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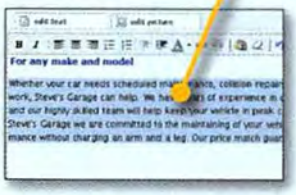

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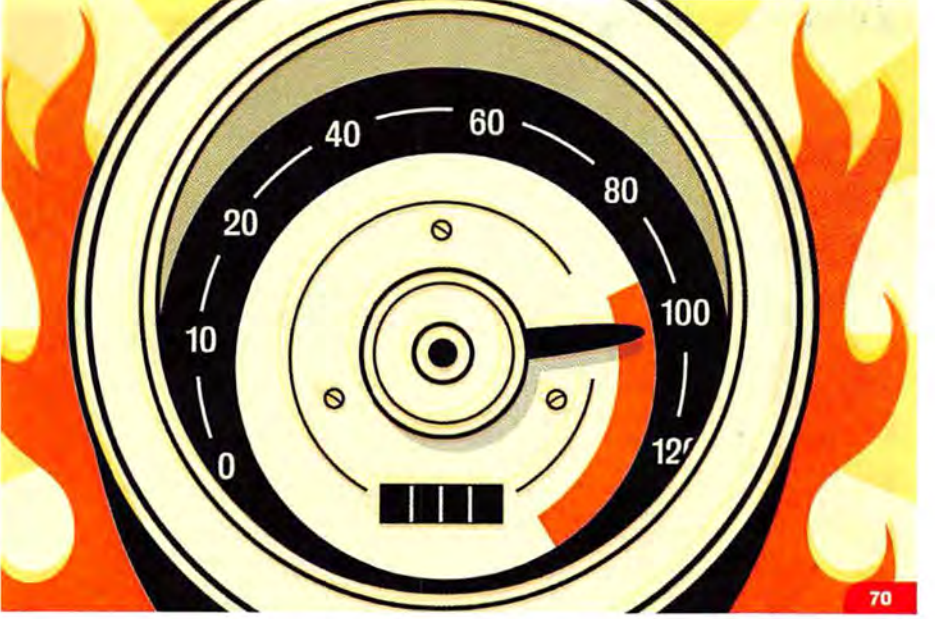

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Hedging Our Bets on the Future of Tech

Don't worry: If AR, 3D TV, USB 3.0, or 802.11*xx* don't pan out, we have a whole new set of acronyms to pep up the new decade.

THE PREDICTION GAME is a risky business. Even the best-informed folks—armed with empirical research, statistical models, and a brainful of relevant factoids—can go horribly awry. Whether you're a professional soothsayer, a stock picker, or a tech journalist, the future is simply hard to foresee.

I like to point out, for example, that I correctly predicted that the Yankees would win the World Series this year, which should give me bragging rights. Then again, I've been making that same prediction since 1976. For the record, that leaves me at a meager 7 for 34—not nearly so impressive.

Nonetheless, January puts us in a forward-thinking frame of mind. So with the calendar flipping its pages to a new decade, veteran tech journalist Glenn Fleishman has forged ahead with some highly educated guesses on four technologies that will shake up the world (see "Breakthrough Tech," page 89).

Fleishman's task wasn't easy: He and his editor, *PC World*'s Mark Sullivan, spent weeks combing the literature, consulting with experts, and debating possibilities with anyone who would listen as they whittled their lengthy list down to a compact little quartet. I encourage you to take a look, since augmented reality (AR), 3D TV, USB 3.0, and video streaming over Wi-Fi are all likely to be game changers over the coming few years.

Second-String Predictions

But what about the promising innovations that failed to make Glenn and Mark's final cut? Some of them may fizzle. Others, though, could win the hypothetical Tech World Series. So as a public service (and in order to hedge our bets in the crystal ball sweepstakes), let me fill you in on four more technologies worth watching. If any of these developments turn into the greatest thing since Tim Berners-Lee first uttered the letters "www," remember where you heard about them first.

(1) SED TVs: Also known as surface-conduction electron-emitter displays, these devices are the love child of the CRT and the flat panel, promising great response time and contrast (the CRT part), plus compact size and light weight (those attractive flat-panel genes). In addition, SEDs use less power than comparably sized conventional flat panels do. Although manufacturing is proving tricky, a bunch of companies, including prime proponent Canon, are working hard on bringing the technology to market, so stay tuned.

(2) Light Peak: It's hard to get excited about a data port and cable, but this technology is making me rethink my position. A standard reportedly being introduced by Intel in 2010, Light Peak can move data along a beam of light at a giddy 10GB per second. If widely adopted, a single Light Peak cable and interface could replace the welter of wires and ports (USB, FireWire, and so on) cluttering your desktop. If it doesn't take off, I'm betting it could double as an awesome glow stick at concerts.

(3) 4G Networks: Given the absurdly long time that it took for 3G to arrive in the United States, I'll forgive skeptics who think that a full-scale fourth-generation wireless rollout is still a number of years away. The 4G spec calls for a 100-megabits-per-second data rate and a more reliable connection, resulting in faster, more-robust access to online content. I can hardly wait—though I'm betting that I will have to.

(4) HTML5: The latest version of the Web's venerable markup language is already supported in several browsers, and is clearly destined to be a big deal. Loaded with tempting goodies (local storage and drag-and-drop among them), HTML5 also takes aim at third-party plug-ins like Flash that you currently must download and continuously update if you want to have a rich browsing experience. With HTML5 you'll have greater interactivity and cooler Web apps right out of the box. It's not quite final yet. But then again, this is an evolving standard, so it never may be.

Finally, while I'm at it, I have one more prediction that I feel relatively confident about: The New York Yankees will win the World Series in 2010—as well as in 2011, 2012, 2013... ●

Steve Fox is editorial director of PC World.

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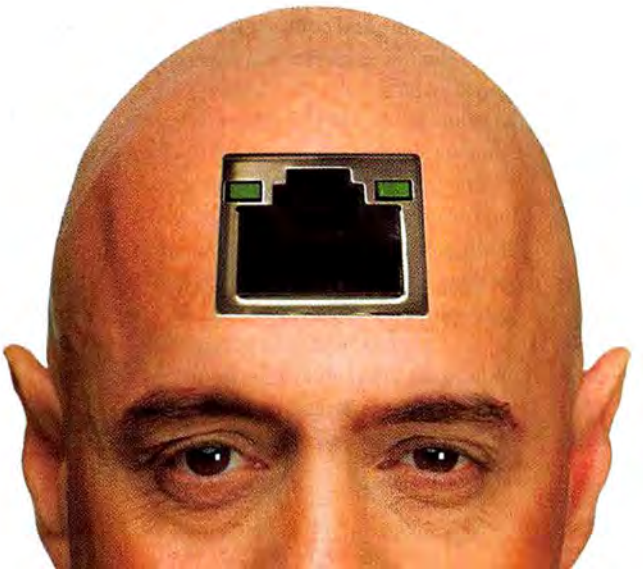

PCW Forum

November's special issue on Windows 7—and related stories on our site—generated a host of reader responses. What's your opinion of the OS? Go to pcworld.com/topics/windows.html for our Windows coverage and add your views to an appropriate article. Here is a sampling of the comments so far.

Windows 7: Readers Skeptical

I just finished reading the November issue's coverage of Windows 7. I was particularly interested in (and disappointed by) the performance ratings of Win 7 as compared with everybody's favorite whipping boy, Windows Vista.

What I'd really like to see is how this initial release of Windows 7 compares with the original release of Vista. I watched the performance of Windows XP degrade through service packs 1, 2, and 3 and all of its security patches (for those people who don't remember, the initial release of XP was remarkably quick). And I've seen the performance of Vista follow a similar trend. One can only assume that 7 will follow its senior relatives in the same manner.

Marvin E. Darter, McAlester, Oklahoma

While your review of Windows 7 demonstrated the failings of Vista, it didn't show any significant advantage of Win 7 over Windows XP. Since most of us are still on the latter, it would have been helpful to compare Windows 7 with XP. So far as I can tell, there aren't any real improvements. Sure, things are rearranged, but is that worth a couple hundred bucks?

William Runkle, Phoenix

Your November article on Windows 7 neglects to address the big question faced by millions of XP users who eschewed Vista: How much will it slow down our hardware? You ran extensive speed tests comparing Windows 7 against Vista, but how about XP? Maybe you've provided enough evidence to convince many Vista users that the upgrade is worthwhile, but there's little in your coverage that would induce me to give up my XP.

John Lieberman
Huntington Woods, Michigan

For more than six years following the release of Windows XP in October 2001, until Vista's release in January 2007, XP was Microsoft's "state of the art" PC operating system—and all necessary updates to keep it that way were free.

Now, less than two years later, in October 2009, Microsoft releases Windows 7, and suddenly Vista is obsolete.

And what is in Windows 7 that was not promised in Vista? Win 7 should be a service pack update to Vista, or at most require a nominal upgrade cost.

But anyone who purchased Vista prior to June 26, 2009, must pay $120 to $220 to upgrade to Windows 7.

Steve Sobel, Princeville, Hawaii

Regarding your online story on Win 7 upgrade woes (find.pcworld.com/64001): While waiting to see if, or when, I should update my XP machines to Windows 7, I installed Ubuntu Linux 9.0.4 on an old Pentium III box just for the heck of it. Guess what? It found all the drivers, hooked up to my network without a hiccup, can read all my files, and does everything I want with Picasa, GIMP, and OpenOffice.

squirrelpie0, PCWorld.com forums

Cloud Computing

It is disappointing that such an informative article as "Take Your Work Into the Cloud With a Web OS" [*Here's How*, November] did not mention two of the most powerful reasons for people to move to "cloud computing":

1. It disaster-proofs documents, photos, and other records. In an emergency a business can be up and running in just minutes or hours, getting files from someplace else. For individuals, priceless photos and papers are protected.

With a judge saying the feds can search my e-mail [find.pcworld.com/64002], I'm again reminded why I started encrypting it. The government may indeed one day rifle through my mail, but they'll have to unscramble it first.

CJ100570, PCWorld.com forums

2. "Cloud computing" is the natural conclusion to the evolution of the "paperless office," with Web-hosted document storage and applications bringing the entire process once and for all under control.

Randy S. Mitchell, New River, Arizona

Internet-Ready HDTVs

Though more HDTVs are coming with built-in Internet access ["HDTVs, Blu-ray Players Push Expanded Web »

ILLUSTRATION HARRY CAMPBELL

Connections," *Forward,* November], I wouldn't recommend buying such a set. The TV always has been and always will be just a peripheral viewing device.

Gerald Zuckerwar, PCTVCables.com, Ellicott City, Maryland

Sneaky Fees

AT&T, Dish Network, and ADT Security are without a doubt the worst regarding such fees ["Sneaky Fees," December]. Each one has made its monthly statements so complicated that the company's own people can't explain them. The fees seem to change every month or so just to keep you in the dark. I was asked, by a Dish Network rep, why I bothered to complain, because these little fees amount to only $2 here and $2 there. But it all adds up to over $10 per month. With millions of subscribers, that's millions added to the companies' net profit.

oldrooster, PCWorld.com forums

CORRECTIONS

IN DECEMBER'S "PC World 100: The Best Products of the Year," we should have said that the 3M MPro120 Pico Projector delivers 12 lumens of brightness. In addition, we should have listed the vendor of Parallels Desktop 4 (virtualization software) as Nova Development.

Wireless Laptop Charging

In his *Mobile Computing* blog, Darren Gladstone talked about the wireless charging dock for Dell's Z600 (find.pcworld.com/64003).

I have to say that this dock does excite me. The cool thing about it is the direction in which it is taking things: Your peripherals are connected to the wireless base station, and you can connect to your monitor, keyboard, and mouse, wirelessly, from up to 9 feet away. This is truly an awesome move on Dell's part to get behind the technology and push it forward.

At our firm we have a laptop assigned to each member of our staff, and we are starting to evaluate all the options available for turning our laptops into full-fledged desktops. Technology like this will really help. Users can allow their laptop to charge wirelessly and control the dock where their keyboard/mouse and monitors are connected.

Todd McElmurry, Longview, Texas

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Forward

Microsoft Office 2010: An Intriguing Beta

The newest edition of the productivity suite brings various interface tweaks, modest but useful desktop innovations, and integration with minimalist Web apps.

BY YARDENA ARAR

WITH THE RELEASE of the Office 2010 beta, the public finally gets to see how Microsoft plans to deliver on its promises for its flagship productivity suite—namely, integration with lightweight Web versions of core apps (Excel and PowerPoint Web are the first to debut for consumers via Windows Live, with Word and OneNote available only in the business-oriented SharePoint 2010 server beta), better multimedia support, a subtle interface refresh, and features to assist in document creation and sharing.

Suitewide, the most immediately apparent change is the departure of the round Office button. Instead, Microsoft returns to a familiar menu convention: a File tab that brings up a full screen of commands and information. The company calls this screen the Backstage View.

Microsoft devotes most of Backstage View to big panes filled with document-specific items such as editing permissions, links to autosaved versions, file size, and even a thumbnail. (Businesses can customize it to integrate their workflow processes.) It's nice in many ways—the ability to return to previous unsaved versions is especially good—but it can also be a bit disconcerting, since you completely lose sight of the original document (except for the tiny thumbnail).

One of the cooler suitewide changes affects cutting and pasting text. Observing that users often immediately undo a paste, Microsoft engineers have added a paste preview that lets you see the results before you commit to the change (it's similar to the mouse-over previews of font changes and other edits available in the ribbon). You even get to choose between previews that maintain the source formatting, merge with the destination formatting, or remove formatting.

Improved picture-editing tools allow you to preview and apply cropping (and various new adjustments and effects) on the fly as you insert images into documents.

The ribbon interface introduced in the key Office 2007 apps goes suitewide in the new version, with more contextual changes. Other interface tweaks include a new color scheme, with muted grays that make the sky blues of past editions seem almost boisterous, and an orange logo in place of the multicolored one of years past.

Web Applications

Office Web Apps, Microsoft's eagerly awaited answer to Google Docs, Zoho, and other Web productivity tools, is a work in progress—not surprising since the current applications are prominently labeled as technical previews. Microsoft says that all of the apps will be finalized and available (to consumers through the SkyDrive free

ILLUSTRATION: JASON SCHNEIDER

PCWORLD.COM

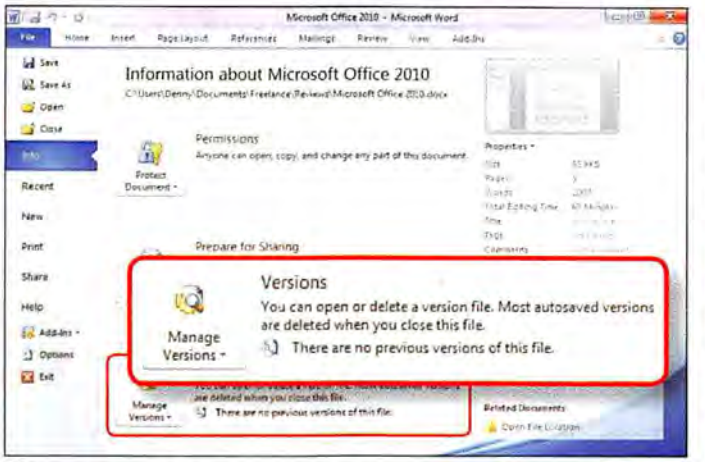
Office isn't the only Microsoft product receiving an overhaul. Learn more about the new look and the social networking upgrades slated for the company's MSN Web portal at find.pcworld.com/64117.

online file storage service and to businesses by way of SharePoint 2010 server software) when the Office 2010 suite ships in the first half of 2010.

But judging by the preview versions I tried via a SharePoint site that Microsoft set up for reviewers (and via the technical beta program on SkyDrive), they are no match for the competition. For example, Excel can't create charts, Word provides no support for revision mode, and PowerPoint's tools pale next to Zoho Show's wealth of choices.

SharePoint's interface for document sharing isn't particularly intuitive: Right now you can't create documents on the Web—instead you must upload them from the desktop apps. And regardless of whether you use SharePoint or Windows Live, Office Web Apps will work only with documents in Microsoft's XML file formats (.docx, .xlsx, etc.). In my tests, at least, Office Web Apps generally delivered on fidelity: What you see online is what you get on the desktop and vice versa, which isn't always the case with other Web apps that support the Office formats.

Though all Windows Live users will have access to Office Web Apps, the offerings' meager features suggest that Microsoft's goal isn't to create a Web-based productivity ecosystem so much as it is to give customers a Microsoft option for basic editing when they don't have access to the company's desktop software.



BACKSTAGE VIEW GIVES you access to commands and document-specific information, including the ability to work with previous versions of the file.

Starter Edition

For new PCs, instead of the free limited-period trial offered now, Microsoft will give a free, ad-supported Office Starter Edition to PC makers (this will replace the low-end Works suite, too).

But it's a stripped-down freebie, with basic versions of Word and Excel that each lack three of the seven main-menu items in the full versions. In Starter, Word does not have the Reference, Review, and View tabs; Excel omits Reference, Review, and Data. Both apps will have a taskbar containing a small ad for the full Office.

More annoyingly, because the Starter applications do not support revision mode, you can't accept, reject, or even delete revisions in documents created in the full versions of Office—a functional limitation that renders Starter Edition useless for any sort of collaborative work.

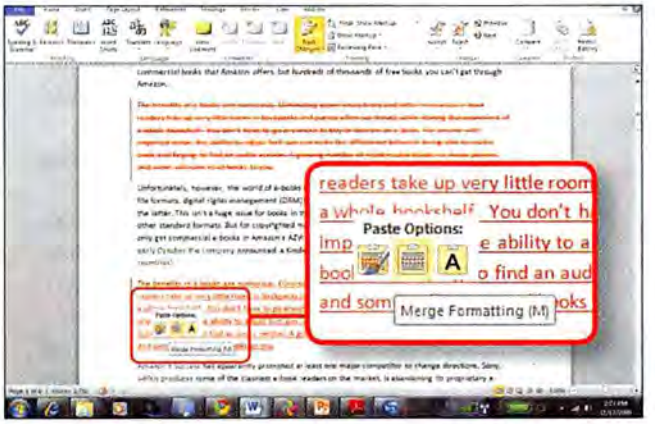
Word 2010

In the latest Word, OpenType typography takes the spotlight in an Advanced font pane that supports new options such as the ability to add ligatures and to choose a style set. A new Text Effects pane lets you apply fills, outlines, or the like—and edit the text afterward, which you can't do with the Word Art function in previous versions. (Publisher 2010 has these features as well.)

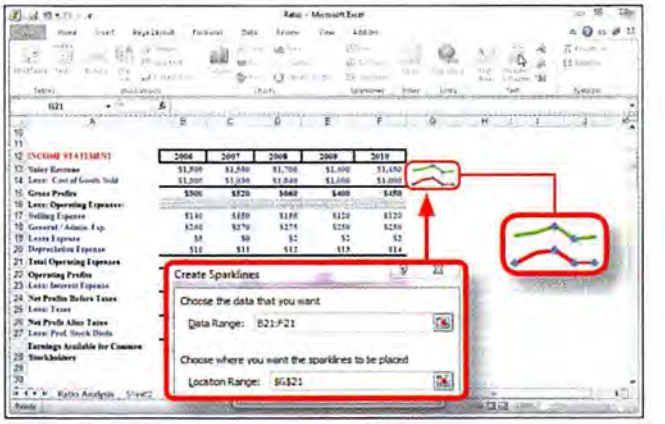
Searching documents is easier with an upgraded Navigation bar that appears when you initiate a search. You see results highlighted in the main screen (it's nicer than clicking Next to jump from location to location).

Excel 2010

Microsoft continues to expand and refine the visualization tools in its spreadsheet app. A feature called Sparklines lets you create miniature charts within a »



THE NEW PASTE-PREVIEW feature lets you see what the results of the action will be, and allows you to choose a formatting option.



WITH EXCEL'S SPARKLINES feature, you can create tiny charts within a cell to illustrate trends across a selected data range.

cell, a way to instantly show multiple trends across several contiguous data sets. Sophisticated users can work with PivotTables and PivotCharts to produce customizable graphics from existing data sets. PivotCharts are not new, but the ability to create filters on the fly is.

PowerPoint 2010

Wouldn't it be nice if your presentation could appear on the laptops of your audience, or on desktops in the room? PowerPoint Broadcast Service lets you set that up with minimal fuss and nothing to install. Click on the Broadcast Slide Show button, and PowerPoint uploads your presentation to Microsoft's free service and creates a link for distribution (via e-mail or copying) to your audience. They then click on the link and see in their browser the same slideshow view that you do—with you driving.

Embedding video requires only a click or two. Presentations incorporating a Web video will warn you that you need a live Internet connection; if you use your own video, you can cut it down, add fade-ins and fade-outs, and otherwise perform minor editing tasks before packing it up with the presentation.

OneNote 2010

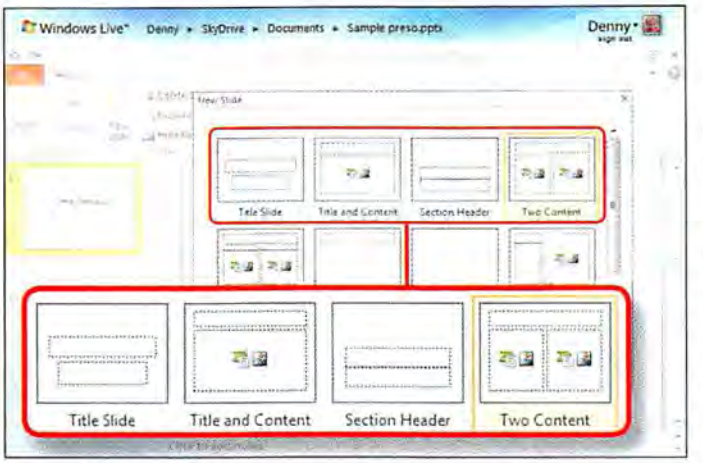
OneNote, Microsoft's note-taking program, is acquiring new powers, primarily through its addition of conduits that relay data from (or otherwise link it to) other apps. Among other things, you can send documents to OneNote using Office's print function; a dialog box shows your OneNote file structure, so you can place the content in the right location.

