortunately displays full screen. (YouTube on a 50-inch HDTV is an ugly sight.)

For good or for ill, you can't get your daily dose of Keith Olbermann or Bill O'Reilly, because TiVo does not stream MSNBC or Fox News. No matter how many video services TiVo supports, it can't support all of them.

Second Strategy: A PC

On a Windows PC, you can watch video streaming on the Internet. And if you install a TV tuner on that computer and connect your antenna to the tuner, you have a DVR.



WINDOWS VISTA'S MEDIA Center offers capable DVR functions, electronic program guides, and lots of other features, all in an elegant interface.

Three different versions of Windows—XP Media Center Edition, Vista Home Premium, and Vista Ultimate—carry acceptable DVR software.

In fact, a system with Vista's Media Center rivals a TiVo as a self-contained entertainment box. In addition to the DVR functions, a Media Center PC gives you Netflix, lots of radio stations, sports, and news from (of course) Microsoft subsidiary MSNBC. But unlike with a TiVo, you can close Media Center and watch unsupported video in your Web browser—even video that requires Java, Flash, or Silverlight.

Of course, if you don't have a sufficiently powerful spare PC hanging around, you'll have to purchase one (although you won't need a monitor). And properly setting up the PC is more difficult than plugging in a TiVo.

First, you have to hook the computer up to the TV. See "Connecting Your PC to Your TV" on the next page.

Second, you need a tuner. If you want to record two

shows at a time, you'll need to have two tuners. I like Hauppauge's WinTV-HVR 950Q, a simple USB-based tuner that works. USB tuners have a couple of advantages: You don't have to worry about whether your motherboard has PCI or PCI-e slots, and you don't have to open the PC's case. If you shop around, you can find the 950Q for about \$70.



HAUPPAUGE'S WINTV-HVR 950Q is a simple USB adapter that gives your PC the ability to tune in to TV broadcasts.

The 950Q comes with a remote, but it's a chintzy little thing—I hated it. Better remotes are available; Hauppauge sells a large, comfortable, Microsoft-certified Media Center remote for \$30, and you can find others easily on the Web. In fact, Hauppauge used to bundle the 950Q with that better

remote as the WinTV-HVR-950Q Windows Media Center Kit. The company no longer makes the kit; but as I write this, you can still find it at Hauppauge's site (find.pcworld.com/63462) for \$100.

Third Strategy: A PC and a DVR

What if you don't have a spare computer to use as a DVR, and you don't want to spend \$500 for >>

Here's How

a new one? You can buy a DVR for time-shifting broadcast TV, and plug your PC into the TV set—and into the closest ethernet outlet—to watch video from the Internet. (This is easier to do with a laptop than with a desktop, obviously.)

Since in this setup you won't need the Internet features that TiVo offers, you can save money and instead buy the only other DVR capable of receiving over-the-air broadcasts, the DTVPal DVR (www.dtvpal.com). Like the TiVo HD, the DTVPal costs about \$250 if you do some hunting, but it imposes no subscription fee—buy it, and it's yours.

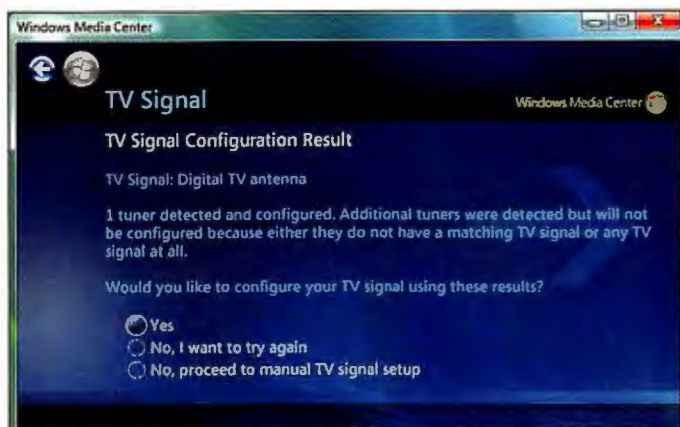
If you're currently a Dish Network subscriber, the DTVPal will feel familiar (Dish Network owns it). The remote, behavior, and menus are nearly identical.