You can also take notes in OneNote while doing work in Word, in PowerPoint, or on the Web. Clicking Linked Notes associates what you've written in OneNote with the location in the source document. Internet Explorer 8 has a similar feature, OneNote Linked Notes, under Tools.

Outlook 2010

Microsoft's personal information manager now has the ribbon interface. Several additional tweaks (support for transcribing voicemail, for example) depend on the use of Microsoft Exchange and/or Communicator, but everyone can benefit from other new features such as a calendar preview (which lets you check for conflicts when receiving invitations).

More-dramatic changes appear in Business Contact Manager, with assorted features designed to manage not only customers but also projects. Potentially the biggest news is Outlook Social Connector, a feature that's supposed to let you follow status updates from third-party social networks that create feeds using Microsoft APIs. Content from the feeds will show up on the e-mail reading screen.



THE WEB VERSION of PowerPoint offers only basic options for presentations, and its slide-creation tools don't compare to Zoho Show's functions.

Access 2010

In addition to new templates to help you get started, the Access database program now offers Application Parts and Quick Start features to assist in creating forms; you just pick the fields and features you need.

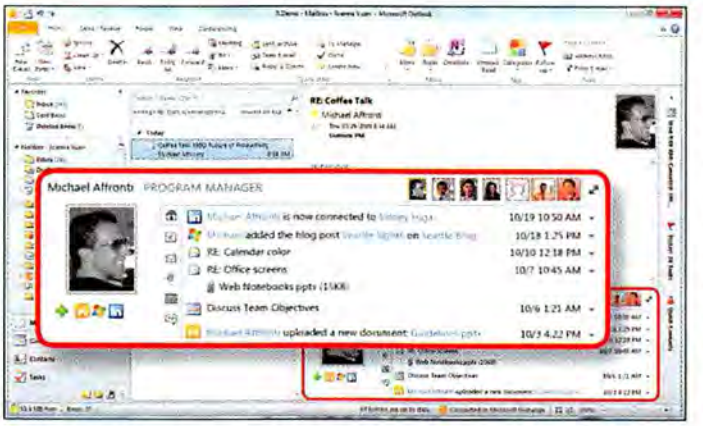
And while it isn't listed with other Office Web Apps, Access now lets you create a Web database, from scratch or by importing an existing one. This feature depends on SharePoint support.

Available Packages

You can choose between the 64-bit version of Office and the 32-bit version during installation. The 64-bit support will primarily benefit people who use huge spreadsheets.

In Office 2010, Microsoft makes improvements that, as a package, are solid and welcome (especially as the Web apps mature). Pricing is not yet known for the various editions: Home and Student (Word, Excel, PowerPoint, OneNote), Home and Business (which adds Outlook), and Professional (which adds Access and Publisher to the rest); plus the volume-licensing editions—Standard (Word, Excel, PowerPoint, Outlook, OneNote, Publisher) and Professional Plus (which adds some enterprise-specific extras).

If the cost of upgrading from 2007 isn't prohibitive, I'd be inclined to move to this new Office.



OUTLOOK 2010, WHICH now sports the love-it-or-hate-it ribbon interface, introduces social networking feeds that track your friends' activities.

Nokia's Future: Location Services, Everywhere

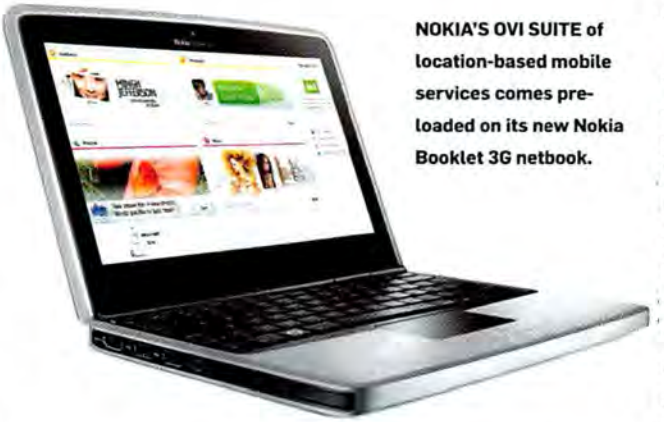
The mobile powerhouse's devices are now collecting data that will help to map out the interiors of buildings, such as hotels, airports, and train stations.

YOU KNOW HOW your GPS device doesn't work unless you have a direct view of the sky? That certainly makes GPS useless when you're trying to find something or someone (or to make it easy for a person to find you) inside a hotel, train station, or airport. I can think of quite a few times when I've needed to locate someone in a large crowd—an overhead view of the scene with my contact's location blinking would have been extremely helpful, had such an app existed.

Of course, that kind of app would be a natural fit for mobile devices, including netbooks like Nokia's new Booklet 3G (find.pcworld.com/64105). And very likely it's an app that mobile consumers would pay for.

Nokia thinks so too—in fact, it is just this type of location-aware service that Nokia hopes will give it an edge in the supercompetitive world of mobile devices and apps. In other words, Nokia wants to "index" the real world the way Google has indexed the online world. And Nokia is already off to a good start, having acquired several mapping/geolocation services, including Navteq, with the world's largest mapping database.

I spoke with Michael Halbherr, Nokia's vice president of social location services, about when indoor location services might be available. He says that the company will likely roll out its new indoor location services on mobile devices in about two years. Currently Nokia's location-based service package (sold under the Ovi brand) includes mapping and driving directions, as well as a pedestrian guide that gives maps and directions for people on foot.



NOKIA'S OVI SUITE of location-based mobile services comes preloaded on its new Nokia Booklet 3G netbook.

Detecting location inside buildings, however, involves a totally different approach from determining location outdoors. And I get the feeling that Nokia's engineers are still figuring out the details.

Halbherr explains that in order to map (and model) the inside of buildings, Nokia is relying on GPS, indoor cellular base stations (installed by the wireless carriers), and indoor Wi-Fi hotspots. Each time a Nokia handset or other device approaches a building, it communicates with the GPS satellite until the moment it enters the door; it then begins communicating with the cellular and Wi-Fi base stations inside. By triangulating the device's position relative to the GPS satellite outside the building, and to all the cellular and Wi-Fi access points inside, Nokia's technology is able to associate the device with a specific cell (an area measuring no more than 10 meters across) as it moves around inside the building. All of that data is transmitted to a database that then uses the data to piece together a 3D picture of the interiors of buildings.

Right now, 3G- and Wi-Fi-enabled Nokia devices around the world are already passively collecting location information (just the raw location data—nothing about the individual users of the handsets). Halbherr notes that the information needed to map and model the inside of buildings could also be collected proactively by people walking through buildings to establish location, similar to the way cars outfitted with cameras cruised city thoroughfares gathering the images we see in Google Street Views.

Reportedly, Google also is creating an indoor mapping database, but Nokia may have an advantage because of the millions of handsets it already has out in the wild passively collecting data.

Though the indoor mapping service remains a ways off, Nokia is experimenting with other location services, too. It has already collaborated with Facebook on an app called Ovi Lifecasting (find.pcworld.com/64106) that mixes real-time location information with various social networking features.

—Mark Sullivan

NOKIA COLLABORATED WITH Facebook on an app called Ovi Lifecasting. Via maps and photos, users of the service can show off to their Facebook friends the places they visit in the real world.

TwitterPeek: A Twitter-Only Device

MOBILE E-MAIL DEVICE maker Peek has partnered with Twitter to make the world's first dedicated Twitter device. TwitterPeek lets you send and receive tweets and direct messages, follow new users, and view images sent via Twitpic. It has a 2.7-by-4-inch color screen, a full QWERTY keyboard, and no-contract, nationwide unlimited wireless coverage.

Available now from Amazon or TwitterPeek.com, the handset sells for $100. That price includes six months of wireless service; monthly access will set you back $8 per month after that. Big spenders can pay $200 up front for the device and get lifetime wireless coverage.

Missing Features

From the sound of it, however, TwitterPeek leaves a lot to be desired. For one, it lacks a search function, so if you plan on using it to track, say, tweets about your business, you'll miss conversations that use hashtags—a user-created system of cataloging tweets by subject—or other conversations that don't have an @reply to your company's Twitter account.

It also has no Web browser, so you can't enjoy conversations focused on a blog post or news item. Plans are in the works to allow you to preview Web pages within TwitterPeek, but that will still leave the device crippled if you won't be able to get a complete view of what other people are looking at.

I have to wonder about TwitterPeek's appeal. You can already get Twitter on any smartphone or feature phone with Internet access, and you can also send and receive tweets by SMS.

If you want to avoid the high data fees typical of most phone plans, you could try a cheaper Peek device, such as the $60 Pronto; that unit will also let you send text, and access Twitter via Ping.fm. It's still stripped down, but at least you can use it for three different functions, all at a lower price.

—Ian Paul

TWITTERPEEK IS THE first handset devoted to Twitter.

BETA WATCH

EDWARD N. ALBRO

iCurrent: Your Newspaper on the Web

Do you miss the newspaper format, but have no interest in subscribing to a paper? iCurrent could be for you. You can personalize this free news site with your own interests. Essentially you build a series of alerts, specifying the subjects and the sources you prefer. Then iCurrent shows you the latest news in all your chosen areas, in the familiar format of a daily paper. As you read or discard stories, iCurrent fine-tunes what it displays. It can take some work to set up, but iCurrent is a good way to keep track of a broad range of subjects. The site was in private beta when I tried it. To get an expedited invitation to the beta, use the code **pcw2010** when you sign up. icurrent.com

Tom's Planner: Drag-and-Drop Gannt Charts

Gannt charts, with their neat sets of overlapping color lines or blocks, are a nice way to visualize a project schedule. In some apps, however, creating them can involve huge amounts of painful data entry. With Tom's Planner (free for a year with sign-up during the beta), you go straight to the final product. Right-click on a date and choose 'Insert Period', and the app gives you a block to represent one step of your project. You can drag the block out for as many days as you like, and color-code it. You can also add icons along the way to signify meetings, deadlines, and other milestones. tomsplanner.com

TELL ICURRENT WHAT subjects you're interested in, and the news site will present the latest articles in a newspaper-style format.

JoinCube: Never See Your Coworkers Again

If you and your colleagues all work remotely (or if you're all in the same building but you just can't stand the sight of one another), JoinCube could be a perfect way for everyone to get their work done virtually. Like Yammer, JoinCube allows people to give their colleagues Twitter-like miniupdates. But JoinCube, which costs $24 to $149 per month, brings much more to the table: You can also send instant messages, share files, create wiki pages, and manage to-dos. Persuading your coworkers to give up the tools they use now to perform such tasks could be a struggle, but JoinCube has a lot to offer in return. joincube.com

Capture the adrenaline now.
Share the adventure forever!
Nero 9 Reloaded – Your videos, your photos, your music, your way! NEW!
This holiday season is filled with thrills at every turn. Relive your experiences in a whole new way with the world's best-selling digital media suite. Benefit from the convenience of working with all types of media, from videos and music to photo and data. Enjoy the freedom to capture, create, rip, burn and share your life, from one easy-to-use software solution.
• Rip and burn files faster than ever
• Copy, burn, share, and create music mixes
• Capture and edit your HD movies
• Quick and easy edits to your videos to later enjoy on DVD with full 3-D menus
Includes Nero BackItUp & Burn FREE! ($50 Value)
• Back up to hard drive, CDs, DVDs, and online storage
• Restore lost, deleted, and damaged files
www.nero.com/enu/pcworld.html

Google Gives Free Wi-Fi in Airports for the Holidays

GOOGLE IS FOOTING the bill for Wi-Fi access at 47 airports in the United States through mid-January, so that people can connect to the Net for free while they wait at gates and other areas.

Google is working with airports and Wi-Fi providers such as Advanced Wireless Group, Airport Marketing Income, and Boingo Wireless to offer free Wi-Fi in Baltimore, Boston, Houston, Indianapolis, Las Vegas, Miami, Seattle, St. Louis, and other locations.

As part of the offer, people who log in to the free Wi-Fi service will have the opportunity to donate to the Climate Savers Computing Initiative, Engineers Without Borders, and the One Economy Corporation. Google plans to match users' donations up to $250,000.

The offer ends January 15, except at the Seattle and Burbank, California, airports, which will have free Wi-Fi indefinitely, Google says.

In October, Google and Virgin America announced free Wi-Fi on that airline's flights during the holidays.

—Juan Carlos Perez

GEEKTECH

Green Your PC With Hardware and Software

THANKS TO AN expanding array of ecofriendly software and hardware products, conserving energy is easier than ever. Following are several tips for making your home PC more efficient. (To read about eight handy green gadgets for the office, browse to find.pcworld.com/64098.)

> It's easy being green, with help from power-efficient components and energy-management apps.

Manage Your PC's Power Usage

A number of programs can help you save power by putting your PC into the deepest sleep possible without compromising your session.

Edison (find.pcworld.com/64092) is a free energy-monitoring utility that can show your PC's power usage and change the settings.

If you use a Mac, the PowerManager 3 (find.pcworld.com/64093) application could save you hundreds of kilowatt-hours (kWh) each year. A free 30-day trial is available.

Although it's now a fairly old piece of software, an Energy Star–certified freeware utility for Windows called WatchOverEnergy (find.pcworld.com/64094) could help you save up to $75 per year in energy costs.

PowerSave (find.pcworld.com/64091), for both PC and Mac, promises intelligent power management. Give the free trial a spin.

Although it's aimed primarily at business users, BizEE Benchmark (find.pcworld.com/64096) is tweakable for home use. With this application's help, you can create your very own home energy audit.

Finally, JSutils (find.pcworld.com/64097) has a range of energy-saving software offerings, all of which are worth checking out.

In addition to those software options, each of the major operating systems has a built-in power-saving mode, such as OS X's Energy Saver and Windows' Power Options control panel and sleep mode. For more on sleep mode's benefits, visit find.pcworld.com/64086.

Switch to Efficient Hardware

Swapping out your computer's various components, as well as your other power-hungry tech gadgets, for greener alternatives is another way to reduce your overall energy consumption. Major vendors such as Apple and Sony Ericsson, for example, have made big pushes to become more green, but the economic downturn has put a damper on a number of such efforts. That said, lots of companies still offer power-saving hardware options:

Western Digital sells an entire range of energy-smart hard drives that promise to save, on average, 4 or 5 watts over other similar drives. For our review of one such drive, the 2TB Caviar Green, see find.pcworld.com/64087.

Last year MSI introduced the Wind Board (find.pcworld.com/64088), a motherboard designed to save power. When idle, it uses 10 percent less power than comparable products.

Antec offers power supply units (find.pcworld.com/64089) that the company claims are among the most efficient of their kind on the market.

NEC SAYS THAT using the eco-mode on its MultiSync LCD175M will lower power consumption.

Lastly, NEC's MultiSync LCD175M 17-inch monitor (find.pcworld.com/64090) has a special eco-mode designed to save over 42 percent in power compared with similar displays.

What green computing products have you tried, and would you recommend them? Visit find.pcworld.com/64095 and share your thoughts.

—Chris Brandrick

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

ILLUSTRATION: JASON SCHNEIDER

Worried about cybercrime?

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Effective, fast protection for your PC

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eset

Barnes & Noble's Nook: More Than the Basics

The bookseller's new e-reader offers a touchscreen, a color display, and other enhancements.

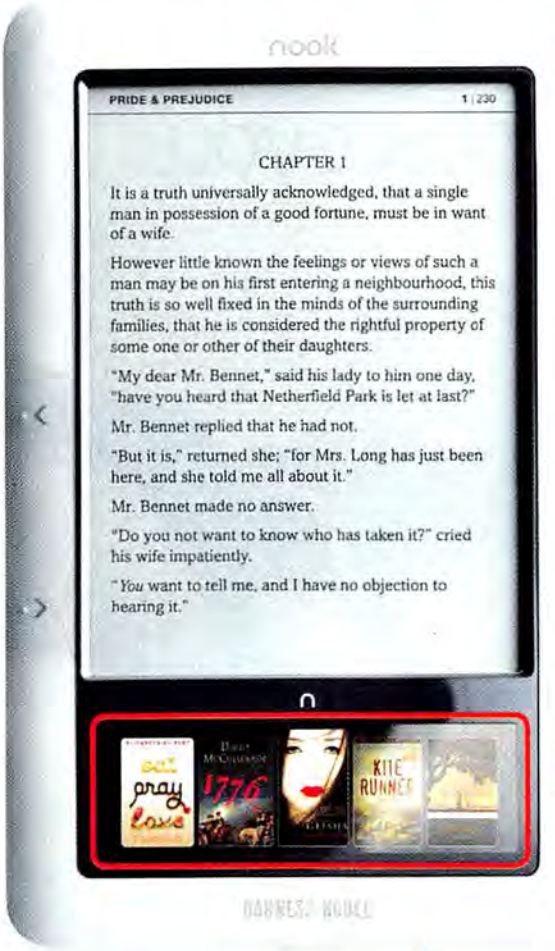
DON'T WRITE OFF Barnes & Noble's Nook (bn.com) as just another e-reader. This is no thoughtlessly slapped-together offering—it's the bookseller's attempt to capitalize on all the mistakes it believes Amazon has made with the Kindle, in the form of a better product at the exact same price.

In the Nook, all of the things you'd expect—Wi-Fi, an online bookstore, the ability to mark notes—are paired with unusual features, such as a touchscreen, a color navigation display, and a way to lend e-books to friends.

Its $259 price is important at a time when e-readers are trying to break into the mainstream. Though Amazon popularized e-readers, rivals such as iRex, Plastic Logic, and Sony are trying to muscle in. Sony offers three different models, with progressively better features and larger screens. The other two companies are vying for customers with deep pockets, offering a magazine-style experience on screens the size of computer paper.

In contrast, the Nook is geared toward the average user. It isn't a high-priced business tool, and it isn't feature-deficient, either. But it does give the e-reader market a kick in the pants. Here are just a few of its most intriguing features.

—Jared Newman



The Form

THE NOOK MEASURES 7.7 by 4.9 by 0.5 inches, giving it similar dimensions to the Kindle (Amazon's product is a little taller and wider, but slightly thinner). The actual screen real estate, however, is the same 6 inches after you account for the navigation touchscreen.

Touchscreen Navigation

NOT ALL OF the Nook's screen is touchable. The top portion is a regular E-Ink display, but the bottom part is like the touchscreen of a smartphone, allowing you to navigate menus and giving you a virtual keyboard for typing in your notes.

By including a color touchscreen, the Nook stands out next to the bland gray hues of other e-readers. When you browse through your library, the e-books scroll by in a way reminiscent of the iPod's Cover Flow feature. The Nook also works as an MP3 player.

Big Battery, Decent Storage

BARNES & NOBLE claims that the Nook lasts ten days on a charge. It's not clear how the company arrived at that calculation and whether Wi-Fi was on for the duration, but it's safe to say that you could take this device on a long flight. As for storage, the Nook's 2GB can carry up 1500 e-books, same as the Kindle.

Powering the Nook is Android 1.5. Users can stop reading on the device and then resume on select BlackBerry and Motorola phones with a free Barnes & Noble e-reader application. I also like the ability to load photos onto the Nook to serve as screensavers.

Accessorize!

IT'S NOT UNHEARD of to throw a cover on an e-reader to make it more book-like, but the Nook is getting fancy with contributions from Kate Spade New York, Jack Spade, Tahari, and Jonathan Adler (pictured). With Nook in hand, you just might become part of the newest fashion trend.

The Lure

BARNES & NOBLE is in a great position to sell e-readers. No need to make deals with vendors when you already have floor space and the right demographic visiting your brick-and-mortar stores. This might be the Kindle's biggest competitive problem.

Give your iPhone, 3G, 3GS, BlackBerry® or Smartphone more than double the juice.

For iPhone 2G/3G/3GS/iPod
Direct plug-in/no cable.
Includes 2G/3G support brace.
RS001 **$69.95**

For iPhone/iPod with Cable
Cable connection only.
Perfect for iPod touch.
RS008 **$69.95**

For All BlackBerry®/Smartphones
Cable or direct plug-in.
Works with all USB-port phones.
RS007 **$69.95**

The quick, pocket-sized solution to top up your iPhone, BlackBerry or Motorola DROID! And now get a free iPhone case too!

by Richard Thalheimer

Just plug RichardSolo 1800 into your iPhone/BlackBerry /Palm Pre once or twice a day for fifteen minutes, and keep your device charged up. At your desk or at dinner, plug in RichardSolo to instantly transfer charge. No more battery worries! 1800 mAh lithium-ion battery is largest in its class and holds its charge for months. RichardSolo 1800 will charge iPhone to full 1.5 times, and lithium-ion is good for 3-5 years of recharges.

Retractable USB cable, 110-240v AC wall charger, and dual-port USB car charger included — like getting two extra chargers for free! Even charge the RichardSolo 1800 and phone together at the same time. Take only one charger when traveling and wake up in the morning with the RichardSolo and your phone charged. Put the RichardSolo in your pocket, plug it into your phone now and then to top it up. Use your phone while charging it.

Enjoy a built-in laser pointer and ultra-bright LED flashlight, too! These two lights use very little power, so you get handy extra features. RS001 is the only snap-on battery available with a latching mechanism for iPhone, to keep battery firmly attached. RS001 fits all iPhone/iPod cases except the very thickest armor. Optional 2G/3G support brace included.

RS001 works with iPhone 2G/3G/3GS and all iPod models except shuffle. Direct plug in. No cable.

RS008 works with iPhone 2G/3G/3GS and all iPod models except shuffle — perfect for iPod touch. Cable only — included.

RS007 works with all BlackBerry models, Motorola DROID and any phone with a mini/micro USB charging port. Plug in directly or use with cable — included.

Your satisfaction is guaranteed, with our 30-day, no-hassle return privilege. If you're not satisfied for any reason, we'll email you a pre-paid return label. You have no risk whatsoever, and the warranty is now one full year.

On-line ordering and blog reviews: www.RichardSolo.com

email: support@RichardSolo.com

Made for iPod Works with iPhone

We are here to support you! Actual customer comments:

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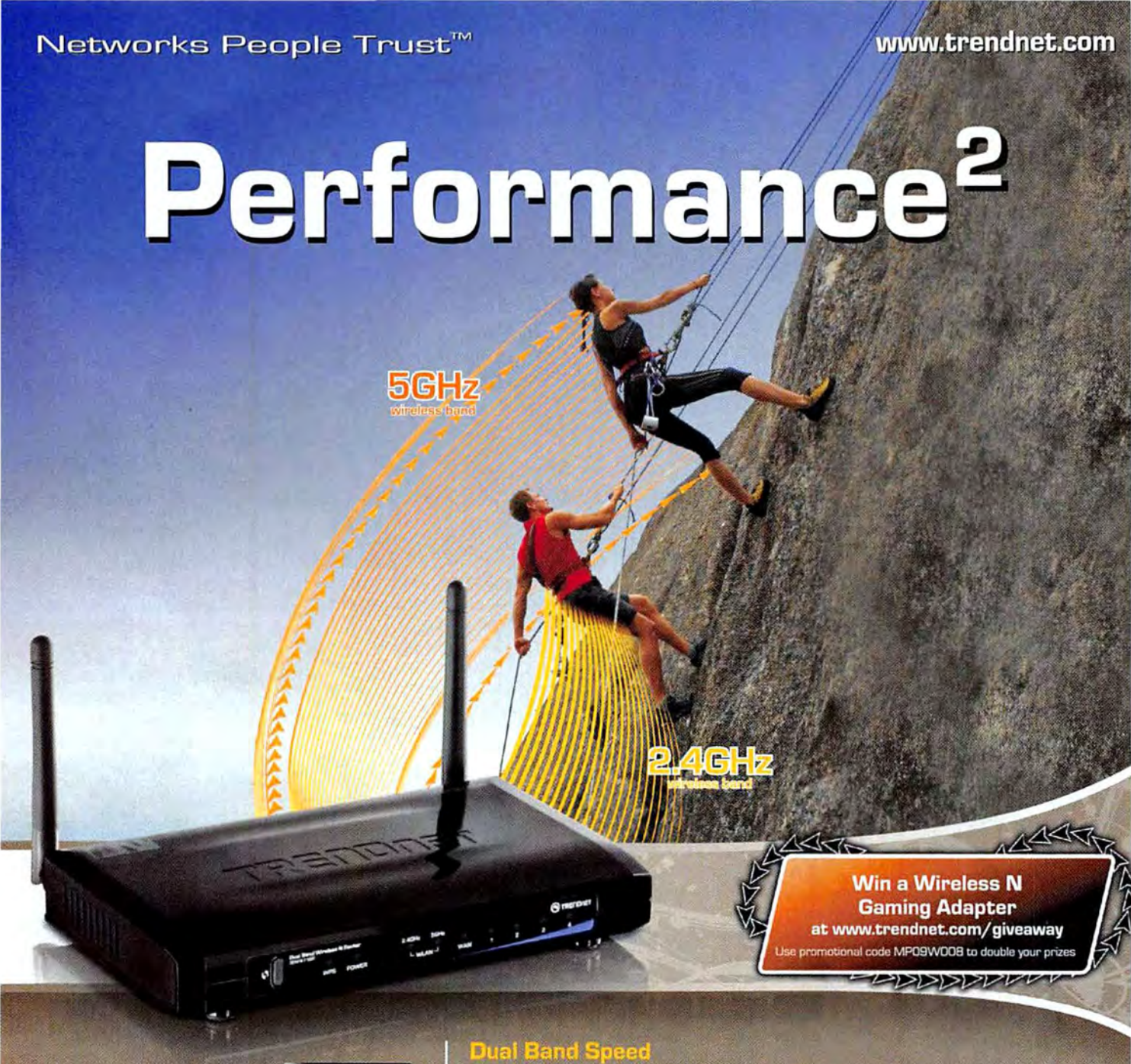

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Jailbreaking Your iPhone: The Pros and Cons

BY MIKE KELLER

IPHONE "JAILBREAKING" HAS been a hot topic since Apple released its smartphone more than two years ago. While the amazing device does indeed have applications for "just about everything," Apple's sometimes arbitrary or self-serving rejections of offerings such as Google Voice have turned more people on to the idea of freeing themselves from dependence on Apple for such resources (and also, in some cases, from AT&T for a network signal).

A collective of hackers known as the iPhone Dev-Team publishes easy-to-use, cross-platform tools that let you install third-party apps for the iPhone that Apple won't admit into its App Store.

However, the legality of jailbreaking is in question. The Dev-Team offers its free tools without proprietary code so as not to violate copyright laws. But Apple recently filed a statement arguing that jailbreaking is copyright infringement because it incorporates a modified version of Apple's bootloader, the software that loads the main operating system.

Some jailbreakers want to use their iPhones on a network other than AT&T's. Trying this might result in better coverage, or save some money on data-plan costs—but don't expect any tech support from Apple or AT&T. Unlike jailbreaking limited to loading third-party apps, jumping to a different network is not completely reversible, because of the changes it makes to the phone's modem firmware. And the legality of this kind of jailbreak is even more questionable than with apps.

Thinking about adding third-party applications —not approved by Apple—to your iPhone? Make sure you know what the risks are first.

ILLUSTRATION ALEX EBEN MEYER

Suppose you're interested in a relatively simple jailbreak just so you can experience third-party apps. This has advantages, but it brings some cautions to consider as well.

The Pros

Rebellion against 'The Man': Apple argues that by keeping firm control over the hardware that runs its software, it's able to maintain quality and a consistent experience. But with the App Store rejections, limitations on software developers, and usage restrictions (MMS is here, but where is tethering?), some people feel constrained by what the iPhone can't do. Apple has been very clear that it isn't happy with iPhone hacking; nevertheless, if you like to rush out of the electronics store without letting the security guard check your receipt, you may find a rebellious thrill in jailbreaking.

Third-party apps galore: Cydia and its newer, lighter competitor Icy are the unofficial app stores available only to jailbreakers, with hundreds of terrific apps not approved for the App Store. Examples? Cycorder is a camera app that enables video recording on pre-3GS iPhones; PDANet allows tethering of your 3G connection to your laptop; and GVMobile is an app for the Google Voice service. Plus, you can still obtain free and paid applications from the official App Store.

Total UI customization: The iPhone's user interface is excellent, but there is just something cool in giving your phone a Snow Leopard face-lift. Or making your home screen look like a vending machine. Jailbreaking lets you do that, and »

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For the latest reviews of cell phones, visit PCWorld.com's Cell Phones Center at pcworld.com/products/phones.html. And for a one-stop guide to iPhone apps, go to pcworld.com/appguide/index.html.

much more. For instance, you could install systemwide add-ons such as SBSettings, which enables quick access to your system settings from within any app. The list goes on and on.

The Cons

Bye-bye, warranty: It's sad, but true—jailbreaking voids your warranty. If you experience hardware problems with your jailbroken iPhone, don't demand any help from Apple. But you can probably get around that limitation. If you use iTunes to restore a clean version of the iPhone software (not one from a backup), Apple will never know that you had previously jailbroken the phone.

Updates can break jailbreaks: If you're the kind of person who waits in line to buy the latest and greatest Apple hardware, or worries about the security implications of not installing a new software update, jailbreaking may not be for you. Installing an update on your hacked iPhone will likely negate the jailbreak, meaning your phone will still function, but all your jailbreak apps and plug-ins will be erased.

Increased instability: Every operating system is prone to crashing occasionally, and the iPhone OS is no exception. With unofficial, hacker-originated software installed on your phone, you might experience more crashes.

Security-breach risk: Jailbreaking may open up root file-system access, which makes it possible for users to unwittingly do serious damage. For example, if you install openSSH (to allow wireless data transfer between your phone and your computer) and you forget to change the default root password, your entire file system could be open to other people on the same network, and your personal data could be at risk.

Fear of the brick: While the Dev-Team has generally done an adequate job of testing its tools prior to release, cases of users "bricking" their iPhones in the jailbreak process have been known to occur. These are simply inherent risks. If you don't want to gamble, jailbreaking may not be your best option.

SKEPTICAL SHOPPER GINNY MIES

Online Coupons: Scams and Savings

Although online coupons are popular—and great money-savers—you still need to be vigilant to avoid scams.

COUPON CLIPPING no longer involves wielding scissors and getting newspaper ink on your hands. According to a survey conducted by HarrisInteractive for the RetailMeNot.com shopping site, 62 percent of consumers seek out coupons for online retailers, and 30 percent will not make a purchase if they can't find a coupon from a particular retailer.

As the hectic holiday shopping season goes into full swing, knowing how to uncover the best online coupons—and how to avoid the scams—will save you both money and stress.

A variety of Websites are dedicated to online coupon clipping. FatWallet.com, RetailMeNot.com, and Savings.com are among my favorites because they're easy to browse and they provide coupons for just about everything you could want. Some sites have newsletters; subscribe, and you'll be alerted to the most recently added deals. Many also have forums, which is a boon for finding the best coupons. The members of these forums are also good at sniffing out scams on the Web and alerting others, according to a representative from FatWallet.com. Still, a few untrustworthy sites *are* out there, so you must know the warning signs of a fraudulent coupon before you snatch it up.

Some Coupon Rules

First off, never pay for a coupon. According to the Coupon Information Corporation, a nonprofit dedicated to fighting coupon fraud, selling coupons violates manufacturers' policies.

Also, be wary of sites that demand you share personal info, such as your name, address, and account numbers, to redeem coupons. One scam a couple of years ago claimed that you could receive a $50 discount from a popular online clothing retailer if you filled out a few forms. These online forms asked for personal information and even required you to sign up for a trial membership with a CD club. The consumers who were looking for a sweet deal ended up getting slapped with all kinds of excessive charges for products they weren't aware of buying. Reputable coupon sites, such as the ones named above, ask only for your e-mail address to create an account—and that's it.

The Better Business Bureau recommends checking whether the coupon is being offered directly by the store or by a third party such as a partner or affiliate. If it's the latter, after you find out the partner or affiliate's name, look up its reputation with customers on the BBB's online company directory (free of charge; find.pcworld.com/64010). That information should tell you whether consumers were scammed in the past.

If a coupon site has lots of broken links, expired deals, and old content, you probably should skip it. Look for sites with frequently updated news and deals, editorial content, and an active forum or a blog.

When you're sure your coupon is legit, check for restrictions such as dates of expiration and a required minimum purchase to receive a discount. (Many coupons that promise free shipping have such minimums.) If you still have doubts about your coupon's validity, call the company to which the coupon applies, describe its value, and say where you found it. The company should be able to verify whether the coupon is the real deal.

ILLUSTRATION: HARRY CAMPBELL

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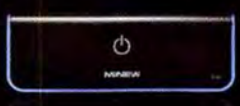

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Consumer Watch

ON YOUR SIDE MARLA MIYASHIRO

LAST YEAR I purchased a used Dell XPS M170 laptop on eBay. I checked with Dell before bidding to ensure that the warranty was still valid and that the system had not been reported stolen. I was told the extended warranty was transferable to me. Soon after I received the laptop, Dell replaced the power brick for me. Today I requested replacement of the cooling fan, but the representative I spoke to said he couldn't help until a hold on the account was resolved. Dell had placed a hold on all computers handled by a service technician who had requested replacements for laptops and then sold the laptops instead of returning them to Dell. My XPS was one of those, so Dell now refuses to honor my warranty. Can you help?

Joe Hightower, Burien, Washington

OYS responds: After we contacted Dell about Hightower's problem, the company got in touch with him directly. A couple of days later, a representative informed Hightower that Dell had decided to lift the hold on his PC—reactivating the rest of its warranty—and to reimburse him for the cooling fan he had bought.

Purchasing used equipment from an individual seller, whether on eBay, Craigslist, or another online marketplace, is risky. To avoid a warranty dispute, we recommend doing as Hightower did: Get the product's serial number from the seller before buying or bidding, and check with the manufacturer to verify that the item was purchased legitimately and that the company will support the product.

Even so, something could still go wrong. We recommend being persistent with your computer's manufacturer, as Hightower was, until you get exactly what you need out of the warranty.

Irksome Installation Disc

Bill Cain of Newberry Springs, California, contacted us when he bought the Magix Movie Edit Pro 15 Plus video editing software and couldn't get the installation disc to work. Unable to open or view any files, he e-mailed Magix. Unfortunately, the company didn't respond, even though he e-mailed it multiple times.

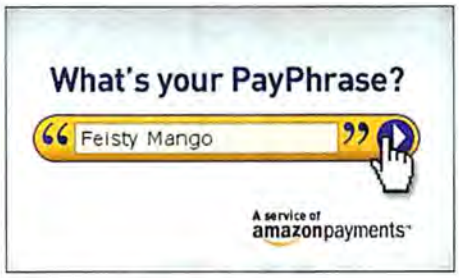
After we contacted Magix about this issue, a representative sent Cain an install disc that he had tested personally. According to Cain, the program loaded and runs as expected. If you're having trouble getting a company's customer

support to respond to your e-mail messages, try calling directly. If the company doesn't list a phone number on its site, look for its listing on the Better Business Bureau's roster. Usually you can find a general company number listed.

Sony AC Adapter Recall

Sony, in cooperation with the U.S. Consumer Product Safety Commission, recalled about 69,000 VAIO computer AC adapters (model VGP-AC19V17) that were supplied with certain VAIO all-in-one computers and docking stations. Insulation inside the adapter can fail over time, posing an electrical-shock hazard. Though Sony has received four reports of adapters short-circuiting, no injuries have been reported.

Consumers should turn off their computer, unplug it, and stop using the recalled AC adapter immediately; they should also contact Sony to order a free replacement adapter. For more information, call Sony toll-free at 877/361-4481 or visit find.pcworld.com/63986.



Amazon: Quick Checkouts With PayPhrase

AMAZON PAYMENTS HAS introduced a new way to pay at both Amazon.com and several other Web retailers. The service is called PayPhrase, and it lets users enter a phrase and a personal identification number to speed up the checkout process.

The service keeps credit card information, the shipping address, and shipping preferences on record, and lets online shoppers invoke them via a phrase of their own choosing. To make changes to these preferences, the user must log in to their standard Amazon account.

PayPhrase simplifies payments because users don't have to log in to their account by entering a username and password, and they don't have to set up multiple accounts or share credit card information with a number of different retailers, Amazon says.

Besides Amazon, clothing companies DKNY, Jockey, and Patagonia, as well as electronics retailer Buy.com, will use the PayPhrase system.

This new payment option is currently available only in the United States, according to Amazon.

Users of the PayPhrase service can set up accounts, with a limited amount of funds available, for other people, too. Parents can monitor and approve teenagers' purchases via an e-mail or a mobile text message, the company says.

Consumers who want to start using PayPhrase can visit the Amazon Web site (find.pcworld.com/63990) and register.

—Mikael Ricknäs

ILLUSTRATION: HARRY CAMPBELL

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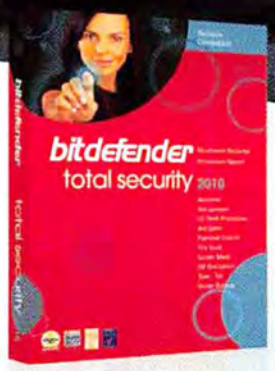

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Connect to Customers With E-Mail Marketing

The Emma service lets you send customized e-mail messages to clients, automating your bulk mail while giving it a personal touch.

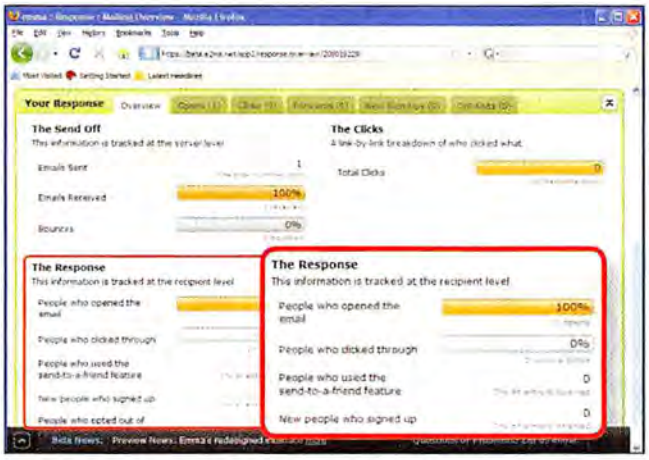
BY ZACK STERN

NOBODY LIKES TO receive spam, but nearly any business can cultivate customers and increase sales by using e-mail marketing judiciously. Dedicated services can organize contacts, track readership, and evaluate customers' interest in mailings.

Many services can do the job, but I like Emma (www.myemma.com). Emma designers merge your assets—a logo, letterhead, a URL—into your e-mail. The process's setup fee is $249, and you'll pay $30 or more per month, depending on the volume of e-mail you send. Here's how to get started with Emma.

Import Your Contacts

Emma imports your contacts after you pinky-swear that they're okay with receiving your e-mail. The CAN-SPAM Act says that the people you e-mail need to have requested messages, to have bought from you recently, or to have otherwise established a relationship with your business. Remember, too, not to cross the line between occasional e-mailing and spamming.



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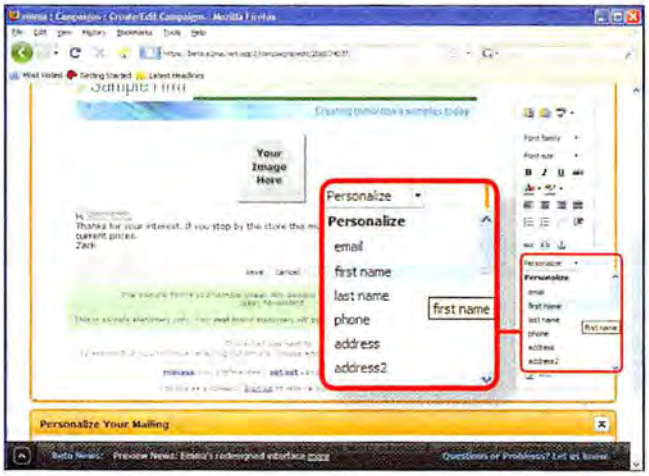

IN EMMA'S E-MAIL editing screen, the Personalize menu translates your placeholder into the mail recipient's first name, for example.

From your e-mail app, export a CSV (Comma Separated Values) file. Then, in Emma, choose *Audience•Import*. Click *Create a new import* and *Manage Fields*. Emma will import just names and e-mail addresses by default, but you can set it to import other details; for example, under 'Add more fields', you might pick *Mobile Number*. Select *Create a new field* for a custom choice. Click *Save & Exit*. Click the checkbox for importing approved addresses, and then click *Continue*. Select *Upload a File* and *Browse*, pick the CSV (or .xls) file, and click *Continue*.

Next, match your fields to Emma's database options. Use the menus to select the proper kinds of data, and click *Continue*. Choose either *Add Only* or *Add & Update*. If you import again in the future, the former adds only new addresses; the latter also overwrites duplicates with data in your CSV file.

Pick a group; if necessary, type a new group name, and click *Add*. Click *Continue*. Review everything, and choose *Import*.

Create a Custom Message

To set up your mailing, click *Campaigns*, and then *Get Started*. In the 'About this Mailing' box, add a name for your organization, write a subject line, and pick a template and layout.

Choose *click to edit* within 'Your Mailing'. You can enter »

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For smart advice on creating eye-catching e-mail messages—to customers or anyone else—read Rick Broida's "E-Mail Strategies: Attachments, Subject Lines" at find.pcworld.com/63992.

the e-mail text here, or you can compose it in a word processor and then copy it over: Click either the *T* or *W* icon (for copying from a plain-text editor or from Microsoft Word, respectively), and paste. To create or modify formatting, use the options on the right.

Within the e-mail, select areas to customize. For example, maybe you wrote *Dear Customer* as the generic heading; double-click *Customer*. Click the *Personalize* menu, and then select the correct field—in this case, choose *first name*. Click *save* when you're done. Many recipients will view HTML messages as plain text, so be sure that the text layout looks okay, too: Select the *Plain Text* tab, and click *Update* to make edits.

In 'Personalize Your Mailing', enter text options for cases where you're missing data. For example, enter **Customer** to greet someone on your list for whom you have an e-mail address but no first name. Click *Update Placeholders*.

Click the *Save & Preview* tab to verify everything. Select the *Proof* tab to run Emma's automated quality check, which looks for links and words that are likely to trigger junk-mail filters.

Choose *Send* and *Continue*. Pick your audience group. On the final screen, choose *Send Now* or select *Schedule It*.

Track Results

You can track your e-mail, viewing how many people opened it, how many of them clicked the links, and other data. Click the *Response* button; you can pick a single mailing, or select more than one and click *Compare Mailings*. Note, though, that mail-campaign services track messages by embedding links to graphics; if the recipient's e-mail client is set to avoid such downloads, Emma won't know that the message was opened. Also, Emma recognizes forwarded mail only if the recipient used the embedded link, not their application's Forward button, to pass it along.

For more details on customizing your e-mail message and sending it to targeted audiences, see the online version of this article at find.pcworld.com/64014.

NET WORK

MICHAEL SCALISI

What You Need to Know About XP Mode

XP Mode offers older-OS compatibility on Windows 7, but it does so at a cost.