But there's a price to having no subscription. The unit's electronic program guide is limited to the information that stations broadcast with their digital signals, and that means you can see only what will be playing for the next 12 hours or so. That imposes a pretty serious limit on searches.

As for the other half of this two-part setup—your PC—the only potential difficulty is getting the computer's signal to the TV. Read on.

Connecting Your PC to Your TV

Depending on what ports are present on both your PC and your TV, connecting them can be difficult or impossible. Check the back of



WHEN YOU PLUG one or more TV tuners into your PC, Media Center will detect them and walk you through the process of configuring the signal.

the devices, and keep your fingers crossed. If you have any of the following matches, you may be in luck.

Both have HDMI: You should be all set. A single cable will carry a great, high-definition image and powerful sound from the PC to the TV set. You may have to change Windows' audio-output device setting to HDMI.

Both have VGA: Of course your PC has this standard

video port, and your HDTV probably has it, too. But just because an HDTV has a VGA port, that doesn't mean the set can produce a decent-looking image from it. Try it out, and check your TV's manual for instructions.

Even if the picture looks good (and with a newer HDTV, it probably will), you'll still have an audio problem. VGA is a video-only signal, and I have yet

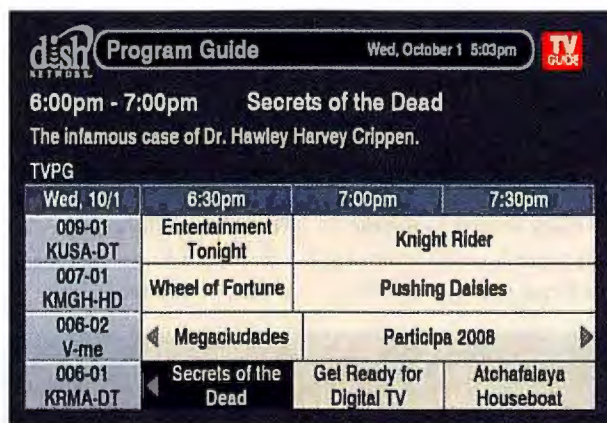
to see a TV with audio inputs matched to the VGA port. The solution: Find another set of speakers to plug into the PC, or connect the PC to your stereo system. Doing so may require attaching a Y-adaptor audio cable with a 1/8-inch stereo miniplug (like the one on your headphones) at one end, and two standard RCA audio connectors at the other.

Computer has DVI, TV has HDMI: You can purchase a DVI-HDMI adapter at any electronics store for only \$10 to \$20. The resulting output will look terrific, since the video portion of an HDMI signal is identical to a DVI signal. You'll have the same audio problem as with VGA—but fortunately, the same solutions will work.

Both have S-Video: The result won't be HD quality, or even DVD quality. But it will work; and unlike the connections above, even your pre-HD set probably has an S-Video input.

Anything else: Outside of upgrading your PC's video card, you likely don't have an option. You can buy adapters to convert VGA to common television inputs, but the expensive ones look lousy and the cheap ones simply don't work.

You have additional alternatives for bringing the Internet to your television. Some HDTV sets and Blu-ray players come with Internet connectivity and support Netflix, YouTube, and other entertainment providers. See find.pcworld.com/63463 to learn about them.



THE DTVPAL DVR comes with a Dish Network program guide, but it's limited to the next 12 hours' worth of schedule information.

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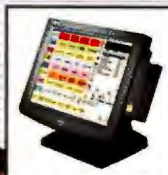
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Be More Productive in Microsoft Outlook