MICROSOFT'S Windows 7 XP Mode is an interesting addition to the new operating system that offers a number of distinct advantages, and some limitations.

XP Mode Advantages

It allows you to run XP apps on Windows 7: This is its primary purpose—it provides a path for people who can't yet let go of apps that won't run in Vista or 7. It won't be a robust gaming environment, but it should handle business programs fine.

It allows you to run multiple versions of incompatible software: For example, on a single instance of Windows, you can't run multiple versions of Internet Explorer or Outlook. With XP Mode, you can run the latest version of IE on your host computer while using IE 6 in XP Mode for legacy compatibility.

It's integrated: You can launch XP Mode applications directly from the Windows 7 Start menu, and XP Mode defaults to using your documents library on the host computer when it saves files. Ordinarily, explaining to the end user exactly what a virtual machine is and how it works is a challenge for anyone supporting a virtual computer; though the concept is simple, people often have a hard time grasping the idea of an OS running within another OS. Once XP Mode apps are deployed, XP Mode's integration provides an extra layer that hides virtualization from the user.

It provides a way to run 32-bit-specific apps on a 64-bit OS: While the lion's share of 32-bit apps will run on a 64-bit OS, you will encounter exceptions. Watchguard's SSL VPN client, for example, requires a 32-bit OS. XP Mode provides a safeguard for these rare occasions.

You can blow it up: Since XP Mode is a fully functional virtual machine, you can use it for testing software that you don't trust on your host computer. If by chance a program destroys the XP Mode environment, restoring it is not at all difficult.

XP Mode Limitations

It's resource intensive: Running a virtual OS on top of your real OS consumes lots of CPU cycles and memory. If you have a new quad-core processor running 64-bit Windows with 8GB of RAM, your computer will handle XP Mode with aplomb. Running it with just 1GB of RAM, in contrast, will prove to be somewhat frustrating.

It needs a CPU with hardware-assisted virtualization technology: Without a supported CPU, your attempts to install XP Mode will be dead in the water.

Windows 7 Professional (or higher) is required: If you were hoping to run XP Mode on a new Windows 7 computer that you pick up at a retail outlet, you may be disappointed to learn that you'll need to spend additional capital to upgrade to the Professional version of the OS.

XP Mode is slow: If you launch an application that requires XP Mode, you might have to wait a minute or two. Subsequent XP Mode apps will launch faster, since the virtual machine will already be running. While business programs should give you no trouble, don't expect to run graphics-heavy games or HD video.

Microsoft was smart to offer XP Mode to its business customers, since the technology virtually eliminates software compatibility as an excuse for companies to hang on to older systems. As long as you're aware of the feature's limitations, I think you'll discover that XP Mode can guide you through a few sticky situations.

ILLUSTRATION: HARRY CAMPBELL

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TECH AUDIT

Virtualization Revs Up a Small Business and Lowers Costs

Find out how a major IT overhaul improved productivity for a Vancouver car dealership.

CLARKDALE VOLKSWAGEN (www.clarkdalevolkswagen.com), a leading car dealership in Vancouver, British Columbia, is about to celebrate its 50th year in business. Over the years, the company's technology infrastructure has grown in an ad-hoc way. Clarkdale VW's last major upgrade had been in 2003, but the outdated POP3 e-mail and decentralized network of desktop PCs offered little communication among the 65 employees, made backups a hassle, and required excessive labor to maintain. To bring order to the chaos, Clarkdale called in Computer Troubleshooters Canada.

Before we stepped in, one Linux server ran Enterprise Resource Planning software, and six print servers connected ten printers to the network. The company LAN connected to several wireless networks, including a public one for customers, which left the network at risk of intrusion. Remote workers could not access network data, and the setup had no central storage for important files.

Network and Equipment Revamp

Our goal was to create an environment that could be supported via remote and on-call support. The network also had to have a low long-term cost, without compromising functionality or reliability. We started by replacing the POP3 e-mail with a hosted Exchange service from Canada's Radiant Communications. With this service, the client had no hardware to support, no licenses to maintain, no backups to monitor, and no concerns about upgrades or maintenance. Plus, Exchange adds scheduling and shared contacts.

Each department in the dealership had a set of specific software needs. We determined that a virtualization server connected to desktop terminals would meet those assorted needs while minimizing long-term costs. We deployed Windows Server 2008 and VMWare. Over time each existing desktop PC will be replaced with a Wyse terminal running Embedded XP. To improve interoffice communication, we included SharePoint, which supports custom lists such as vehicle-delivery schedules and a sales leaderboard.

FOR CLARKDALE VW, Chris Aconley and Computer Troubleshooters Canada set up Exchange e-mail, virtual servers, and sales stations.

Previously, all ten salespeople had their own laptops. In the new setup, we created six sales stations, since only six salespeople work on a shift. The stations improved access to information while retaining the flexibility of working from several locations in the showroom.

The Payoff

The move to virtualization has added security and control to an environment that previously had little of either. One major benefit of virtualization is that it allowed management and select users to work remotely, enhancing productivity and customer service.

The total cost was about CDN$10,000, with monthly upkeep and management costs of about CDN$3000. Clarkdale expects to save more than CDN$15,000 per year on IT salaries and benefits that will be eliminated. The dealership also expects ongoing savings of CDN$9000 per year on hardware costs, plus an additional potential of CDN$4000 per year in power-consumption savings.

—Chris Aconley, Computer Troubleshooters Canada

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MEET THE PROS

Computer Troubleshooters

A WORLDWIDE FRANCHISE, Computer Troubleshooters solves clients' tech problems and manages their IT infrastructure. As national director for Computer Troubleshooters Canada (www.computertroubleshooters.ca), Chris Aconley brings 10 years of business experience and 15 years of IT experience to the task of improving technology for his business customers. Computer Troubleshooters Canada is a Microsoft Gold Partner. Its location in Vancouver focuses entirely on managed services and enhanced business solutions. You can reach Chris Aconley at 604/639-2667.

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(ET.HB3HP.001)

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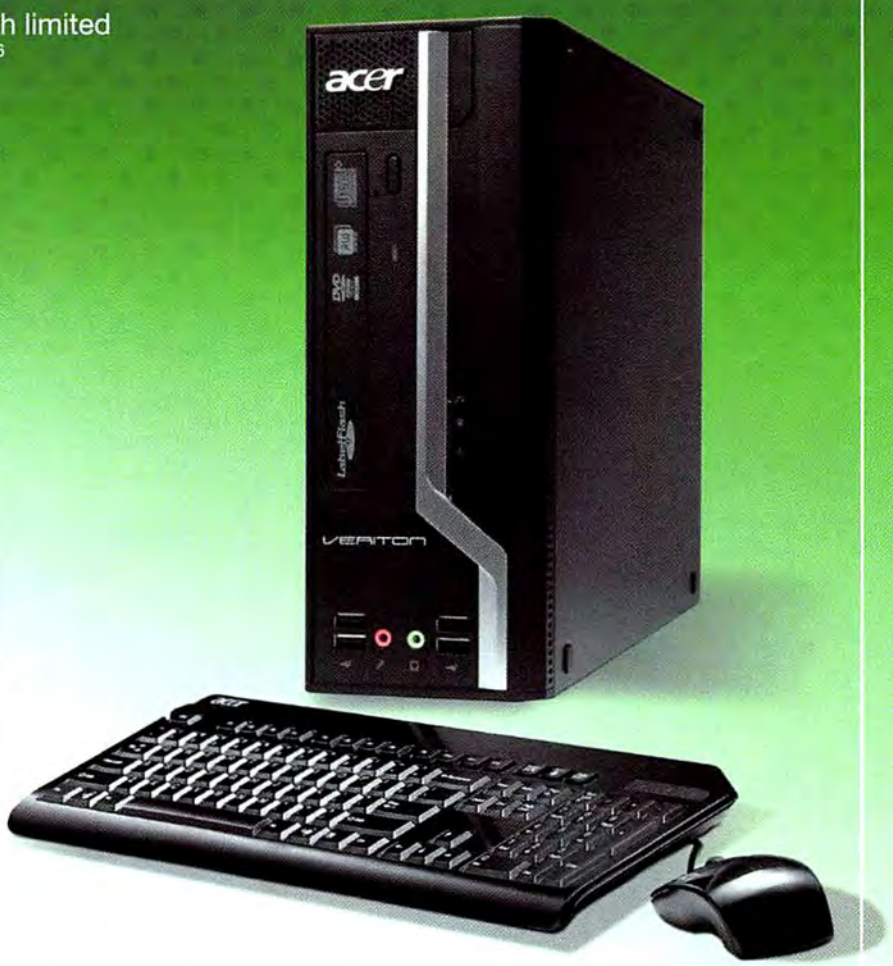

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New Banking Trojan Horses Gain Polish

BY ROBERT VAMOSI

CRIMINALS TODAY CAN hijack active online banking sessions, and new Trojan horses can fake the account balance to prevent victims from seeing that they're being defrauded.

Traditionally, such malware stole usernames and passwords for specific banks; but the criminal had to access the compromised account manually to withdraw funds. To stop those attacks, financial services developed authentication methods such as device ID, geolocation, and challenging questions.

Unfortunately, criminals facing those obstacles have gotten smarter, too. One Trojan horse, URLzone, is so advanced that security vendor Finjan sees it as a next-generation program.

> As banks improve their ability to detect and fight fraud, the Trojan horses that criminals devise become even more sophisticated.

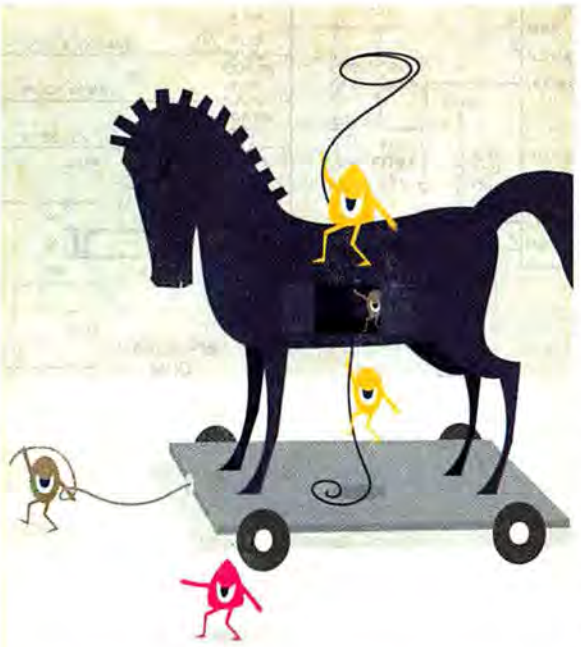

ILLUSTRATION: ANDREW BANNECKER

Greater Sophistication

URLzone lets crooks log in, supply the required authentication, and hijack the session by spoofing the bank pages. The assaults are known as *man-in-the-middle attacks* because the victim and the attacker access the account at the same time, and a victim may not even notice anything out of the ordinary with their account.

According to Finjan, a sophisticated URLzone process lets criminals preset the percentage to take from a victim's bank account; that way, the activity won't trip a financial institution's built-in fraud alerts. Last August, Finjan documented a URLzone-based theft of $17,500 per day over 22 days from several German bank account holders, many of whom had no idea it was happening. But URLzone goes a step further than most bank botnets or Trojan horses, the RSA antifraud team says. Criminals using bank Trojan horses typically grab the money and transfer it from a victim's account to various "mules"—people who take a cut for themselves and transfer the rest of the money overseas, often in the form of goods shipped to foreign addresses.

URLzone also seems to detect when it is being watched: When the researchers at RSA tried to document how URLzone works, the malware transferred money to fake mules (often legitimate parties), thus thwarting the investigation.

Silentbanker and Zeus

Silentbanker, which appeared three years ago, was one of the first malware programs to employ a phishing site. When victims visited the crooks' fake banking site, Silentbanker installed malware on their PCs without triggering any alarm. Silentbanker also took screenshots of bank accounts, redirected users from legitimate sites, and altered HTML pages.

Zeus (also known as Prg Banking Trojan and Zbot) is a banking botnet that targets commercial banking accounts. According to security vendor SecureWorks, Zeus often focuses on a specific bank. It was one of the first banking Trojan horses to defeat authentication processes by waiting until after a victim had logged in to an account successfully. It then impersonates the bank and unobtrusively injects a request for a Social Security number or other personal information.

Zeus uses traditional e-mail phishing methods to infect PCs whether or not the person enters banking credentials. One recent Zeus-related attack posed as e-mail from the IRS. »

PCWORLD.COM

Watch a video guided tour of Windows 7's new security features at find.pcworld.com/64005. And at find.pcworld.com/64006, see why you should install security patches that have been around awhile.

Unlike previous banking Trojan horses, however, the Zeus infection is very hard to detect because each victim receives a slightly different version of it.

Clampi

Clampi, a bank botnet similar to Zeus, lay dormant for years but recently became quite active. According to Joe Stewart, director of malware research for SecureWorks, Clampi captures username and password information for about 4500 financial sites. It relays this information to its command and control servers; criminals can use the data immediately to steal funds or purchase goods, or save it for later use. The *Washington Post* has collected stories from several victims of the Clampi botnet.

Clampi defeats user authentication by waiting for the victim to log in to a bank account. It then displays a screen stating that the bank server is temporarily down for maintenance. When the victim moves on, the crooks surreptitiously hijack the still-active bank session and transfer money out of the account.

Defending Your Data

Since most of these malware infections occur when victims respond to a phishing e-mail or surf to a compromised site, SecureWorks' Stewart recommends confining your banking activities to one dedicated machine that you use only to check your balances or pay bills.

Alternatively, you can use a free OS, such as Ubuntu Linux, that boots from a CD or a thumbdrive. Before doing any online banking, boot Ubuntu and use the included Firefox browser to access your bank site. Most banking Trojan horses run on Windows, so temporarily using a non-Windows OS defeats them, as does banking via mobile phone.

The key step, however, is to keep your antivirus software current; most security programs will detect the new banking Trojan horses. Older antivirus signature files can be slow to defend PCs against the latest attacks, but the 2010 editions have cloud-based signature protection to nullify threats instantly.

BUGS & FIXES

ERIK LARKIN

Firefox Squashes a Buggy Microsoft Plug-In

Plus: A massive Microsoft patch batch, and fixes for Adobe Reader and Acrobat.

REDMOND TURNED red-faced upon learning that an automatically installed Microsoft Windows Presentation Foundation plug-in for Firefox opened a major security hole. Following Microsoft's disclosure of the bug, Mozilla—with Microsoft's acquiescence—blocked the plug-in (see find.pcworld.com/64024 for more).

Simultaneously, Mozilla launched a new Plugin Check page at find.pcworld.com/64025 to identify and update old and vulnerable plug-ins. The page checks only certain popular plug-ins right now, but it's a simple and handy security tool.

Microsoft Patch Push

Microsoft delivered eight critical patches this month, and another five important patches.

An Internet Explorer patch wards off drive-by download attacks and fixes the Firefox plug-in vulnerability (see find.pcworld.com/64026). It's critical for IE 5 on Windows 2000; IE 6 on XP and Server 2003; IE 7 on XP, Vista, Server 2003, and Server 2008; and IE 8 on Windows XP, Vista, 7, Server 2003, and Server 2008.

Problems with the Microsoft Windows Graphics Device Interface (GDI+) could let an attacker take control of your PC if you view a tainted image on a Web page or open it in an affected program. The patch (find.pcworld.com/64027) is critical for XP, Vista, Server 2003, and Server 2008, and needed for IE 6 on Win 2000.

Viewing a malicious streaming-media .asf file on a Web page or opening one in an affected program could launch an attack on systems lacking a patch for Windows Media Runtime (find.pcworld.com/64028). It's critical for Windows 2000, XP, Vista, Server 2003, and Server 2008.

A related patch (find.pcworld.com/64029) for Windows 2000, XP, and Server 2003 fixes a hole in Windows Media Player.

Microsoft Active Template Library gets a killbit patch for Windows 2000 and XP that disables troublesome ActiveX controls (find.pcworld.com/64030), and a fix (find.pcworld.com/64031) for ActiveX controls that Office introduced. Office XP, 2003, and 2007 need the critical fix, as do the Visio 2002, 2003, and 2007 viewers.

A Tarnished Silverlight

Another patch (find.pcworld.com/64032) repels takeover attacks from malicious Web pages. It's critical if your Windows client (nonserver) installation or Mac has Silverlight installed, and it's important for Windows servers. The same patch closes holes in versions of .Net on Windows 2000, XP, Vista, and 7.

A final critical patch (find.pcworld.com/64033) fixes an SMB problem (discussed last month) affecting Vista and Server 2008. Unpatched PCs could be hit by a network-based attack.

Run Microsoft Update to ensure that you have all of these critical patches, along with the five security fixes rated Important. For a full list of this month's patches, see find.pcworld.com/64034.

Adobe Reinforcement

A huge patch for Adobe Reader and Acrobat closes 29 vulnerabilities. Windows, Mac, and Unix users with version 9.1.3 or 8.1.6 of either program need version 9.2 or 8.1.7; Windows and Mac users with version 7.1.3 need version 7.1.4.

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After One Year, 7 Million Conficker Infections

THE CONFICKER WORM has passed a dubious milestone. It has likely infected more than 7 million computers.

Shadowserver Foundation researchers logged computers from more than 7 million unique IP addresses, all infected by the known variants of Conficker.

Though Conficker is a well-known worm, it continues to infect PCs. Security experts first noticed it in November 2008, but it is remarkably resilient and adept at reinfecting systems even after antivirus software has removed it.

Members of the Conficker Working Group, an industry coalition set up last year to deal with the worm, suspect that many infected PCs run bootleg copies of Windows, and therefore can't download the patches or Microsoft's Malicious Software Removal Tool, which could eradicate the infection.

Oddly, the criminals who control Conficker have rarely used it. Some CWG members believe that the worm's author may be reluctant to attract more attention, given its overwhelming success at infecting computers.

"The only thing I can guess at is, the person who created this is scared," says Eric Sites, CTO of Sunbelt Software and a member of the working group. "This thing has cost so many companies and people money to get fixed, if they ever find the guys who did this, they're going away for a long time."

The cost of the worm would be even greater if Conficker were to be used to unleash a distributed denial-of-service attack, for instance. With a botnet of such magnitude available to do its master's bidding, experts say, identifying a limit to the potential harm is difficult.

—Robert McMillan

PRIVACY WATCH ERIK LARKIN

Keep Your Passwords Private—and Handy

An online airing of tens of thousands of stolen Webmail passwords suggests that it's time to find extra protection.

THIS FALL, MORE than 20,000 stolen usernames and passwords for such Webmail providers as AOL, Gmail, Hotmail, and Yahoo appeared on Pastebin.com, a programmer's Website.

The Webmaster, Paul Dixon, wrote that "for reasons unknown," some "miscreants" posted the data on his site. Dixon removed the stolen info, which Microsoft and some security researchers theorize was gathered through phishing attacks (see find.pcworld.com/64036).

A researcher at ScanSafe argues that the data may have come from password-stealing malware, not phishing (find.pcworld.com/64037). Either way, crooks clearly want access to your Webmail. But why? A friend of mine was recently hit by a scam, and her experience helps answer that question. After her Hotmail account was hacked, every message she sent included an unwelcome advertisement.

Crooks have also begun using stolen Webmail and Facebook accounts to send pleas supposedly from a victim to friends or contacts. Some bogus messages claim the sender is stranded overseas and needs an urgent wire transfer of funds.

Don't Pass the Password

To guard against password thieves, I use LastPass (find.pcworld.com/64108). The tool offers a free password-managing add-on for Firefox on Windows, Linux, or Mac OS X; Internet Explorer on Windows; and Safari on Mac OS X. An add-on for Google Chrome is under development.

LastPass fills in your username and password for verified sites that match a real URL; phishing scams that use similar but fake Web addresses won't deceive it. And because you don't type your password, keylogger malware can't capture your keystrokes and nab your password.

Other apps, like Password Hash (find.pcworld.com/64015), offer similarly worthwhile protection, but LastPass stores all of your data on its servers (using 256-bit AES encryption) as well as on your PC. Since the company never has the software decryption key or your password, nobody at LastPass can get to your info.

Because your data is stored centrally, you can use the add-on with any browser, log in with your LastPass master account info, and access all of your passwords. Even without the add-on, you can log in to LastPass's site to get to your information. That means you should create a fairly complex master password for the LastPass site, but it also means you have a de facto backup if your PC goes kaput.

Instant Entry

The handy add-on can automatically log you in to sites and can fill in forms, but for better security you should change some of its default settings. For instance, to prevent someone from sitting at your desk and accessing your accounts, click *Preferences* and check *Automatically logoff after idle*. I set mine to log off my LastPass account after an hour.

It's also smart to require a password reprompt for sensitive accounts; the app will ask for your master password before filling in the username and password, even if you're already logged in. LastPass offers applications for the iPhone, BlackBerry and other mobile devices, too, but those will cost you $12 per year. ●

ILLUSTRATION: HARRY CAMPBELL

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Gamer Infinity 8800 Pro SE

Asus® P6T SE Intel X58 Chipset MB
Genuine Windows 7 Home Premium 64 Bit Edition
Corsair® 6GB DDR3-1333 Tri Channel Memory
1TB 7200RPM SATA-II 3.0Gb/s 16MB Cache Ultra Fast HD
ATI Radeon™ 5870 1GB Direct X 11 Video
Inwin Maelstrom Full Tower Case 800 Watt Power
Asetek Liquid Cooling System

Intel® Core™ i7 Processor
(8MB L3 Cache, 1066Mhz)

Extreme i7-975 3.33Ghz	$ 2165
i7-960 3.20Ghz	$ 1795
i7-920 2.66Ghz	$ 1485

System included the following

4X Blu-ray Player | LG 24X±RW | HD 7.1 600 W | Xtreme Gear® | Xtreme Gear® | FREE 802.11G

$765

Gamer Xtreme 1000

Asus® Intel® P55 Chipset MB
Genuine Windows 7 Home Premium 64 Bit Edition
Corsair® 4GB PC-6400 DDR3-1333 Dual Channel Memory
500 GB 7200RPM SATA-II 3.0Gb/s 16MB Cache Ultra Fast HD
NVIDIA® GeForce® GT 220 1GB
Apevia X-Crusier 2 Gaming case with
3 Meters and Controls 420 Watt Power Supply

Intel® Core™ i7 Processor
(8MB L3 Cache, 1066Mhz)

i7-870 2.93Ghz	$ 1155
i7-860 2.80Ghz	$ 849

Intel® Core™ i5 Processor

i5-750 2.66Ghz	$ 765

System included the following

LG 24X±RW | HD 7.1 600 W | Xtreme Gear® | Xtreme Gear® | FREE 802.11G

$999

Gamer Infinity HD 4850

Gigabyte Intel® X58 Chipset MB Supporting CrossFireX™/SLI™
Genuine Windows 7 Home Premium 64 Bit Edition
Corsair® 6GB DDR3-1333 Tri Channel Memory
500GB 7200RPM SATA-II 3.0Gb/s 16MB Cache Ultra Fast HD
ATI Radeon™ HD4850 1GB
Apevia X-Dreamer 3 Gaming Case / 600 Watt Crossfire™ Power

Intel® Core™ i7 Processor
(8MB L3 Cache, 1066Mhz)

Extreme i7-975 3.33Ghz	$ 1295
i7-960 3.20Ghz	$ 1315
i7-920 2.66Ghz	$ 999

System included the following

LG 24X±RW | HD 7.1 600 W | Xtreme Gear® | Xtreme Gear® | FREE 802.11G

$1009

Gamer Xplorer X7-7700

Intel® Centrino® 2 Technology
- Intel® Core™ 2 Duo Processor
- Intel® PM45 Chipset
- Intel® WiFi Link 5300 802.11 A/G/N

Genuine Windows 7 Home Premium 64 Bit Edition
4GB DDR-3 PC1066 800 Memory, 500GB SATA150 Hard Drive
17" WXGA TFT Display 1600x1050 pixels, 8x DVD+/-RW Drive
1000/100/10 Network & 56K V.92 Fax/Modem
NVIDIA® GeForce® GT130M 512MB DDR3, 3-in-1 Built-in Media Reader
1 HDMI Port, 1 IEEE-1394 Firewire Port & 3x USB 2.0 Ports, 1 PCMCIA Type II Slot
3 Hours Battery Life, Weight only 7.6 Lbs, Free Carrying Case

Intel® Core™ 2 Duo Processor
(800Mhz FSB)

T9900 6MB L2 Cache, 2.93Ghz	$ 1375
P9700 6MB L2 Cache, 2.80Ghz	$ 1169
T9600 6MB L2 Cache, 2.66Ghz	$ 1135
P8800 3MB L2 Cache, 2.53Ghz	$ 1055
P8700 3MB L2 Cache, 2.40Ghz	$ 1009

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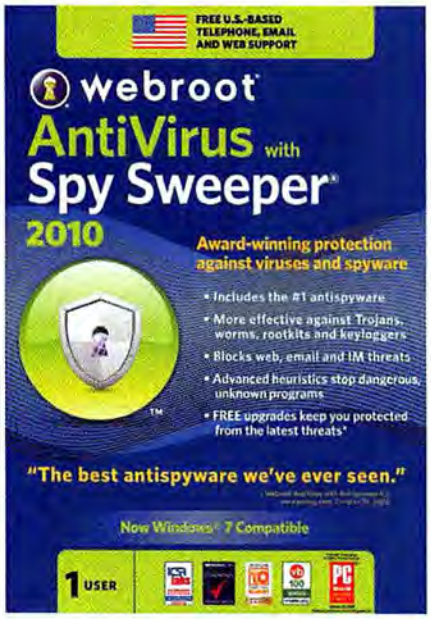

If you're in the market for security software, consider these three questions: How effectively will it stop emerging threats? Do the experts recommend it? Can I easily get assistance if I need it?

For Webroot AntiVirus with Spy Sweeper, the answer to all of these is a resounding yes. It provides highly effective online protection that has been proven in independent tests to be among the best at blocking and removing emerging online threats. And unlike many other security companies, Webroot provides all active subscribers with free U.S.-based telephone and online technical support.

Webroot AntiVirus with Spy Sweeper features award-winning technologies trusted by millions of users worldwide. Certified for Microsoft Windows 7, its multi-layered security protects against viruses, spyware, adware, worms, pop-ups, Trojans, keyloggers and rootkits — effectively blocking malicious programs that can track your online activity and steal personal information. If your PC is already infected, Webroot AntiVirus with Spy Sweeper has been proven to find the malicious files and remove them more thoroughly than the competition.

It does all this using streamlined technology that protects your PC without compromising performance.

Webroot AntiVirus with Spy Sweeper: TOP SECURITY BACKED BY OUTSTANDING SUPPORT

GUARD YOUR IDENTITY

Webroot is especially effective at detecting keyloggers and rootkits, which criminals may employ to steal your logins, passwords, account numbers and other personal information. Webroot also shields you from downloading malware hidden in email attachments, in USB drives and from "drive-by attacks" from harmless-looking websites.

BLOCK "ZERO-HOUR" THREATS

Webroot AntiVirus with Spy Sweeper provides "zero-hour" protection, meaning that the time it takes between a new threat emerging and your PC being secured is zero. So you are protected before viruses and spies become known, as Webroot AntiVirus with Spy Sweeper identifies programs that behave suspiciously and blocks their access to your computer.

STAY AHEAD OF THE CURVE

To ensure that security is always current, the Webroot Automated Response Network monitors the status of millions of users, creating a data bank of malware definitions that stays ahead of the curve. And Webroot ensures your protection is current by automatically installing the latest threat definitions and free updates as soon as they are released.

SPY SWEEPER: 20 MILLION USERS CAN'T BE WRONG

Webroot AntiVirus with Spy Sweeper contains the same antispyware protection found in Webroot Spy Sweeper, the top antispyware product on the market. Proven to find and remove more spies than the competition, this multi-award-winning technology thoroughly scans your computer to detect and remove spyware, adware, and pop-ups, while proactively blocking new threats before they can install on your system. With 20 million users and over a decade in the antispyware business, Webroot is a pioneer and a leader in recognizing the latest spyware threats while protecting you from false alerts. Spy Sweeper has received more than 50 awards from PC publications and industry experts, a recognition that is unmatched for antispyware security.

Sound like a product you'd like to try? To download a free trial version, visit www.webroot.com/wavtrial

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And then there's really safe.

With best-in-class security technology and free, U.S.-based telephone support, no one keeps you safer than Webroot. Find out why Webroot products are recommended by experts and trusted by over 20 million users worldwide. Run a free scan for viruses and spyware at **www.webroot.com/pcscan** or call 1-866-915-4130 for more information. See why there's safe, and then there's Webroot safe.

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Reviews & Rankings

ITS FULL 5-INCH screen makes the TomTom XXL 540S a winner.

THE NUVI 1690 is Garmin's first service-connected GPS device.

THE MAGELLAN RoadMate 1700 has an enormous 7-inch screen.

GPS: More Screen for Less Money

NOT LONG AGO, most GPS devices had 3.5-inch screens. Today, a 4.3-inch screen is standard, and some displays are even bigger—4.7 inches (Magellan's RoadMate 1470), 5.0 inches (TomTom's XXL 540S), and even 7.0 inches (Magellan's RoadMate 1700), for instance.

The devices are getting less expensive, too. You can find full-featured portable units with text-to-speech, lane assist, and big screens for not much more than $100.

And they're getting more connected. Both Garmin and TomTom released Internet-connected devices in 2009. A GPS device with a live Net connection lets you search for fuel prices, weather data, airport departure/arrival info, and points of interest (POIs), using Google's Live search. Still, smartphones continue to grab the lion's share of the connected GPS market.

> GPS devices have reached a consumer-friendly stage of development where they rapidly add desirable features and yet cost less and less.

After changing how people think about smartphones, can Apple's iPhone do the same for the portable GPS market? New iPhone GPS apps from TomTom, Navigon, and others have changed the GPS landscape. These apps cost from $35 to $100—cheap enough to convince people that they don't need a dedicated GPS. Google's recent announcement of a full-featured free navigation application could disrupt the GPS market even more as additional Android phones start to ship.

Though 2010 is likely to be tough for manufacturers of dedicated GPS devices, some excellent personal navigators are on the market today.

TomTom XXL 540S

If a 4.3-inch screen feels too small, you'll love the TomTom XXL 540's 5-inch display.

The XXL 540S uses TomTom's IQ Routes feature to calculate routes and estimate time of arrival based on historical traffic data rather than on speed limits. In my testing, the routes it generated were the ones I'd normally take. And ETA projections were fairly accurate, even

PHOTOGRAPHS: ROBERT CARDIN

INSIDE

54 ACER ASPIRE One D250-1613

56 MOTOROLA DROID

60 LEXMARK PLATINUM Pro S905

64 APPLE MACBOOK (13.3 inches, 2.26GHz)

without a live traffic receiver (a $60 extra; that price includes a year's subscription to traffic data, which costs $60 per year thereafter).

After generating a route, the 540S provides excellent route-viewing options, including browsing a turn-by-turn list of directions, viewing maneuvers as images, showing a route summary, and demonstrating the trip. The 540S was a bit slow at initially calculating routes for longer trips, but recalculations after missed turns were fine. The device pronounced street names clearly and at a volume adjusted to the vehicle's speed.

Garmin Nuvi 1690

The Nuvi 1690, Garmin's first connected GPS device, is a good start but has room to improve. It offers Bluetooth phone connectivity, text-to-speech conversion, a built-in cellular radio, lane assist with junction view (showing simulated highway signs), a 4.3-inch screen, and optimized multisegment routing.

The 1690's menu structure matches that on other Nuvi models, but with connected services sprinkled throughout the menus in (for the most part) appropriate locations. For example, the connected services in the tools menu are Flight Status, Weather, Ciao, and Currency.

Other connected services appear in the Where To menu. The first screen offers Google Local search and White pages as options. Google Local provides online access to the same 13 POI categories as does the 'Points of Interest' icon. Just as when you're searching the POI database, you can use Google Local to search areas nearby, in a different city, close to a recent or a favorite destination, or (if you have an active route) along the route you're currently on.

MORE ONLINE

For a complete review and test report for each GPS device we discuss here, see our chart at find.pcworld.com/64101.

Magellan RoadMate 1700

If you're looking for a portable GPS navigation device with a mammoth screen, Magellan's new RoadMate 1700 could be just the thing. Measuring 7.5 by 4.2 by 0.6 inches and weighing a hefty 10.7 ounces, the 1700 houses a 7.0-inch screen.

Bigger is not always better, though. In a large vehicle, such as an RV or a truck, the RoadMate 1700 may be the perfect size, as the distance between the driver and the GPS is greater than in an automobile. In my Camry, however, the 1700 took up too much dashboard real estate and, depending on the mounting location, created distracting blind spots.

THE TOMTOM GO 740 Live's impressive array of connected services delivered uneven results.

The map view is clean and uncluttered, and the routes provided are sensible. Magellan's text-to-speech gives clear directions and pronounces street names well. The route recalculation time after a missed turn was acceptable in my road tests. The unit has plenty of volume, even on the noisiest of roads. One nice (and unique) navigation feature is the ability to calculate simultaneously the device's four routing options: shortest, fastest, least use of highways, and most use of highways.

You also get Magellan's One Touch feature, which provides single-tap access to shortcuts for locations you can define, or for searches. You could, for example, define a search for the nearest Bank of America ATM or the nearest Starbucks.

Tomtom Go 740 Live

Like the Garmin Nuvi 1690, TomTom's Go 740 Live features a built-in cellular radio. This wireless data connection permits the unit to download information relevant to your journey, such as traffic, weather, and fuel prices. These connected services are a useful addition, but they didn't always make my commute easier—and their costs add up over time. »

The TomTom Go 740 Live shares many of the physical attributes of the company's excellent Go 930 navigation device. You get a big, bright 4.3-inch touchscreen and a slender body (it's less than an inch thick). The Go 740 Live includes a car cradle, through which you connect the GPS to its car charger, as well as a desk cradle.

The Go 740 Live delivered accurate and sensible routes. It announced road turns well ahead of time, and I found its pronunciation of street names clear and easy to understand. Like the XXL 540S, the Go 740 uses IQ Routes technology, which takes into account historical data—such as real-world speeds at certain times of the day—collected from anonymous users, when calculating your route.

I had hoped that the connected features would make the unit's excellent routing that much better, but I was disappointed. The Go 740 did warn me about upcoming traffic incidents, but consistently told me that I was "still on the fastest route" rather than presenting me with alternatives.

The other connected services, such as the included Google Local Search, weather forecasts, and fuel price updates, were more impressive, though still not worth the $10-per-month that TomTom charges for them (the first three months are free). You can use the Local Search feature to browse through information (such as restaurant reviews) about local points of interest.

THE PETITE GARMIN Nuvi 265T will fit easily in your pocket, but its screen is small, too.

Garmin Nuvi 265T

The Garmin Nuvi 265T packs a lot of features into a very small case: This GPS unit delivers lifetime traffic service, hands-free calling with Bluetooth, a hefty points-of-interest database, and more. Unfortunately, the device's 3.5-inch screen is a bit small for the user to take full advantage of its many features.

The routes that the Nuvi 265T delivered ranged from decent to very good, and the device provided exceptionally accurate estimates of travel time. The inclusion of lifetime traffic service is a bonus on this unit, as traffic incidents are factored into your routes. The free traffic service does come at something of a price, though: You may see occasional advertisements on the 265T. The ads are for businesses that appear along your route, and are small and usually unobtrusive.

—Craig Ellison (Liane Cassavoy contributed to this report.)

PC WORLD TOP 5 GPS DEVICES

	MODEL	Rating	Dimensions	Features
1	BEST BUY **TomTom XXL 540S** **$300** find.pcworld.com/64099	★★★★½ SUPERIOR	• 5.3 by 3.5 by 0.9 inches • 7.0 ounces • 5.0-inch screen • 480 by 272 resolution	• Text-to-speech • Traffic requires extra-cost accessory and monthly subscription • No Bluetooth compatibility with cell phones
	▸ TomTom's impressive navigation features get markedly better when used on this model's ideal-size 5-inch screen.			
2	**Garmin Nuvi 1690** **$500** find.pcworld.com/64100	★★★★ VERY GOOD	• 4.9 by 3.1 by 0.8 inches • 6.2 ounces • 4.3-inch screen • 480 by 272 resolution	• Text-to-speech • Traffic included with connected services • Bluetooth compatibility with cell phones
	▸ Garmin's first connected GPS rates as a very creditable initial effort, but it leaves room for improvement.			
3	**Magellan RoadMate 1700** **$300** find.pcworld.com/64102	★★★½☆ VERY GOOD	• 7.5 by 4.2 by 0.6 inches • 10.5 ounces • 7.0-inch screen • 800 by 480 resolution	• Text-to-speech • No traffic service • No Bluetooth compatibility with cell phones
	▸ If your vehicle can accommodate a GPS with a giant 7-inch screen, the RoadMate makes a worthwhile travel companion.			
4	**TomTom Go 740 Live** **$400** find.pcworld.com/64103	★★★½☆ VERY GOOD	• 5.0 by 3.4 by 0.9 inches • 7.9 ounces • 4.3-inch screen • 480 by 272 resolution	• Text-to-speech • Traffic included with connected services • Bluetooth compatibility with cell phones
	▸ The addition of connected services should make TomTom's excellent devices even better, but they don't always work as they should.			
5	**Garmin Nuvi 265T** **$220** find.pcworld.com/61854	★★★½☆ VERY GOOD	• 3.8 by 2.8 by 0.8 inches • 5.2 ounces • 3.5-inch screen • 320 by 240 resolution	• Text-to-speech • Lifetime traffic included • Bluetooth compatibility with cell phones
	▸ This midrange GPS device packs a multitude of features—but you'll wish that its 3.5-inch screen were bigger.			

CHART NOTES: Ratings are as of 10/5/09.

Top 10 Bluetooth Headsets for Cell Phones

LAB TESTED

These headsets let you use your cell phone or player hands-free—a great help when driving.

MONO HEADSETS		Rating	Performance	Features and specifications
1	Aliph Jawbone Prime $110 find.pcworld.com/64016	★★★★½ SUPERIOR	• Audio quality: Superior • Comfort: Very Good • Design: Superior • Button placement: Good	• Style: Earhook or earbud • 0.35 ounce • 2.1 by 0.8 by 0.9 inches • Included USB adapter: Yes
	▸ Expect stellar audio quality and top-notch noise cancellation from Aliph's fashionable—but pricey—headset.			
2	Plantronics Discovery 975 $120 NEW find.pcworld.com/64017	★★★★☆ VERY GOOD	• Audio quality: Very Good • Comfort: Superior • Design: Superior • Button placement: Very Good	• Style: Earbud • 0.28 ounce • 2.7 by 0.8 by 0.5 inches • Included USB adapter: No
	▸ Fans of earhook-free headsets will appreciate the Discovery 975; it delivers great-sounding calls at both ends of the line.			
3	BEST BUY Plantronics Voyager Pro $85 find.pcworld.com/64018	★★★★☆ VERY GOOD	• Audio quality: Superior • Comfort: Superior • Design: Good • Button placement: Fair	• Style: Earbud • 0.62 ounce • 3.0 by 2.3 by 0.5 inches • Included USB adapter: No
	▸ If you can live with the Voyager Pro's chunky design, you'll appreciate its excellent audio quality and impressive wind reduction.			
4	Jabra BT530 $30 find.pcworld.com/62110	★★★★☆ VERY GOOD	• Audio quality: Fair • Comfort: Very Good • Design: Very Good • Button placement: Good	• Style: Earhook or earbud • 0.35 ounce • 1.9 by 0.8 by 0.5 inches • Included USB adapter: Yes
	▸ The BT530 provides a secure fit—with or without the earhook—but its audio quality on calls wasn't consistent.			
5	Plantronics Discovery 925 $70 find.pcworld.com/62109	★★★★☆ VERY GOOD	• Audio quality: Very Good • Comfort: Superior • Design: Very Good • Button placement: Good	• Style: Earbud • 0.28 ounce • 2.7 by 1.0 by 0.9 inches • Included USB adapter: Yes
	▸ This headset has very good audio quality and is easy to fit in your ear; the package includes a handy rechargeable carrying case.			

STEREO HEADSETS		Rating	Performance	Features and specifications
1	Jabra Halo $120 find.pcworld.com/64019	★★★★☆ VERY GOOD	• Music quality: Very Good • Call quality: Good • Comfort: Superior • Design: Very Good • Button placement: Fair	• Style: Earmuffs • 3.0 ounces • Included music player adapter: No
	▸ If you want to listen to tunes wirelessly for hours, the Halo will let you do so in comfort. Its controls can be a bit of a pain, though.			
2	BEST BUY Motorola MotoRokr 305 Wireless Stereo Headphones $55 find.pcworld.com/64020	★★★★☆ VERY GOOD	• Music quality: Good • Call quality: Good • Comfort: Superior • Design: Very Good • Button placement: Good	• Style: Earmuffs • 1.8 ounces • Included music player adapter: No
	▸ You'll find a lot to like about these affordable headphones, including their solid audio quality and comfortable fit.			
3	Sony Ericsson Wireless Stereo Headphones HBH-IS800 $120 find.pcworld.com/64021	★★★½☆ VERY GOOD	• Music quality: Very Good • Call quality: Very Good • Comfort: Good • Design: Superior • Button placement: Very Good	• Style: Earbud • 0.45 ounce • Included music player adapter: No
	▸ If you're willing to pay the price for truly tiny stereo headphones, then this ultradainty pair is just the ticket.			
4	LG Electronics HBS-250 $50 find.pcworld.com/64022	★★★☆☆ GOOD	• Music quality: Good • Call quality: Fair • Comfort: Very Good • Design: Good • Button placement: Poor	• Style: Earmuffs • 1.4 ounces • Included music player adapter: No
	▸ LG's headphones offer a comfortable, secure fit; music sounds good, but call quality sometimes suffers.			
5	Motorola MotoRokr S9-HD for iPod Wireless Stereo Headphones $60 find.pcworld.com/64023	★★★☆☆ GOOD	• Music quality: Superior • Call quality: Good • Comfort: Fair • Design: Fair • Button placement: Superior	• Style: Earbud • 1.0 ounce • Included music player adapter: Yes
	▸ This Motorola headset offers superior music quality, plus a Bluetooth adapter for your iPod; it can feel a bit clunky.			

CHART NOTE: Prices reflect an average of three online retailers, as of 11/5/09.

MORE ONLINE For information on selecting a headset, see our Bluetooth headset buying guide at find.pcworld.com/64074.

Corel Digital Studio 2010: Editing Suite Disappoints

DIGITAL STUDIO 2010 is an entry-level photo and video editing suite.

AS A LONGTIME user of Corel's Paint Shop Pro, I had high hopes for Digital Studio 2010 ($100), a suite that gives novice users basic photo and video editing features, plus the ability to organize large media libraries, produce photo projects like calendars and greeting cards, and generate videos for YouTube or for burning to a DVD. I can see the appeal of its broad feature set and its clean, abbreviated user interface, but the software didn't work particularly well.

The photo and video editing apps are straightforward enough. The photo editor has icons for a picture-cleanup macro and basic tools for cropping and for adjusting contrast, color saturation, poor lighting, and red-eye.

In the video editing tool, you can put in music and do basic editing, including adding text and credits.