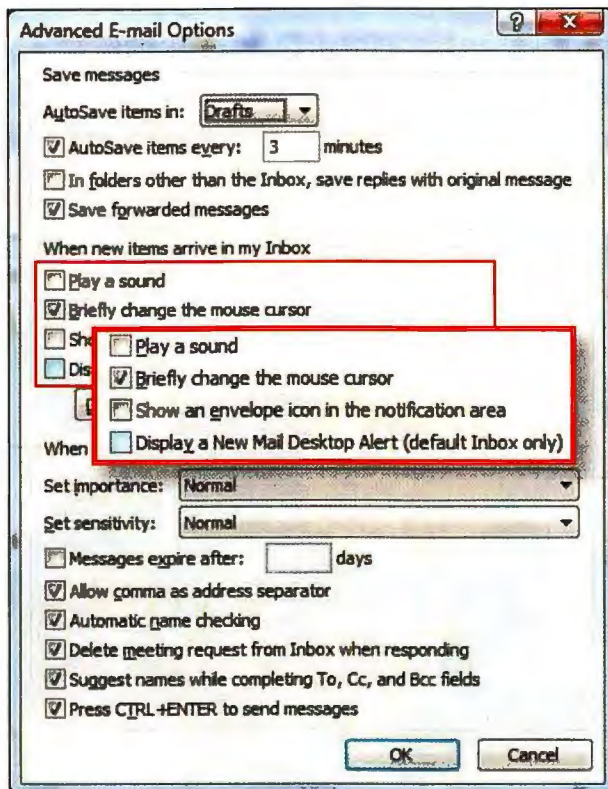
Learn how to turn off new-message alerts, modify the subject lines of archived mail, and use Twitter within Outlook.

DO YOU FIND Microsoft's Outlook annoying? Join the club: Thousands of Outlook users are lobbying Microsoft for improvements in the next version. In the meantime, read on for a few tips and tools that will make you more productive, right now.

Turn Off Disruptive New-Message Alerts

Wait, turn off Outlook's you've-got-mail alerts? Why on earth would you want to do that? In a word: productivity. New e-mail messages are constantly flowing into your inbox all day, and by default Outlook alerts you to the arrival of each and every message. Though that certainly seems appropriate, the end result isn't much different from a coworker's popping his head into your office every 5 minutes to ask some trivial question. Talk about productivity-killing interruptions!

Consequently, you may want to try life without those new-message alerts—and disabling them is easier than you might think. Choose **Tools•Options**, click **E-mail Options**, and then select **Advanced E-Mail Options**. In the resulting window, you will need to uncheck four boxes: *Play a sound*, *Briefly change the mouse cursor*, *Show an envelope icon in the notification area*, and *Display a New Mail Desktop Alert*.



DISABLE OUTLOOK'S PRODUCTIVITY-KILLING new-message alerts by unchecking four items in the Advanced E-mail Options window.

notification area, and *Display a New Mail Desktop Alert*. Then click **OK**, and you're done.

Outlook will continue to fetch (or receive) your new

e-mail messages at regularly scheduled intervals, of course, but it will do so without subjecting you to the usual interruptions. In

other words, you can now review your inbox on your schedule, not Outlook's.

Edit Subject Lines

Let's look at another e-mail annoyance: Subject lines that no longer match the content of the message.

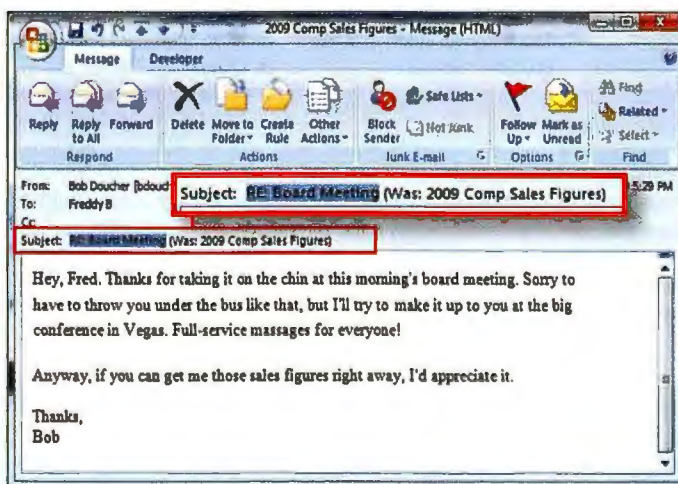
Suppose, for example, that you and some coworkers start exchanging e-mail about the company picnic. Somewhere along the way, the conversation shifts to sales forecasts, at which point a colleague pastes in some new figures. Now it's a message you want to keep for future reference. Just one problem: The subject line still reads 'Company Picnic'.

Fortunately, Outlook has a hidden feature that lets you edit an e-mail's subject line. In Outlook, open the e-mail in question. (You can't do this with message previews; you have to double-click the message to open it in a new window.) Click anywhere in the Subject line to place your cursor, and then edit the subject as you see fit. Press **<Enter>**, and accept whatever warning Outlook gives you.