Menus in both apps let you make finer adjustments. Just opening the tools was a chore, however: First I had to allow the program to find, index, and generate a metadata database entry for each of the photos or videos that I wanted to work with.

Another program lets you burn videos to a recordable DVD, complete with menus. And Corel WinDVD, in theory, can play back files in most video formats or discs (but it didn't handle XviD-encoded AVI files correctly).

The stated minimum system requirements—a dual-core CPU, 2GB of RAM, a 256MB graphics board—sound steep, but Digital Studio performed okay on a four-year-old homebuilt PC.

All in all, though, I found this suite disappointing.

—Andrew Brandt

★★★ GOOD

Digital Studio 2010 | **Corel**

Editing suite has a broad range of tools, but none are first-rate.

List: $100

find.pcworld.com/64012

Ad-Aware Pro: Costly Antimalware Protection

THE AD-AWARE SERIES has long been known primarily for Ad-Aware Free. Ad-Aware Pro, designed chiefly for businesses, includes antivirus, network protection, and various advanced tools. (Pricing depends on the number of users; a one-year, single-user license is $40.)

As Ad-Aware Free and Plus do, Pro scans for spyware as well as viruses. The last version of Pro, Ad-Aware Anniversary Edition, left room for improvement: Security company AV-Test.org found that Anniversary Edition located only 83.6 percent of over 100,000 malware samples, an unimpressive result compared with its competition. Such tests have not been run on this newest version, so we don't know if the software has improved.

THE NEW AD-AWARE Pro provides a variety of antimalware tools.

We do know that it includes several types of heuristic detection, which protects PCs by examining complex system behavior rather than just looking for known malware signatures. At least theoretically, this method could offer better protection against emerging and unknown threats.

Pro also guards against network-borne threats and provides a "Toolbox" of additional protection features. Overall, the Toolbox is moderately useful.

Is Pro worth $40? For home users, probably not, as many programs offer competent antivirus protection for free. Business users may be content with Ad-Aware Plus, which is $27. If you're looking for an antispyware program for your home PC, Ad-Aware Free still contains the best of what the Ad-Aware tools have to offer.

—Preston Gralla

★★★ GOOD

Ad-Aware Pro | **Lavasoft**

Competent free antimalware tools are a better deal than this paid app.

List: $40 (single user, one year)

find.pcworld.com/64050

Android-Based Droid Eris Targets Businesses

THE HTC DROID Eris is the second in Verizon Wireless's parade of Droids (after Motorola's Droid, reviewed on page 56). The Droid Eris ($100 with a two-year contract) has much in common with other Android phones, but it also adds features that improve the experience for business users.

This touchscreen, CDMA handset has dimensions similar to, and much of the same functionality as, T-Mobile's myTouch 3G GSM unit, also made by HTC. With the two phones side by side, the first thing that jumps out at you is the Eris's brighter, sharper-looking display. Though both handsets have a 3.2-inch, 480-by-320-pixel screen, the Droid Eris supports 262,000 colors while the myTouch 3G has just 65,000 colors.

Soft Keys

The Eris replaces the top four buttons (Home, Menu, Back, and Search) of the myTouch 3G with embedded soft keys, but they are not as easy to activate as their hardware counterparts.

The Droid Eris has a 528MHz Qualcomm MSM 7600 CPU, a 5.0-megapixel camera, Wi-Fi, and Bluetooth 2.0; includes a GPS receiver; and supports the 800MHz and 1900MHz bands on the Verizon Wireless network. It also has a standard headset jack.

Under the hood is the Android 1.5 operating system, not the Android 1.6 (Donut) update or the Motorola Droid's Android 2.0. However, some of the improvements in Donut are in the Eris anyway. For example, it has the updated Google Maps app, which includes transit directions.

Syncs Easily

What sets the Droid Eris apart is how it caters to business users. It allows direct calendar and contact synchronization with Microsoft Outlook, so you don't have to sync your data with your online Google account first before downloading it to the phone—a boon for users. In addition, Verizon has preinstalled an Adobe PDF file viewer, a link to Verizon's Visual Voicemail, a "Stocks" link to financial-market information from Yahoo Finance, and support for Microsoft Exchange corporate e-mail.

Also preinstalled on the handset are a Peep app (for Twitter) and Footprints, which allows you to capture an image, attach comments, and use the phone's GPS capabilities to log its location and create a map, all of which you can share.

While the Eris can't match the Droid's 420-by-854-pixel display, it performed well with both standard and high-definition YouTube videos (depending on the quality of the data connection).

The 5-megapixel camera lacks a flash but captured reasonable images under adequate ambient light. The virtual keyboard worked well in portrait or landscape mode. At just 4.2 ounces and measuring 4.5 by 2.2 by 0.5 inches, the unit fits nicely in a shirt pocket.

If you want a cheaper Android-based alternative to the Droid and can live without a hardware keyboard, the Droid Eris makes a good choice at its price of $100.

—Robert S. Anthony

THE HTC DROID Eris has a touchscreen keyboard for input.

★★★★ VERY GOOD

HTC Droid Eris | Verizon Wireless

Android phone is feature-packed but has no physical keyboard.

List: $100 with two-year contract

find.pcworld.com/64035

iGo Green Charger Cuts Laptop Energy Waste

THE $100 IGO Green Charger uses only the precise amount of energy your laptop requires, and can automatically shut off if need be when not in use—so laptops can be plugged in, but won't draw unnecessary energy once done charging. iGo says the charger uses 80 percent less energy in stand-by mode. It comes with eight laptop tips suited for a variety of models and specially designed to measure out the energy allowed by the device each tip matches.

The charger works across worldwide voltages, but for now is strictly AC power. An AC/DC version that will include an auto/air adapter is coming, according to iGo.

—Melissa J. Perenson

IGO'S CHARGER PROMISES to cut laptop power consumption.

★★★½ VERY GOOD

iGo Green Charger | iGo

Laptop charger saves energy by shutting off when it's not in use.

List: $100

find.pcworld.com/64053

Acer's New Aspire One Comes With Two OSs

THIS ASPIRE ONE can boot either Win XP or Google's Android.

THE LATEST in the Aspire One netbook line, the D250-1613 has a 1.6GHz Intel Atom CPU, 1GB of RAM, a 160GB hard drive, a tiny keyboard, and a microscopic multitouch pad. It's a dual-boot system, with both Windows XP and Android. But Google's OS isn't sufficient to make it a winner.

Upon your first boot-up of the D250-1613, it goes into Windows XP. Once you find and use the Android configuration tool, and reboot, it loads the Acer flavor of Android in about 18 seconds.

The main interface is clean. By default, a few apps line the bottom; you can drag and drop others from a pull-out menu that sits on the right side of the screen. Of course, it has hooks into Gmail, so you have access to all your contacts, calendaring, and e-mail offline. Change any information locally, and the next time you're online, it syncs up with your Google account.

A big disappointment is the lack of useful preinstalled software such as a word processor. The ability to browse a USB thumbdrive would be nice, too, as would printer support.

This Aspire is a little smaller than earlier models (10.2 by 8.0 by 1.0 inches and a light 2.7 pounds). The keyboard is a bit cramped even by netbook standards. And the touchpad is tiny.

At least the display is reasonably big and colorful. With brightness cranked up, test videos ran nicely.

In subjective tests, battery life was a little over 6 hours.

—Darren Gladstone

★★★☆☆ GOOD

Aspire One D250-1613 | Acer

Though it comes with Android, it still has netbook limitations.

List: $350

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New Archos 5 Internet Tablet Does Media, Web

THE ANDROID INTERFACE shines on the Archos 5 Internet Tablet.

THE ARCHOS 5 Internet Tablet—sporting Google's Android mobile operating system—is a touchscreen media player that stands out from the crowd. (It comes in various capacities. A 160GB hard-drive model is $430; an 8GB flash-drive one is $250.)

The Web-centric Android OS includes a powerful Flash Lite browser that will default to a Website's mobile version if one is available. The Internet Tablet also comes with free apps for IM, Twitter, Wikipedia, and other online services.

The Android interface shines on this device, and the generous (4.8 inches), 800-by-480-pixel display is well suited to navigating an assortment of apps.

The player supports 720p MPEG-4 HD video, among other formats; footage looks beautiful on the unit's glossy display. The on-screen controls make it easy to pause, rewind, or jump forward.

You can download media from the Archos Media Club store over the built-in Wi-Fi, or sync the device to your libraries with Windows Media Player 11 or higher.

The unit has a DVR capability, but using it requires a DVR kit that sells for $140. Another option (costing $50) lets you play content from the Archos on your TV.

The built-in GPS often failed to pinpoint my location well, and the feature requires a subscription.

The cost of such useful add-ons may discourage some potential buyers, but the unit remains an intriguing choice as a media player and mobile browsing device.

—Robert Strohmeyer

★★★★☆ **VERY GOOD**

Archos 5 Internet Tablet | **Archos**

A nice media-playing and mobile-browsing combo; pricey add-ons.

List: $430 (160GB hard drive)

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Motorola's Cliq and Droid: Android Smartphones

MOTOROLA HAS introduced two new smartphones, the Cliq and the Droid, both running the Google Android OS for mobile devices. The two phones couldn't be more different, however: The Cliq, with a fun, widget-based interface, is aimed at social networkers; the Droid is for the gadget enthusiast who wants a phone that can do it all.

Motorola Cliq

The Cliq ($200 with a two-year contract from T-Mobile) offers a sleek design and the innovative MotoBlur overlay for Android. Overall, it lived up to our expectations. The Cliq isn't flawless, however: Its camera disappoints, and it doesn't ship with the latest version of Android.

Like a few other phones, the Motorola Cliq has both a touchscreen and a slide-out keyboard. It measures 4.5 inches long by 2.3 inches wide by 0.6 inch thick. It weighs 5.7 ounces, so it is slightly heavier than other current smartphones.

The 320-by-480-pixel capacitive touch display (3.1 inches) is large enough for watching a video or navigating the interface comfortably. Its physical keyboard is a necessity because the native touch keyboard on Android is far from perfect.

Call quality over T-Mobile's network was very good. Motorola says the phone has two microphones and noise-cancellation technology.

The Cliq is the first phone to showcase MotoBlur, Motorola's skin for Android. After you register for an account, MotoBlur aggregates and organizes your social networking data, and delivers it to the phone. MotoBlur's best feature may be its ability to track your lost or stolen phone via GPS and remotely wipe it.

For hard-core social networkers, the Motorola Cliq is a dream phone.

MOTOROLA DESIGNED the Cliq to please social networkers.

Motorola Droid

The Droid ($200 with a two-year contract from Verizon) has a solid feel and heft, and a crisp, 3.7-inch touchscreen. Making good use of Android 2.0's new features, the Droid is a powerful Web surfing and communications tool. Its biggest flaw, however, is in its keyboard design, which is shallow and flat, so typing can be uncomfortable.

At 0.54 inch thick, the Droid still has room for a 40-key, slide-out QWERTY keypad. It's just under 6 ounces; closed, it measures 4.56 by 2.36 inches.

The Droid supports the 1900MHz and 800MHz CDMA EvDO bands on the Verizon Wireless network and comes with a 1400-mAh battery rated at 270 hours of standby time and 385 minutes of talk time. It also has a preinstalled 16GB memory card and offers Wi-Fi and Bluetooth 2.1 support.

The phone provided excellent call quality in tests. Especially snappy was the handset's Web browser, which loaded images quickly. Video and audio were excellent.

As with all Android devices, you'll need a free Google account to take advantage of key features, such as the contact list and the calendar.

The Motorola Droid certainly stands out among Android devices due to its hardware (superior, overall) and its enhanced 2.0 software. If the Android Marketplace is successful, the iPhone faces a powerful new competitor.

—Ginny Mies and Robert S. Anthony

MOTOROLA'S DROID IS meant to be an enthusiast's do-it-all gadget.

★★★★½ **SUPERIOR**

Cliq | Motorola (via T-Mobile)

For hard-core social networkers, the Cliq is a dream phone.

List: $200 with two-year contract

find.pcworld.com/64054

★★★★½ **SUPERIOR**

Droid | Motorola (via Verizon)

The Droid, running Android 2.0, is a powerful iPhone competitor.

List: $200 with two-year contract

find.pcworld.com/64055

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Top 10 Network-Attached Storage Devices

LAB TESTED

Choose a NAS box for centralized storage, media streaming, print serving, and backup.

	MODEL	Rating	Performance	Features and specifications
1	Synology DS509+ **$1549 NEW** find.pcworld.com/63994	★★★★½ SUPERIOR	• Overall performance: Superior • Copy files: 218 seconds • File search: 288 seconds	• 5000GB; rpm not stated • External SATA-300, USB 2.0, gigabit ethernet • Cost per gigabyte: $0.31
	▸ The Synology DS509+ is a superfast NAS box that provides five lockable bays, great features, and useful software.			
2	Seagate Black Armor NAS 440 **$1090** find.pcworld.com/63227	★★★★ VERY GOOD	• Overall performance: Very Good • Copy files: 319 seconds • File search: 342 seconds	• 4000GB; 7200 rpm • USB 2.0, gigabit ethernet • Cost per gigabyte: $0.27
	▸ Seagate's NAS 440 is a top-notch network-attached device that can act as a media server; it comes with pro software features, too.			
3	Synology Disk Station DS209+ **$420** find.pcworld.com/62702	★★★★ VERY GOOD	• Overall performance: Superior • Copy files: 216 seconds • File search: 305 seconds	• 1000GB; 7200 rpm • Gigabit ethernet • Cost per gigabyte: $0.42
	▸ This speedy Synology NAS box has tons of robust server-level features and streams photos, music, and videos well.			
4	HP MediaSmart Server ex487 **$750** find.pcworld.com/62692	★★★½ VERY GOOD	• Overall performance: Superior • Copy files: 231 seconds • File search: 194 seconds	• 1500GB; 7200 rpm • Gigabit ethernet • Cost per gigabyte: $0.50
	▸ Windows Home Server blesses this highly capable unit with features, but curses it with unnecessary complexity.			
5	Netgear ReadyNAS NV+ **$740** find.pcworld.com/57859	★★★½ VERY GOOD	• Overall performance: Good • Copy files: 373 seconds • File search: 563 seconds	• 1000GB; 7200 rpm • Gigabit ethernet • Cost per gigabyte: $0.74
	▸ This expensive device comes with deep, comprehensive settings that make it well suited for business use.			
6	BEST BUY Western Digital ShareSpace 4TB **$650 NEW** find.pcworld.com/63995	★★★ GOOD	• Overall performance: Fair • Copy files: 409 seconds • File search: 268 seconds	• 4000GB; 7200 rpm • USB 2.0, gigabit ethernet • Cost per gigabyte: $0.16
	▸ Four-bay network-attached storage device boasts multiple RAID options, fast file searching, and smooth media serving.			
7	Netgear ReadyNAS Duo **$380** find.pcworld.com/60441	★★★ GOOD	• Overall performance: Good • Copy files: 284 seconds • File search: 312 seconds	• 500GB; 7200 rpm • Gigabit ethernet • Cost per gigabyte: $0.76
	▸ Compact, two-bay, hot-swappable network-attached device packs a strong punch, in both features and performance.			
8	HP MediaSmart Server LX195 **$400 NEW** find.pcworld.com/63996	★★★ GOOD	• Overall performance: Superior • Copy files: 237 seconds • File search: 207 seconds	• 640GB; 7200 rpm • Gigabit ethernet • Cost per gigabyte: $0.63
	▸ HP's single-drive device provides network storage, but does so via an ungainly interface; response to remote logins is slow.			
9	Buffalo Technology LS-WS **$450 NEW** find.pcworld.com/63997	★★★ GOOD	• Overall performance: Fair • Copy files: 336 seconds • File search: 297 seconds	• 1000GB; 5400 rpm • USB 2.0, gigabit ethernet • Cost per gigabyte: $0.45
	▸ The compact Buffalo LS-WS offers plenty of storage capacity and RAID, in a box that you can slip into your laptop bag.			
10	Linksys by Cisco Media Hub NMH410 1TB **$430** find.pcworld.com/62707	★★½ FAIR	• Overall performance: Fair • Copy files: 404 seconds • File search: 404 seconds	• 1000GB; 7200 rpm • Gigabit ethernet • Cost per gigabyte: $0.43
	▸ This Linksys by Cisco model is an excellent, easy-to-use choice for streaming media, but it's poky at data transfers.			

CHART NOTES: Ratings are as of 11/2/09.

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HP, Lexmark Multifunctions Offer Web Connectivity

HP AND LEXMARK have each launched Web-enabled color inkjet multifunctions. HP's Photosmart Premium Touchsmart Web All-in-One Printer costs $400. Lexmark has three models: the Interact S605 ($200), the Prestige S805 ($300), and the Platinum Pro S905 ($400) reviewed here. Both companies' MFPs have large, color touchscreen LCDs and automatic duplexers, but average speed and print quality for the price. As for their Web capabilities, they take different directions, and neither one has yet gotten very far. Both units need an ethernet or a Wi-Fi link to your Internet-connected network to gain Web access. Also, neither printer can browse the Web in general; instead, they give you access only to certain kinds of content.

Limited Web Options

The consumer-oriented HP model offers prefabricated—and sometimes disappointingly limited—apps. In Google Maps you can find and print a map, but driving directions are still in the works. USA Today's app lets you select and print news, but you can't preview the contents. Snapfish users can view, print, and upload photos, but a slideshow function (which would seem a natural fit for the MFP's 4.33-inch display) is absent. A handful of apps come preloaded; you can download more from the HP App Studio site. HP says that a software development kit (SDK) will be out in early 2010—now, that could be fun.

The HP's other features are pretty good. The two input trays accept a sparse 100 sheets of paper plus 20 photos. Connectivity includes USB, ethernet, Wi-Fi, and Bluetooth, plus a scad of media slots and a PictBridge port. The high-yield inks cost a midrange 4.4 cents per text page and 12 cents for each four-color page.

The Lexmark S905 is built for a busy small office. It has a 50-page automatic document feeder and two 150-sheet, letter/legal input trays. The top tray can fit snapshot-size photo paper, while the bottom one is removable. Connections include USB, ethernet, Bluetooth, and Wi-Fi. A single media slot takes Memory Stick, MultiMediaCard, SD Card, and XD-Picture Card; the device also has a PictBridge port. Lexmark's high-yield inks are amazingly cheap, costing just 1 cent per text page and 10 cents per four-color page.

The Web capability is one aspect of what Lexmark calls "SmartSolutions," namely the ability to program a button on the MFP's 4.3-inch LCD for one-touch execution of a sequence of actions (such as saving scanned PDFs to a location on a server). While the unit has a few presets, Lexmark expects you to build your own. The Web presets include the ability to view an RSS feed, or to view and print an agenda from your Google calendar. You can even enter your zip code and then map and print the closest sources of Lexmark ink. The company says it is working on an SDK, too.

LEXMARK'S S905 LETS you program Web functions and other actions.

HP'S TOUCHSMART WEB MFP has apps for several online services.

Worth a Look?

Is it time to purchase a Web-enabled printer? Maybe—if you're patient and adventurous. I like Lexmark's flexible approach more than HP's canned one, but both offerings are still in their infancy: Some odd behavior, mostly firmware related, plagued both of our test units. Lexmark has issued fixes; HP is still working on several.

—Melissa Riofrio

★★★★☆ VERY GOOD

Photosmart Premium Touchsmart Web All-in-One Printer | HP

Web apps can be disappointingly limited; MFP is average otherwise.

Street: $400

find.pcworld.com/63998

★★★★☆ VERY GOOD

Platinum Pro S905 | Lexmark

Web apps are programmable, features are generous, inks are cheap.

Street: $400

find.pcworld.com/63602

PHOTOGRAPHS: ROBERT CARDIN

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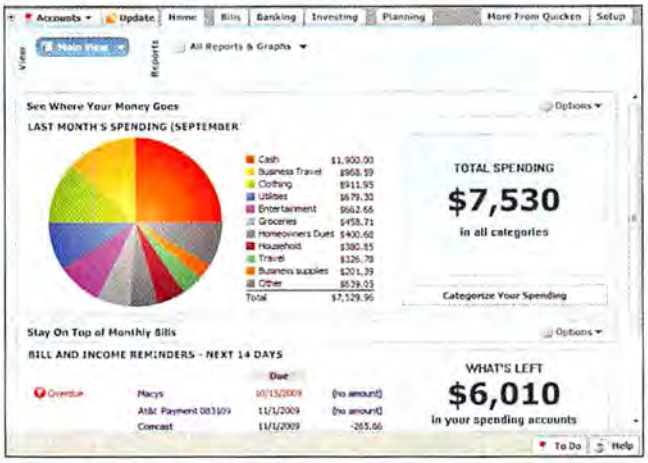

QUICKEN PREMIER 2010 shows your spending in easy-to-read charts.

INTUIT'S $90 QUICKEN Premier 2010 improves on previous versions. Interestingly, many of the improvements seem to have taken inspiration from Web apps such as Rudder and Mint (Intuit just acquired the latter). You get three stacked modules, the first with a pie chart showing the month's spending by major categories, along with the total. The middle module shows which bills are due, plus calculations of how much you will have in your accounts after paying them. Lastly, bar charts show how your spending in key categories tracks against your budget.

Quicken continues to offer automated downloads of transaction data from financial institutions. Intuit says that it has improved auto-categorization of downloaded transactions based on payee. Since categories can be associated with line items in tax returns, accurate and complete categorization can be a big help at tax time, and such sorting is certainly vital for useful financial planning.

The Premier edition also has good tools for tracking investments and minimizing taxes, but you can find many of them online. The main benefit of Quicken is consolidation, for watching accounts at several institutions.

—Yardena Arar

★★★★½ **SUPERIOR**

Quicken Premier 2010 | Intuit

Personal finance app continues to improve, and offers solid value.