That's it! Now you can file the e-mail message away with a more appropriate (and recognizable at a glance) subject line.

Use Outlook to Access Twitter

If you use Outlook to manage your contacts, calendar, e-mail, and the like, why not use it for all your Twitter activity too? That's the idea behind

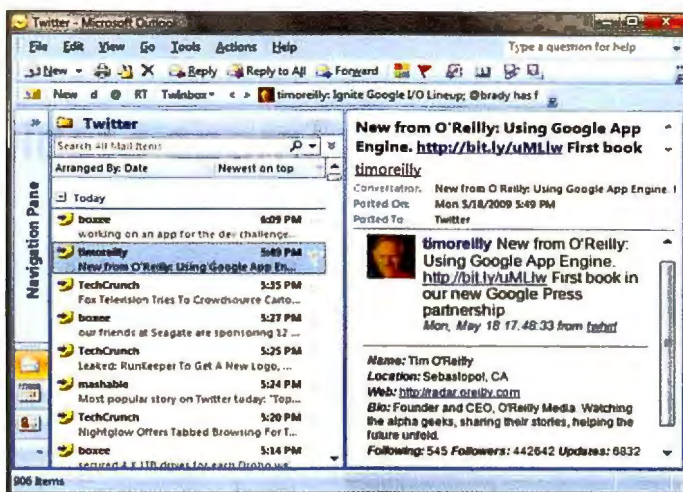


TO CHANGE THE subject line of an e-mail message that you want to save for reference, simply open the message, click in the field, and edit it.

TwInbox (find.pcworld.com/63509), a no-cost plug-in that adds a Twitter toolbar to Outlook.

Once installed, TwInbox places a new folder in your inbox. (It can also make individual folders for each sender, which you might find helpful from an organizational standpoint—unless you follow lots of people.)

From there you just supply your Twitter user name and password, and presto: The plug-in fetches all the tweets from your account and lets you read



THE FREE TWINBOX plug-in brings Twitter to Outlook, showing you all of the tweets from your account and allowing you to post your own updates easily.

them just as you read e-mail.

A click of the toolbar is all you need to do to send out an update, to send a direct

message, to reply to a message, or to retweet something. TwInbox automatically shortens any long Web

addresses via TinyURL.

The toolbar also shows you a preview of new tweets as they arrive, which saves you from having to switch over to the tweets folder every time you want to check for updates.

In short, TwInbox is a terrific little utility, and it's a must-have tool for any Twitter-loving Outlook user. I do wish that it could handle more than one Twitter account, but I can't argue with the price: TwInbox is free.

—Rick Broida

LINUX LINE

How to Run Your Windows Applications in Linux

WINE IS AN open-source project that offers the ability to run Windows programs under Linux (or any other open-source OS). Finally, a chance to run Windows apps for which there are no open-source equivalents—Quicken, or Flash CS, say. And all those games! To get the most out of Wine, however, you need to hack. Often, getting Wine to deliver is a black art, and not for novices.

Installation wizards can help. Some are commercial, proprietary projects. If you'd prefer something open-source and free, try Wine-Doors. Below are installation instructions, for Ubuntu 9.04.

Before installing any Wine application, though, it's a good idea to install the Microsoft Core Web fonts (Arial, Times New Roman, and so on), which many Windows apps expect. You can install them either by copying the .ttf files from a Windows installation or by installing the msttcorefonts package. Fonts that are not in this package, but which some applications might need, include Tahoma and MS Sans; you can find them on the Web. To import fonts from Windows, find them in the C:\windows\fonts directory. Copy all of the .ttf files to a USB memory stick, create a folder in your /home directory called .fonts (note the period), and place them there.

Installing Wine-Doors and Windows Apps

Open *System Administration*•*Software sources*, and click the *Third Party* tab. Click *Add* and type `deb http://ppa.launchpad.net/wine-doors-dev-team/ppa/ubuntu intrepid main` on one line.

Click the *Close* button and refresh the repository listings when prompted. Afterward, use Synaptic to install the Wine-Doors package. (Note that you can install the GPG key if you wish, which will avoid any harmless errors about unsigned packages.) Wine-Doors will appear on the *Applications*•*Wine* menu, which is where you'll



ONCE YOU'VE INSTALLED Wine-Doors, it gives you a list of popular Windows applications, and installing them takes just a few clicks.

also find any Windows applications you install in the future.