List: $90

find.pcworld.com/63999

Top 5 Snapshot Printers

LAB TESTED

Epson's snapshot models generate good-looking photos, for a reasonable per-print cost.

	MODEL	Rating	Performance	Features and specifications
1	Epson PictureMate Zoom $230 find.pcworld.com/59195	★★★★☆ VERY GOOD	• Color photo quality: Good • Grayscale photo quality: Very Good • Tested speed (ppm): 1.5	• Media types: CompactFlash, Memory Stick, SD Card, XD-Picture Card • Cost per print: $0.25
	▸ An integrated CD burner makes the PictureMate Zoom pricey, but the feature simplifies mass-quantity photo backups.			
2	Epson PictureMate Dash $180 find.pcworld.com/58735	★★★★☆ VERY GOOD	• Color photo quality: Good • Grayscale photo quality: Very Good • Tested speed (ppm): 1.5	• Media types: CompactFlash, Memory Stick, SD Card, XD-Picture Card • Cost per print: $0.25
	▸ The bulky PictureMate Dash compact printer produces nice-looking photo prints quickly and easily, and at a good price.			
3	BEST BUY Epson PictureMate Charm $150 NEW find.pcworld.com/63989	★★★½☆ VERY GOOD	• Color photo quality: Very Good • Grayscale photo quality: Good • Tested speed (ppm): 1.0	• Media types: CompactFlash, Memory Stick, SD Card, XD-Picture Card • Cost per print: $0.25
	▸ Slower than its older Epson cousins, but also a little cheaper, the PictureMate Charm is a nice choice as a basic photo printer.			
4	Canon Selphy CP790 $180 NEW find.pcworld.com/63414	★★★☆☆ GOOD	• Color photo quality: Fair • Grayscale photo quality: Very Good • Tested speed (ppm): 0.8	• Media types: CompactFlash, Memory Stick, SD Card, XD-Picture Card • Cost per print: $0.32
	▸ You might choose the Selphy CP790 for its unusual looks rather than its overall performance, which is merely adequate.			
5	HP Photosmart A646 Compact Photo Printer $150 NEW find.pcworld.com/63618	★★★☆☆ GOOD	• Color photo quality: Good • Grayscale photo quality: Good • Tested speed (ppm): 1.1	• Media types: Memory Stick, SD Card, XD-Picture Card • Cost per print: $0.34
	▸ Though the A646's purchase price is low, this model's replacement inks are expensive. Flesh tones come out orangey, too.			

CHART NOTE: Ratings are as of 11/2/09. Printer speeds are in pages per minute (ppm).

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MacBook Gains a Sleek Design, Loses Weight

IN ITS FIRST major remodeling since 2006, the MacBook gains many of the features of the MacBook Pro, including a unibody design, a glass touchpad, and an LED-backlit display.

Making the MacBook's case out of a single piece of polycarbonate plastic results in fewer parts, a lighter weight, and better durability. The keyboard also feels more solid and consistent.

The battery is not user-replaceable, but Apple says that it will last for 3.5 to 7 hours and will go through up to 1000 charge cycles before lowering to 80 percent capacity. Accessing the hard drive and RAM slots for upgrades is pretty easy.

The 13.3-inch display has the same 1280-by-800-pixel resolution as before, but it's brighter. Unfortunately, it shows a yellow color shift as you change viewing angle.

THE CASE OF the new, lighter MacBook is constructed from just a single piece of polycarbonate plastic.

PHOTOGRAPHS: COURTESY OF APPLE

MacBook (13.3 inches, 2.26GHz)
Apple
Not rated
Unibody design makes for a lighter, more comfortable-to-use MacBook.
List: $999
find.pcworld.com/64008

Overall, the new model is slightly wider and deeper than the previous MacBook, despite shaving 0.3 pound from the total weight. That small difference in weight, though, is quite noticeable.

The latest MacBook uses a 2.26GHz Intel Core 2 Duo CPU, and ships with 2GB of RAM (Apple will double that to 4GB for an extra $100). It also has nVidia GeForce 9400M graphics, as well as 802.11n and Bluetooth 2.1 wireless networking.

In *Macworld*'s tests the new MacBook was a little faster than its predecessor. Be sure to stay tuned at PCWorld.com for a report on how it performed on World-Bench 6 under Boot Camp.

—Jonathan Seff

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Apple's Magic Mouse Offers Multitouch Features

SOPHISTICATED, alluring, and stunning, the Magic Mouse epitomizes Apple style. The mouse and its multitouch features work well, too. But you may not want to abandon your current mouse for it.

WITH THE SLEEK Magic Mouse, you use touch commands to scroll.

Offering no visible buttons and no scroll ball, it rises 0.93 inch off the table—a very low profile. If you like having a mouse resting against your palm, you may find this one too flat.

You can use the whole surface above the Apple logo for multitouch finger swipes. Scrolling this way is easy and feels natural. You can't use touch if you run a non-Mac operating system on your Mac, either through virtualization or Boot Camp. It doesn't have Windows drivers, so in that OS it can't scroll at all, and it becomes a basic two-button mouse. Perhaps driver updates or third-party apps will include more functions that demonstrate the input advantages of multitouch on a mouse.

When you right- or left-click, the whole top of the mouse presses down and makes a click sound. Despite the lack of delineation between the two buttons, I never inadvertently pressed the wrong one.

The on-screen tracking is excellent. I never experienced gaps, and the cursor kept up with both long and precise movements. However, the biggest disappointment with the Magic Mouse is the way it feels as you move it on a table, mousepad, or desktop. Since it rests on two plastic rails (which provide grip on the surface so that the mouse stays still while you perform touch gestures), the result is a grinding, rough feel.

—Roman Loyola

★★★☆☆ GOOD

Magic Mouse | Apple

Aside from the touch features and slick design, this is a basic mouse.

List: $69

find.pcworld.com/64007

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WinZip 14 Introduces Windows 7 Features

WINDOWS 7 USERS will be pleased to see that the WinZip Standard compression program now takes advantage of some of the OS's most useful new features.

Thanks to Windows 7's Libraries, in WinZip you can now zip files in multiple folders together in a single action. WinZip 14 integrates with Jump Lists, too: Pin WinZip to the taskbar and right-click its icon, and you can perform tasks such as opening and making archives.

WinZip 14 also adds a feature for all Windows users: better security for encrypted files. It will automatically destroy temporary, created-for-viewing copies of encrypted files, and it will work with Intel-based hardware that uses AES encryption.

The new features join an already powerful suite of archive tools. Also included is the .zipx standard (introduced in a previous version), which offers greater compression than regular .zip. The .zipx format will even compress .jpg files, which are already compressed.

—Preston Gralla

★★★★½ **SUPERIOR**

WinZip Standard 14

WinZip Computing

Compression tool adds Windows 7 support and improves security.

List: $30

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Utilities Ease the Move to Another Computer

BIRDS MIGRATE IN the fall. People migrate to new computers—or between work and home PCs—at any time. No matter how big the move, these downloads will help you stay on track.

PCmover Professional

If you're looking to upgrade to Windows 7, or just to perform a clean installation of one of the older Windows operating systems, you probably don't want to reinstall your current applications one by one afterward. The $60 PCmover Professional, unlike the free file transfer wizards in Windows, helps you transfer programs as well as documents and settings. For effectiveness in transferring my XP installation to Windows 7, I give PCmover Professional an A+. If you don't have the time or don't want to hassle with reinstalling apps (or you can't find the discs), PCmover is a handy, albeit expensive, utility. find.pcworld.com/64057

—Jon Jacobi

PCMOVER PROFESSIONAL CALMS PC-migration jitters with an easy-to-use interface that gives you several alternatives.

Yoono Desktop

One of many apps that mash together all of your social networking updates into one, Yoono Desktop stands out in a few important ways. The free app works on its own, without any other installation. Another advantage: Yoono is not just the union of Facebook and Twitter, as it also has support for MySpace and a host of

YOONO DESKTOP SUPPORTS myriad IM networks.

instant messaging clients. Installation is simple, and each addition of social media requires only a few clicks and your login and password. It's the clear choice if you use more than two social networks/instant messengers and want that info aggregated in one place. find.pcworld.com/64063

—Steve Horton

FavBackup

In the age of Google, we depend on our Web browsers—and on all the features that make them efficient to use. Personal settings and data such as bookmarks, history, cookies, and saved passwords are essential to productivity. FavBackup recognizes the importance of such data and offers an easy and comprehensive way to back all of it up. You can use the free tool to migrate your customized settings to a Web browser on a different computer, as well. FavBackup packages everything into a neat .dat file that you can easily transport and store. Ordinarily, many people go through quite a hassle to preserve browser settings; but with FavBackup's assistance, even the most casual user will never have to rebuild their browsing environment from scratch. find.pcworld.com/64062

—Gabe Gralla

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- Genuine Windows® 7 Home Premium
- High Definition Surround 3D Premium Sound

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PURE PROTECTION FOR HOME PCs, NOTEBOOKS AND SMARTPHONES

Trend Micro Internet Security Pro offers fast, smart, and easy-to-use security for serious online enthusiasts

TREND MICRO™

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Wi-Fi Advisor verifies whether a "hot spot" is legitimate and safe. Trend Micro Vault allows you to remotely protect important data in case your laptop is stolen. And Trend Micro Mobile Security guards against viruses, spam and other attacks for Microsoft Windows Mobile and Symbian OS-based smartphones.

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File size and scan time have been reduced 20 percent, while scans and updates happen only when it's convenient — not while you're watching a video, giving a presentation or playing a game. System Tuner improves PC performance by cleaning up files and registries and managing startup programs.

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To order or for more information, visit www.trendmicro.com

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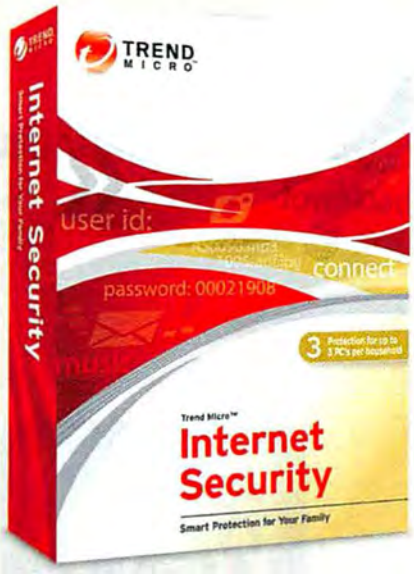

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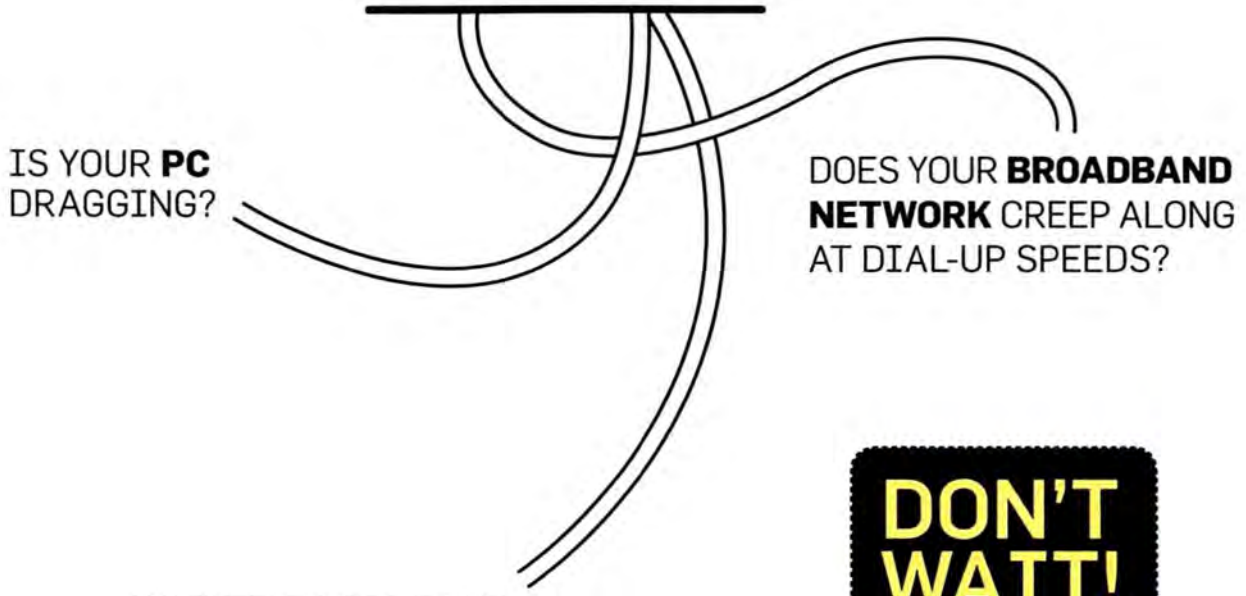
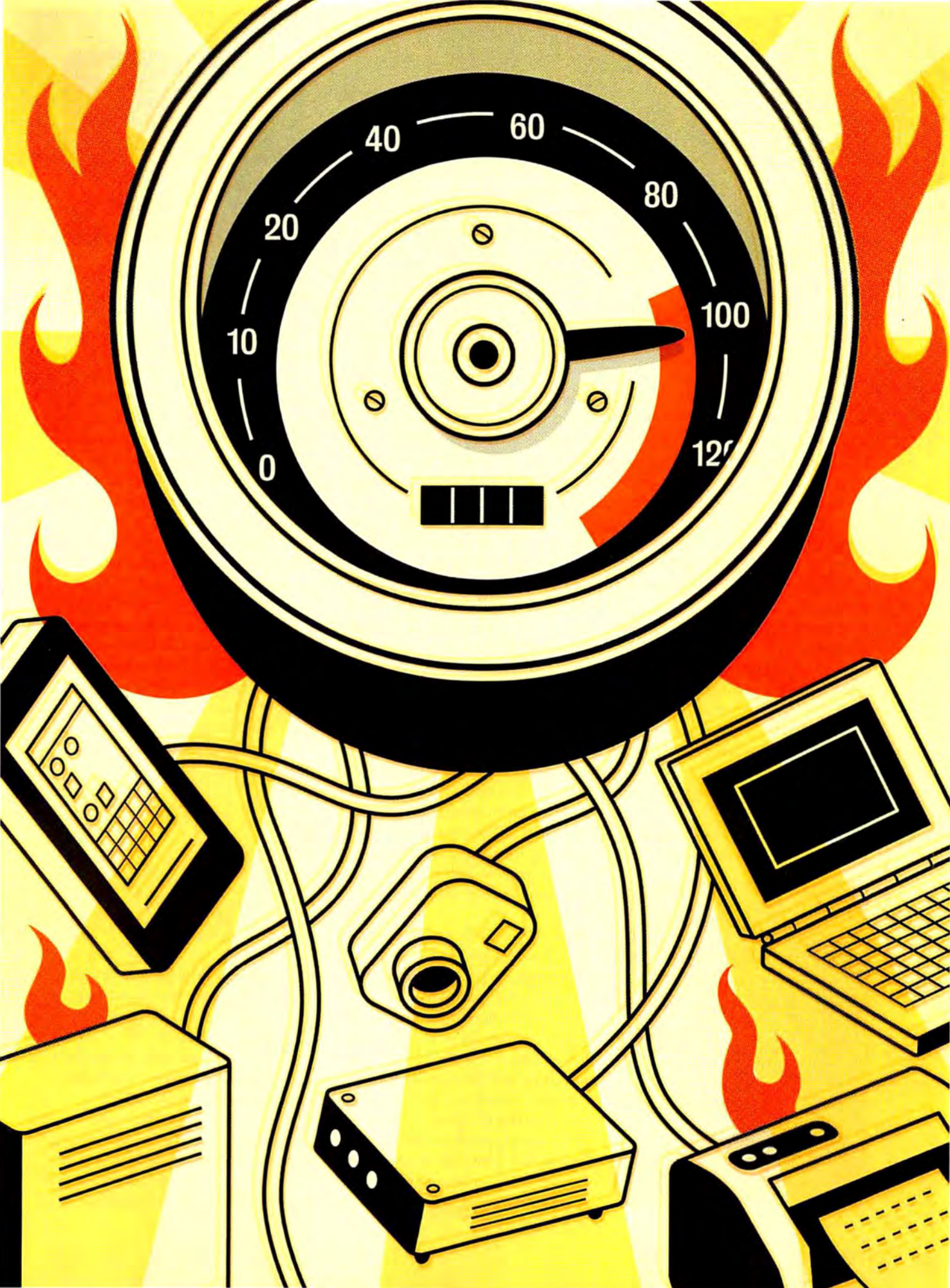
Speed Up Everything

BY THE EDITORS OF PC WORLD
ILLUSTRATIONS BY HARRY CAMPBELL



DON'T WAIT! These fixes will get you back into the fast lane. »


0
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Supercharge Your PC's Hardware

No amount of Windows tweaking can give you the same kind of speed boost that a few judicious hardware upgrades can—the most effective way to soup up any PC is to start by updating the components inside. We'll explain here how to upgrade the two most vital parts: the RAM and the graphics card.

Upgrade Your RAM

Adding RAM is often the most cost-effective upgrade you can make to speed up a sluggish PC. When a system runs short of RAM, it must swap the overflow data to the hard drive, which can hamper performance. Here's how to add memory to your desktop, laptop, or netbook.

RAM comes in many flavors, such as DDR2 and DDR3. Newer technologies provide faster performance, but most motherboards accept only one type of RAM. Check your PC's manual to find out what type of RAM modules you need and how to install them. RAM dealers such as Crucial (www.crucial.com) and Kingston (www.kingston.com) offer online tools that identify the right RAM for many PCs and motherboards. Also, to take advantage of more than 4GB of RAM, your PC needs to run a 64-bit operating system; Windows 7 is available in a 64-bit version, and we highly recommend it.

****WARNING ****
Before you attempt any of these upgrades, take precautions by moving your PC over to a clean, uncarpeted workspace and donning an antistatic wrist strap to discharge any static electricity from your body.

Open the PC's case and look for the memory slots. In laptops and netbooks the slots are usually under a removable panel on the bottom of the machine. To take out existing RAM, release the clips at each end so that the module pops loose. With the slots clear, gently but firmly insert the new module.

On a desktop, it's often best to seat one corner of the module first and then press the other end into place. Once you've fully inserted the module, the clips should close to hold the memory securely. On a laptop or netbook, press the end with the metal leads into place first, and then press down until the clips snap tightly around the ends.

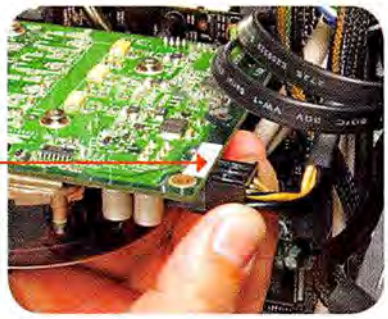
For a complete guide to upgrading your RAM, visit find.pcworld.com/64041.

RAM: Hold the module by the edge, seat one corner, and push the other end in.

Replace Your Graphics Board

Even if you're not a gamer, upgrading your graphics board can give your PC a serious boost, since Windows 7 and Vista both feature fancy effects. While you can upgrade the graphics on some laptops (see find.pcworld.com/64039), in this article we'll focus on desktop PCs.

When shopping for a graphics board, select one that fits the slot on your PC. In most newer systems, it will be a PCI-Express slot; some older machines may have only PCI or AGP slots. Fortunately, graphics card makers still offer boards to fit older slots, so an outdated motherboard need not be a total obstacle.



GRAPHICS: Some new boards require a connection to the PC's power supply.

With your new board at the ready, open the PC's case and locate the existing graphics card. Before attempting to pull it loose, remove the screw holding it down and release any plastic clips that may be securing it. Once the old card is out, slide the new board straight down into the slot until it is firmly seated and the plastic clip on the motherboard has snapped tightly around it.

Newer PCI-Express boards often use so much juice that they require a PCI-E power line from the computer's power supply. If you've installed such a card, connect this power line (the board may have two) before closing the case. Then boot the PC and install the drivers from the disc that the manufacturer provided.

For a complete primer on graphics boards, see find.pcworld.com/64042.

PHOTOGRAPHS: ROBERT CARDIN

Benchmark Your PC

IF YOU'RE SERIOUS about improving your computer's performance, it helps to measure how fast (or how slow) your system is to begin with.

Here at *PC World*, we've been developing and using our own powerful benchmark suite for years. WorldBench 6 (www.worldbench.com), the latest version, tests all facets of a PC's performance on both 32-bit and 64-bit editions of Windows. At $249 for a single-user license, WorldBench isn't cheap, but it's

Streamline Windows

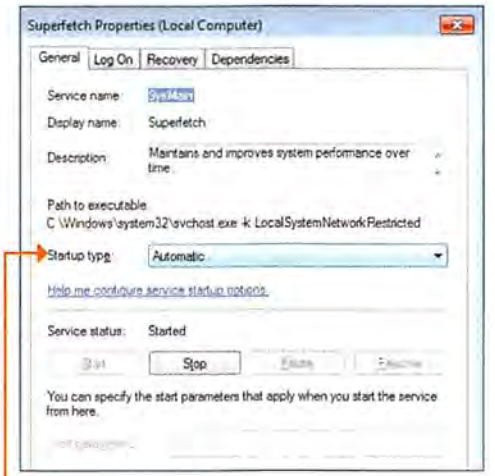
Whether you run Windows XP, Vista, or 7 on your PC, you have a few really good ways to cut out the fluff and make your operating system run more smoothly, quickly, and efficiently. By turning off unnecessary features and disabling unwanted startup programs, you can give your computer an instant speed boost.

Knock Out the Fat

Windows—yes, even XP—is loaded with effects that take up precious system resources without delivering meaningful user benefits. If you turn some of these items off, Windows can divert the resources to more useful activities, such as running your applications.