When Wine-Doors starts for the first time, you'll need to fill in your name and company details, information that will be used when you're installing Windows apps. Optionally you can tick the *I Have a Windows License* box (only if that applies to you, obviously) in order to install certain Windows system components and add-ons.

When you click *Proceed*, Wine-Doors will update itself with the latest list of installation scripts, and then show you a list of applications and games. Click the *Install* link alongside anything you want, and then click *Apply*. With any Wine installation, you'll find your apps in the .wine/drive_c directory of your /home folder.

—Keir Thomas

Mastering Your Camera's Image Stabilization

IMAGE STABILIZATION technology has enabled digital photographers to get dramatically sharper photos without hauling a tripod. But it isn't obvious how to use a digital SLR's image-stabilized lens—after all, the fact that the feature has an on/off switch implies that you shouldn't leave it on all the time. (For lens basics, see “Demystifying Lenses” at find.pcworld.com/63497.)

When shopping for digital SLR lenses, you may have noticed that image stabilization goes by different names, usually either IS (among Canon lenses) or VR (for Nikon). But the lenses tend to work the same way: Motion sensors in the lens generate feedback that tells optical elements to compensate for small movements, like the sort that you make



LENSES WITH IMAGE stabilization, such as this Sigma lens, contain sensors that help compensate for small movements.

when you hold a camera.

Some cameras have image stabilization built into their body instead of the lens. The basic idea is the same, but the key difference is that motion sensors direct the camera's image sensor rather than optics in the lens. The advantage here is that you

need to buy the expensive stabilization hardware only once, instead of in each and every lens.

The motion sensors are a little too sensitive for 24/7 operation, however. If you mount a camera with stabilization on a tripod or secure it to some other stable support, turn the function off. (The switch should be on the lens, or, if the feature is built into the camera, on the body.)

What happens if you don't? The motion sensors tend to interpret artifacts in the data (such as digital noise) as motion, and thus send instructions to the image sensor to compensate. That produces an effect sometimes called *ghost motion*, an introduction of blur into a photo that would otherwise have been sharp.

You can tell whether the

image stabilization is doing its job when you press the shutter release down half-way; the viewfinder image should appear to “freeze” as the system dampens the normal jitters of your body.

Disable One Axis

You might be able to exert even more control over your image-stabilized lens. Some lenses provide Active and Normal modes.

Active mode is good for counteracting ordinary jiggles, both vertically and horizontally. If you're trying to pan a moving subject, however, switch to Normal mode, which adjusts for vertical vibration while allowing for the side-to-side motion you wish to capture. Various lenses are marked differently, so check your user guide for details about the lingo on your particular lens.

—Dave Johnson

ANSWER LINE

ASK YOUR QUESTION AT FORUMS.PCWORLD.COM

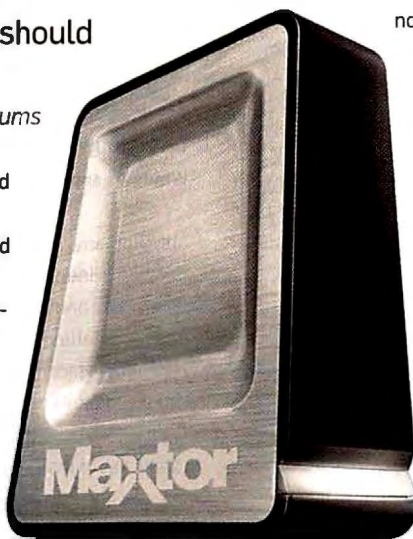
What size external drive should I buy for backup?

—Carperl, via the PCW forums

WHEN PEOPLE TALK about the “size” of a hard drive, they generally mean its capacity—how many gigabytes of data it holds. But you should also consider the device's physical size.

External hard drives come in two basic physical sizes: portable and desktop. Portable drives are light, generally the size of a small liquor flask, and capable of drawing power from the computer's USB port. Desktop drives are larger and inconvenient to carry, and they need separate AC power.

On the other hand, desktop drives tend to be faster, more capacious, and less expensive than portables by the gigabyte, if



SOME EXTERNAL DRIVES, like Maxtor's One Touch 4 Plus, can hold up to 1TB of data.

not by the drive. For instance, as I write this, \$100 can buy you either a 500GB portable drive or a 1TB desktop one.

If you want to take the drive with you on the road, go for a portable. If you want to back up massive amounts of high-def video, you'll want a desktop model. Otherwise, weigh the factors and consider your needs. Personally, I prefer portable drives for backup, even if I don't travel with them, because I can hide them after backing up and lessen the likelihood that a burglar will take both my PC and my backup.

Now, about capacity: Go with the drive that can hold about 25 percent more than the source drive you'll be backing up from. With that much space, you'll be able to do a full backup and many incremental ones.

—Lincoln Spector

Type Less to Save Time

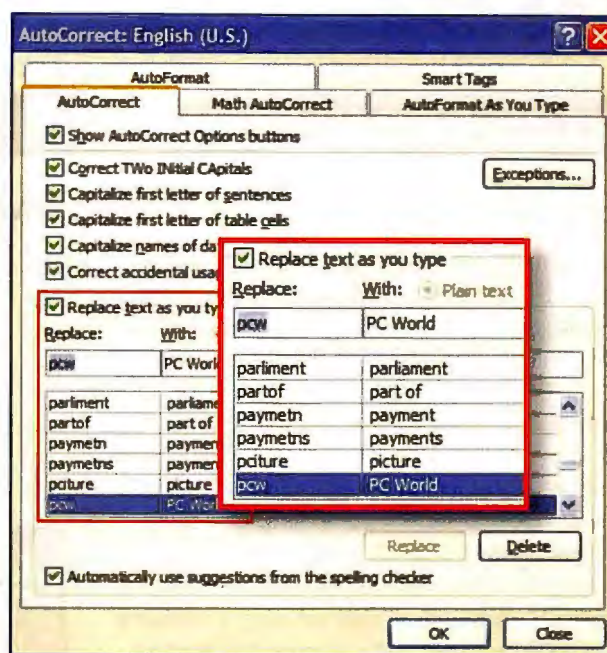
IF YOU NORMALLY regard Microsoft Word as little more than a digital typewriter, you are not taking advantage of the word processor's time-saving features. Sure, it's easy to lose track of Office's seemingly endless abilities and just concentrate on churning out text. I know I do. But one simple feature in Word—AutoCorrect—can regularly save you some time, making you a faster typist and helping you get more done over the long haul.

Similar to T9 texting on mobile phones, AutoCorrect expands your shorthand to produce common words or phrases. Start by identifying things that you commonly

enter in your line of work, and then add those terms to Word's preferences.

For instance, I'm always typing tech terms, so I save a few keyboard strokes by having AutoCorrect expand "nb" to "netbook" or "dt" to "desktop." As an example, I'll show how to turn "pcw" into "PC World."

Within Word, click the Office button in the upper left, and pick *Word Options*. Choose *Proofing*, and click *AutoCorrect Options*. Now, in the AutoCorrect tab, enter your shorthand in the Replace box and the full term in the With box—pcw in the former and PC World in the latter, in this case. Click *Add*.



MICROSOFT WORD'S AUTOCORRECT feature can save keystrokes. Just set up shorthand terms and tell Word how to replace them.

Leave the other settings as they are, and simply add more terms that you typically type. Click *OK*. Now, when-

ever you type pcw and press the spacebar, Word expands it into "PC World." Neat.

—Zack Stern

ANSWER LINE

? I deleted an unwanted Windows log-on, but it's still the default at boot-up. How do I fix that?

—Marshall Alperin, via e-mail

ALPERIN WAS FOLLOWING my advice in "Create a Fast Boot Option" (find.pcworld.com/63495), wherein I described how to accelerate Windows startup by making a second user account to which Windows boots automatically. When that approach seemed not to work and Alperin decided not to keep the new log-on, he deleted it in Control Panel, but to no effect.

First, I'm sorry that the fast-boot tip did no good, for one reader, at least. Without knowing what's slowing down a PC, I can't guarantee that removing user-specific autoloaders will fix it.

I'm even sorrier that my advice appears to have messed things up. Let's see what we can do about that. In the fast-boot tip, I included more than just the suggestion to create another user log-on. I also described how to tell Windows to launch that log-on by default—without even stopping to ask for a password. Now, with the account's having been deleted, Windows is left with mixed signals; it's trying to boot automatically to a "user" who no longer exists.

To fix the problem, select *Start*, type **control userpasswords2**, and press **<Enter>**. In the resulting window, check *Users must enter a user name and password to use this computer*, and then click *OK*.

If you'd rather log on automatically (not to the fast-boot account,

ASK YOUR QUESTION AT FORUMS.PCWORLD.COM



TO STOP WINDOWS from booting up by default to a deleted secondary log-on, check this box in the User Accounts window.

of course), after checking *Users must enter a user name and password to use this computer*, select your preferred log-on and then uncheck that option again. Click *OK*. If it prompts you for your password, enter it; if you don't have a password, leave the field blank.

—Lincoln Spector



RICK BROIDA'S HASSLE-FREE PC

Simple Fixes for a Trio of Windows Annoyances

FEW THINGS ARE more irritating than starting up your computer only to be greeted by an obnoxious, incomprehensibly vague error message. Fortunately, I have a fix for this common problem, as well as advice for dealing with two other everyday PC hangups.

Resolve Startup Error Messages

Reader Randy told me about a vexing problem: Each time his machine booted, it produced an Internet Explorer window that declared: 'Cannot find "File:///". Make sure the path or Internet address is correct.'

Automated instructions like that can be seriously annoying. My guess is that Randy had recently installed or uninstalled a program on his computer that Windows was looking for—but couldn't find—during startup.

The solution is to use a startup monitor that shows everything attempting to run during the boot process so that you can determine which IE-related item is the offender—and then disable it.

If you're reasonably tech-savvy, I recommend using the free utility Autoruns (find.pcworld.com/59017). After running it, click the *Logon* tab and look for any entries that point to *iexplore.exe*. If you find one, clear its check box and reboot. Obviously this may involve a little trial and error, but ultimately it should solve the problem.

A similar, but simpler, approach is to run Windows' built-in *Mscconfig* utility, click the *Startup* tab, and then peruse the Command column (which you may have to enlarge for full visibility) for entries containing *iexplore.exe*. If you find one, clear its check box, click *OK*, and reboot the machine.

Take Control of Your PC's Power LED

Reader Shawn wrote in with this power pickle: "I have a Dell Studio Laptop. When I turn off my computer, the power-button light stays on and blinks. The only way I can stop it from blinking is to disconnect the battery and then connect it again. Please help."

Sound familiar? If your laptop exhibits similar symptoms, I have a pretty good idea of why it's happening: You're using the laptop's power button to shut down, but doing so is merely putting the computer into standby mode. That would explain the blinking LED.

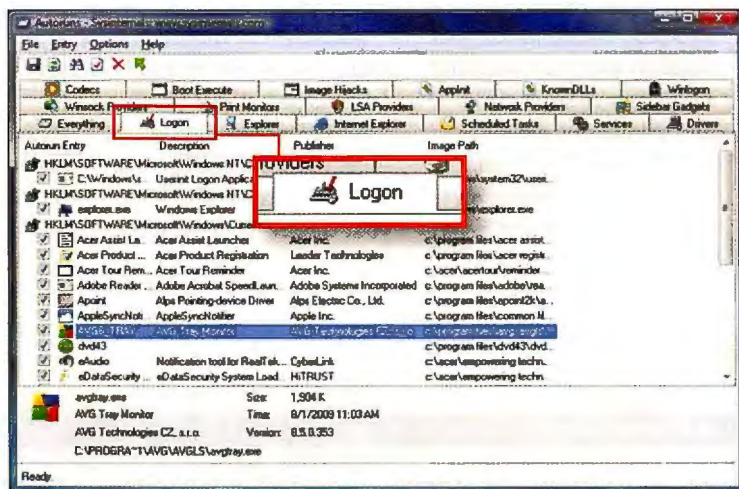
You have two easy ways to address this. First, you can click the *Start* button, mouse over the arrow at the bottom-right corner of the *Start* menu, and then click *Shut Down*. (What's that? You say you've been clicking the power-button icon to the right of the search box? That seems sensible, but the default Windows setting for that icon is the same as for the physical power button: standby.)

Second, you can change the function of your laptop's power button so that pushing it actually shuts down Windows. In Vista, click *Start*, type **power**, and then click *Power Options*. In the left sidebar, click *Choose what the power buttons do*. You should see two drop-

Tackle startup errors, power your laptop PC down completely, and get bigger window views.

down menus alongside *When I press the power button*. One menu lists options for when the laptop is running on battery power; the other, options for when it's plugged in. Choose the setting you want for each scenario. Click *Save changes*, and you're done.

What you should never do is yank out the battery when the power



TO FIND THE cause of a startup error, go to the Logon tab of the free Autoruns utility and look for possible troublemakers among the list of startup items.

LED is blinking. That's the equivalent of turning off the PC without letting Windows shut down properly, which can cause problems.

Oh, and in case you're smacking your forehead over this, don't worry: It's a mistake anyone could make. I mean, it seems only logical that a power button should turn off the power, right?

Switch to Full-Screen View in Applications

Monitor space is a terrible thing to waste, yet most folks sacrifice valuable screen real estate to omnipresent toolbars, which appear in Web browsers, word processors, and other applications. If you'd rather expand your software so that it fills the screen, learn the following handy keyboard shortcuts:

Chrome, Firefox, and Internet Explorer: Press <F11> to toggle the browser's full-screen mode.

Google Docs: <Ctrl>+<Shift>+F turns off the Google toolbars; <Esc> restores them. You can also use the <F11> trick here.

iTunes: <Ctrl>+F enables full-screen mode when you're in Cover Flow view (and it looks cool that way); <Esc> restores standard view.

Excel and Word: Press <Alt>+V, and then U to enable the application's full-screen mode. <Esc> gets you out of it.

Windows Media Player: While you're in the Now Playing view, press <Alt>+<Enter> for full-screen mode; press <Esc> to return. ●

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MashUp*

*NOT A REAL PRODUCT...YET

Multifunction Makeover

THE PITCH

Combining print, copy, and scan features (and sometimes fax), MFPs are great for small or home offices. Our dream multifunction printer mimics the slick style of Samsung's SCX-4500W monochrome laser, but adds an automatic document feeder (for multipage scans/copies) and extras—both real and imagined. (If you're interested in real-world MFPs, read our reviews at find.pcworld.com/63537.)

MULTIPURPOSE DISPLAY

The HP TouchSmart Web's 4.33-inch touchscreen interface is the best we've seen—so we've reproduced it here. Our display, however, is a detachable, optional extra that triples as a digital photo frame, a VoIP Wi-Fi phone, and a miniature PC display. We'd also provide apps for touchscreen smartphone owners to control the printer with their cell phone.

CONNECTIVITY

Print via a wide-format media card reader, a PictBridge USB slot, Bluetooth, Wi-Fi, ethernet, and maybe even USB 3.0.

WHAT WOULD YOU WANT?

Go to find.pcworld.com/63535 and brainstorm with us.

DVD WRITER

An optional laptop-style modular DVD writer would be easy to install and replace. You could use it to print photos from (and burn files to) discs, and it could act as an external drive for any computer or network the printer is linked to.

WEB FEATURES

We like HP's TouchSmart Web printers, which have PC-less access to apps from Google Maps, USA Today, and others. We'd add Web browsing, uploads/downloads, and more.

INKJET/LASER HYBRID?

If lasers print better text and inkjets make superior photos, why hasn't anyone combined them? And we're still waiting for MFPs with 60-ppm Memjet page-width print-heads. Either way, we'd demand third-party ink support.

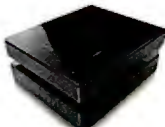
PARTS LIST



Photosmart Premium | HP

What we took: Touchscreen, Apps Studio, Wi-Fi, media card slots, fax.

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SCX-4500W | Samsung

What we took: Beautifully designed monochrome laser-multifunction with Wi-Fi.

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MFC-990CW | Brother

What we took: Touchscreen, telephone handset, automatic document feeder, Bluetooth.

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Home Office Concept | Memjet

What we took: Concept in development has page-width print-heads for blazing 60-ppm speed.

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