In Windows XP, open the System control panel and click the *Advanced* tab. Click *Settings* and then select the radio button marked *Adjust for best performance*. This option will turn off some of the frilly visual effects, such as drop shadows under your menus, and make Windows a little snappier.

In Vista, start by disabling the resource hog known as the Sidebar. In both Vista and Windows 7, turn off the Aero environment to reclaim some of your system's lost memory and processor power. To do this, right-click the desktop and choose *Personalize* from the context menu. In Vista, click *Window color and appearance*, and then uncheck the box for *Enable Transparency*. In Windows 7, simply select the theme labeled *Windows 7 Basic*.



MANAGE SERVICES: To improve Windows' speed, control how (or if) services launch.

Stop Memory-Hogging Apps

Once you've installed programs on your PC, you should check for any unwanted apps running in the background that could slow down the system. Such apps may be designed to launch when Windows starts so that you can load their corresponding programs faster. The problem is that the background items run all the time, regardless of whether you use the parent application.

In Windows 7 or Vista, click *Start* and type **msconfig** in the 'Search programs and files' field. Press **<Enter>**. In the System Configuration window, select the *Startup* tab. In the Command column, look for programs that you don't want to wait for at boot-up time. For example, take iTunes: If you've installed this app, you'll find both iTunesHelper.exe and QTTask.exe. They're unnecessary additions—the former launches when you start iTunes anyway, and the latter merely places a QuickTime icon in the corner of your screen for easy program launching. Uncheck both. Once you've checked all of the programs you want to launch at startup and unchecked the programs you don't, click *OK*.

You can also find services on your PC; Microsoft recommends trimming them as well. Click *Start*, type **services.msc** in the search field, and press **<Enter>**. Up pops the Services window, a list of options and executables that's even more confusing than the Startup window.

To identify which services to turn off (and which to leave on), check out Black Viper's exhaustive list (find.pcworld.com/64040) of Windows 7's services across all of its various editions, along with a list of which services you should modify and how you should set their parameters. Armed with this advice, just double-click on any listed service. You need concern yourself only with the 'Startup type' listing in the screen that appears next. By switching among the Automatic, Manual, and Disabled modes, depending on Black Viper's recommendations, you'll be able to control exactly how services launch—if at all—during the Windows startup process and during your general use of the operating system. Every little bit helps.

Maintain Top Performance

To keep your system fast, clear out the C:\Windows\Temp folder on occasion. Do it as soon as you boot into the OS, or even in Safe Mode, to ensure that you wipe every last unused file. In the same vein, don't use Windows 7's uninstall function or a program's default uninstall executable to remove an app. Instead, use the free Revo Uninstaller (find.pcworld.com/62049); this awesome utility removes programs using their default uninstall routines, but it also scans your system and Registry to clean away all traces of the program. »

a proven benchmark that's trusted by industry leaders ranging from HP and Intel to McAfee and Microsoft.

If you're on a tighter budget, you can find cheaper benchmark tools that will give you an indication of your computer's speed. OpenSourceMark is, as its name implies, an open-source program that you can download for free from find.pcworld.com/64044. This simple utility runs your machine through assorted operations, from spreadsheet tasks to image editing procedures.

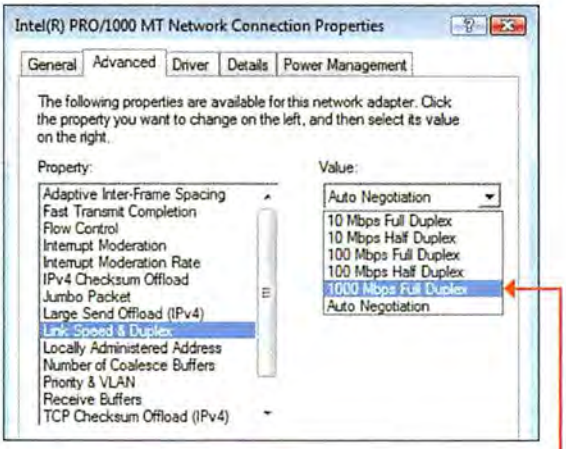
Armed with a starting score, you can then compare it with a post-upgrade score or see how much of an effect some of our Windows tweaks have on your system's overall performance.

Accelerate Your Network

Networks can be tricky to troubleshoot. Much depends on what you're doing: Copying files to another system, for example, might crawl if you're writing to a NAS device attached to a slow PC in the next room. But a few tweaks can still boost your network performance.

Update Firmware and Drivers

To get your network up to speed, first install the latest Windows updates and download the newest drivers for your PC's network cards. Second, install the current firmware for your router. You can usually locate these items on the manufacturers' Websites. Most new routers make updating easy via their Web administration panel; usually the screen will have an option for you to download and install the latest firmware with just a click or two.



NETWORK CARD ADJUSTMENTS: Changing 'Link Speed & Duplex' to its highest setting can help network performance.

Change Network Card Settings

Adjusting your network card's auto-negotiating setting can help, too. In Control Panel, click *Network and Sharing Center*. Click *Change Adapter Settings*, and then right-click on your Local Area Connection and select *Properties*. In the screen that appears, click the *Configure* button under the Connect Using field. Select the *Advanced* tab. Set 'Link Speed & Duplex' to its highest available setting, such as *100 Mbps Full Duplex* or *1000 Mbps Full Duplex*.

Make Windows Set You Free

Windows Vista has a habit of throttling your connection when you're playing multimedia, to prevent movies from skipping. You can adjust this behavior.

Press **<Windows>-R**, type **regedit**, and press **<Enter>**. Navigate to the *HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Multimedia\SystemProfile* key. Raise the value of 'NetworkThrottlingIndex'. Setting it to 100 disables it; Microsoft recommends going no higher than 70, but there's no harm in testing settings.

Route Traffic Intelligently

Online games, streaming media, Internet phone services, and peer-to-peer programs consume a lot of bandwidth. You can manage them with your router's port-forwarding feature.

In your router's configuration screen, under the port-forwarding option (it will be labeled slightly differently from one router to another), type your PC's internal IP address (usually in the form of 192.*.*.*) and the preferred port found in your app's configuration screen (for example, in Skype it's in *Tools•Options•Advanced•Connection*). Pick both TCP and UDP protocols for forwarding, and save. To see if your chosen port has a clear path to the Internet, fire up the app and visit www.canyouseeme.org.

Better Broadband

WHILE VARIOUS PRODUCTS claim to boost broadband performance, none have proven effective enough for us to recommend them. If you're not getting the speed you're paying for, try some basic fixes.

First, visit Speedtest.net for a quick, fairly accurate assessment of your download and upload speeds. If the results are well below the advertised speeds for your plan, call your service provider to complain. This is the most effective thing you can do.

Second, ask your carrier whether a newer broadband modem is available; if so, try to have one sent to you. ISPs frequently upgrade their base equipment, but almost never notify existing customers. If you ask for the latest model, many ISPs will send one free of charge (especially if your contract has expired).

For more advice, visit find.pcworld.com/64045.

SPEEDTEST.NET: Visit this site to evaluate your current Internet connection.

Choose a Fast Hard Drive

A speedy storage device—whether it's internal or external—can have a massive impact on PC and network performance. Here are some things to consider when you shop for a new drive.

Pick a Fast External Option

The big advantage to external storage is obvious: You can hide it for safekeeping or take it on the road. Most home users use external storage for backups. With an external drive, though, you'll probably sacrifice speed. External attachment technologies like USB, FireWire 400/800, and ethernet are slower than the connections for internal storage; only eSATA can match the data-transfer speeds of internal drives. If you're faced with a choice and you want maximum compatibility, choose USB. A much better option is a triple- or quad-interface box that allows you the fastest possible connection under any circumstance.

SWIFT STORAGE: The roomy Seagate FreeAgent XTreme offers high transfer speeds.

Use SATA Instead of PATA

For internal storage, SATA connections are the best, fastest choice—and these days, SATA is most likely the primary (or only) drive connector in your PC. Drives with the older PATA connector are still available in up to 750GB capacities, so you can replace the PATA drive in an older PC. However, if your older system has a SATA bus, use it instead.

SATA drives also have the ability to work externally, in eSATA enclosures, but your PC may require an add-on card to support an eSATA connector.

Examine Drive Specs

Outside of a laptop or netbook, it's rare these days to find a drive that runs at less than 7200 rpm; don't even consider anything slower for a desktop PC.

You'll find 10,000-rpm and 15,000-rpm hard drives, but they carry a premium, and you might not notice much of a performance gain. Unless you have an eSATA connection, don't bother with such drives for external use.

The amount of cache on a drive also affects performance, but usually not significantly. You'll see ecofriendly drives with as much as 32GB of cache, and high-performance drives with only 8MB. Be sure to get at least 8MB; beyond that, don't worry about it.

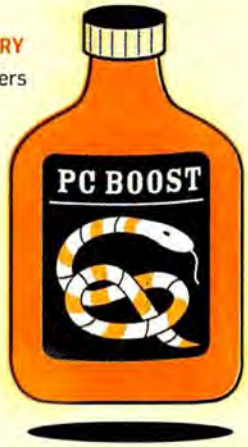
Consider an SSD

Though solid-state drives are the rage, the NAND flash memory used in most models varies wildly in speed. Most serve up data quickly, but some will bog down when writing data. Still, newer SSDs scream past disk-based rivals, and faster models are rapidly becoming affordable. When speed is paramount, opt for an SSD based on SLC (Single Level Cell) technology over an MLC (Multi Level Cell) model. Not only is SLC faster, but it should also last longer: SLC is rated for 100,000 writes as opposed to 10,000 for MLC. That said, 10,000 is actually a lot of writes for a data cell, so don't forgo MLC if you don't need ultrahigh speed or if you mostly want a laptop drive that can withstand a shock. »

ILLUSTRATION: HARRY CAMPBELL

PC Performance Myths

YOU HAVE LOTS of good ways to speed up your PC, but you'll encounter plenty of bogus tips, too. Here are three tactics that don't do the trick.



CLEANING THE REGISTRY Hard-core Windows users love to tweak via the Registry Editor. This, the thinking goes, improves efficiency, saves the OS energy at boot-up, and makes it run faster. But we've seen no evidence that this works, and you can do more harm than good by messing with the database that runs your PC.

DISABLING SYSTEM RESTORE Many supposed Windows gurus say that disabling System Restore can speed up your PC by freeing hard-drive space and preventing it from kicking in while you work. But since System Restore activates only when you install apps or when your PC is idle, and since it uses only a small fraction of your drive, turning it off robs you of a valuable safety measure without providing any benefit.

DEFRAGGING YOUR DRIVE Back when drives were small and OSs were simpler, doing this was necessary. But Windows XP, Vista, and 7 all have automated disk optimization, and it's rare for a drive to become so fragmented that it hampers performance. While defragmenting isn't harmful, it's usually a waste of time.

Fire Up Your Printer

Whether you got a bargain inkjet model in a bundle with your home PC or you charged a thousand-dollar laser printer to your expense account, these suggestions will kick up your print speeds.

Reduce Print Quality

Detailed prints take longer to produce. If you reduce the quality a little, you can churn out prints faster and save ink.

In any application, choose *Print* and select *Properties*. Printer settings vary, depending on your model; in our case, we found the necessary settings under the Main tab for one printer and the Paper/Output tab for another. Reduce the quality—try draft mode—and see if the quicker results are good enough.

DRAFT MODE: Reducing print quality in the Properties settings will help speed up output and save some ink.

Fit More on One Page

You can slice the time to print in half by formatting two document pages to a single sheet. This works best for pages of receipts, spreadsheets, or other documents that you'll reference occasionally, since everything will be smaller.

Choose *Print*, and then *Properties*. The next step may vary with your model. For our printer, we clicked the *Layout/Watermark* tab and then selected '2 pages per sheet'.

Add RAM to Your Printer

Just as with a PC, ample RAM can boost a printer's performance, so find out whether you can add more memory to your specific model.

First, check your printer's memory-related specs in the user manual, or online. Once you know whether your printer can take extra RAM, and its maximum capacity, determine how much it currently has. Open the printer driver. In Windows 7, pick *Control Panel•Hardware and Sound•Devices and Printers*. Right-click the printer, and choose *Printer Properties*.

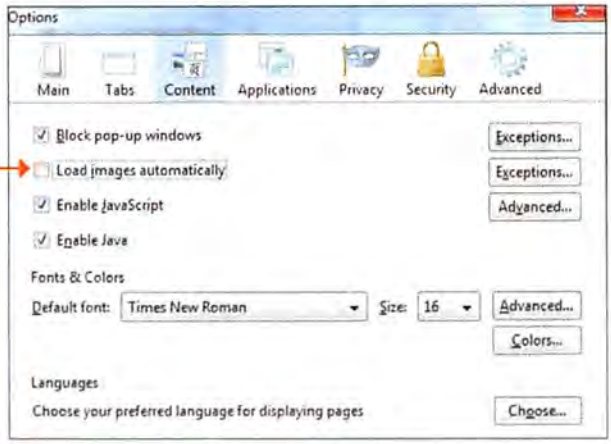
You might have to dig for the details—printer makers provide this information in different locations in the software. If you don't see it in the driver software, check back in the manual.

Use a Fast Interface

How you link your printer to the PC directly affects speed. If you have an inkjet, you probably use USB 2.0, which should be sufficient. But if you have a network printer (or if a networked PC acts as a print server for a USB printer) use the fastest available network connection.

We suggest connecting a network printer to a router with an ethernet cable rather than via wireless. A wired connection is more reliable, and almost always faster. Wi-Fi speeds deteriorate with distance, so if you must use wireless, try to place the printer close to the router. Be sure that the printer or any wireless print server you connect it to supports 802.11n, the fastest standard.

With a wired connection, see if your printer supports 100Base-T or gigabit ethernet. If so, verify that your router and network can handle those speeds, too. For a complete guide to gigabit ethernet, see find.pcworld.com/64043.



STOP IMAGES FROM LOADING: Unchecking this box will remove graphics from a Web page, making it easier—and faster—to print.

Print Websites Without Images

When you're printing from the Web, ads and graphics slow down the process. Before you print, look for a Print link; clicking on it will typically reformat the page minus extras. Otherwise, you can manually disable the graphics.

In Internet Explorer, pick *Tools•Internet Options*. Click the *Advanced* tab; under Multimedia, uncheck *Show pictures*.

In Firefox, choose *Tools•Options*, and click the *Content* tab. Uncheck the box for *Load images automatically*.

In either browser, click the refresh button to reload the page, and choose *Print*. Afterward, toggle the Tools settings to restore the page's graphics.

Speed Up Your Camera

Want to make your camera faster? You might not be able to swap out its components, but you do have an array of options for speeding up your digital photography. We have ways to capture fast-moving action, to reduce your camera's shutter lag, and to cut down on the time between taking a picture and doing something useful with it—like printing it or sharing it online.

Capture Fast-Moving Subjects

Action photos—of rambunctious puppies, grade-school soccer games, air shows, and NASCAR races—are challenging, particularly with slower cameras. But stopping the action to get a great shot is generally just a matter of using a fast shutter speed.

Most DSLR cameras and some high-end point-and-shoots have a shutter priority mode, which lets you manually dial in the fastest speed available; the camera will then accommodate with the appropriate aperture setting. (Alternatively, you can use aperture priority to choose the smallest f-stop number, and the camera will match that with the fastest shutter speed available.)

If that still isn't quite fast enough, you can increase the camera's ISO setting. By doubling the ISO from 100 to 200, for example, your camera can halve its shutter speed. By pushing the ISO to higher values, you can stop action even in relatively dim light. The cost, though, will be noisier photos.

If your camera model doesn't include these controls, you can improve your action photos by panning. Track the subject in the viewfinder and twist your body as the subject moves across your field of vision. Snap the photo and continue to pan, following through as if you were swinging a baseball bat or a golf club. The background will blur, but the subject will be sharp and distinct.

Reduce Shutter Lag

If you have an older camera or an inexpensive point-and-shoot model, you might be frustrated by shutter lag. Fortunately, you can do a couple of simple things to shorten that wait.

Shutter lag happens because your camera, at its default automatic settings, has a lot of things to do before it can capture a photo. You can reduce some of that workload by turning off a few of the automatic settings. Instead of using automatic ISO, for instance, set the camera's ISO to 100 or 200. Likewise, instead of automatic white balance, set the camera to a white balance that reflects your scene, such as outdoor daylight or indoor incandescent. Most important, prepare for your shot by prefocusing: Point your camera at the subject and press the shutter release halfway to lock your focus.

When you're ready, press it the rest of the way to take the picture. All these small tweaks together can shave several tenths of a second off your time, making your camera a lot snappier.

MAKE YOUR CAMERA SNAPPIER: If your camera features a shutter priority mode, you can set it to ISO 100 to reduce the effects of shutter lag and take photos faster.

Save Photos Faster

After you press the shutter release, your camera processes and saves the image. Most cameras can process several photos at once and still be ready to take more. After a certain number of shots, though, the camera has to call a time-out before it can capture any new pictures. You can take two steps to relieve that bottleneck.

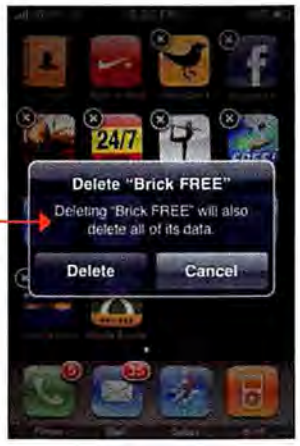
First, if you don't need to capture a bounty of poster-worthy 12-megapixel photos, use your camera controls to save all of your images at a lower resolution. That change can significantly increase the number of photos your camera can handle without stopping.

Second, buy a faster memory card. Cards are rated with different speeds; faster cards, while they cost more, can write photos from camera memory swiftly enough to enhance performance noticeably when you're taking a lots of pictures in a row, such as a burst of action photos. For our look at an ultra-fast card, see find.pcworld.com/63896. »

PHOTOGRAPHS: ROBERT CARDIN

Give Your Smartphone a Boost

Every day, smartphone users enjoy downloading, browsing, and multitasking in various apps. But all of that activity can drag down phone performance. Smartphone slowness is mainly related to limited memory and a drained battery, although other factors are involved. With some routine maintenance and the help of some apps and accessories, you'll have your phone running as fast as it did on the day you bought it.



DUMP APPS: Deleting unused items from your phone is a great way to get a performance boost.

Clear the Call Log and Texts

When was the last time you deleted your call log? It doesn't eat up a ton of memory, but it does consume space. Old text messages, too, take space, so unless you're keeping them for sentimental reasons, delete as many as possible. Clear your call log and older texts about every ten days; set a calendar reminder if you're forgetful.

Clean Your Apps and Photos

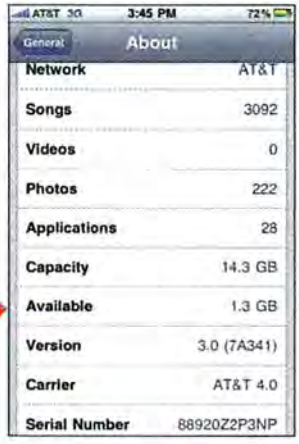
If you're like most smartphone users, you've downloaded apps and games, and then eventually ignored most of them. iPhone owners are especially prone to this issue. You don't want the phone's nonexpandable memory hogged by lame apps. Look through your downloads occasionally, and delete any that you don't use. You could see an immediate speed boost.

Keep Your Battery Healthy

All of the wonderful things you can do on a smartphone take a toll on battery life, and a nearly drained battery significantly slows down phone performance. Consider investing in a battery pack to keep your phone running faster and longer. The Phonesuit MiLi Power Pack for the iPhone (find.pcworld.com/64046) is slim enough to double as a protective case for your phone, and it provides an additional 6.5 hours of talk time. Also think about downloading a battery utility app. APNdroid (available for free at the Android Marketplace) selectively turns off your handset's draining data connection while still allowing you to receive calls.

Download Opera Mini 4.2

Tired of your smartphone's clunky Web browser? If you have an Android, BlackBerry (recent), Symbian, or Windows Mobile handset, give the Opera Mini browser a try. Available in most app stores for free, Opera Mini renders pages on a server and then compresses them by 90 percent. It uses relatively little of your phone's resources, resulting in a quicker Web surfing experience. It also helps you save some time: When you first open a page, Opera Mini shows you an overview of the content and suggests where you should start reading. And if you're entering an address, Opera Mini will recognize it and suggest completions based on your history and Bookmarks. Best of all, you can also search for text within a page to find exactly what you want, faster.



SHORT ON SPACE: Your smartphone's valuable, nonexpandable memory is easily consumed.

Use Wi-Fi Whenever Possible

A no-brainer, but a sometimes forgotten tip: If Wi-Fi is available and your phone supports it, use it. Web browsing will be faster over Wi-Fi than over a 3G network. You can find some great apps for judging Wi-Fi signal strength. For the iPhone, we like WiFiFoFum (find.pcworld.com/64048), which scans an area for 802.11 wireless networks and displays their location in relation to you. A slightly different app, Free WiFi Café Spots (find.pcworld.com/64047), does exactly what its name implies and is useful if you're searching for Wi-Fi on the go. This app is available for the iPhone and for the BlackBerry operating system, but you can find similar apps for other phone platforms.

Delete Your Web Browser's Cookies and Cache

If you use your mobile browser frequently, this housecleaning can help keep your phone running smoothly. The browser stores the content of pages so that they open faster the next time you visit, but these temporary files take up memory. Clear your cache every 5 to 7 hours that you spend surfing the Web—or perhaps once a week.

Use the Newest Firmware

Firmware updates not only add new features to your OS, but they also fix bugs and other issues that might be slowing down your phone. Most firmware updates come over the air from your carrier or your phone's manufacturer. Some handsets, such as the iPhone, require you to connect the phone to your PC to get the update. ●

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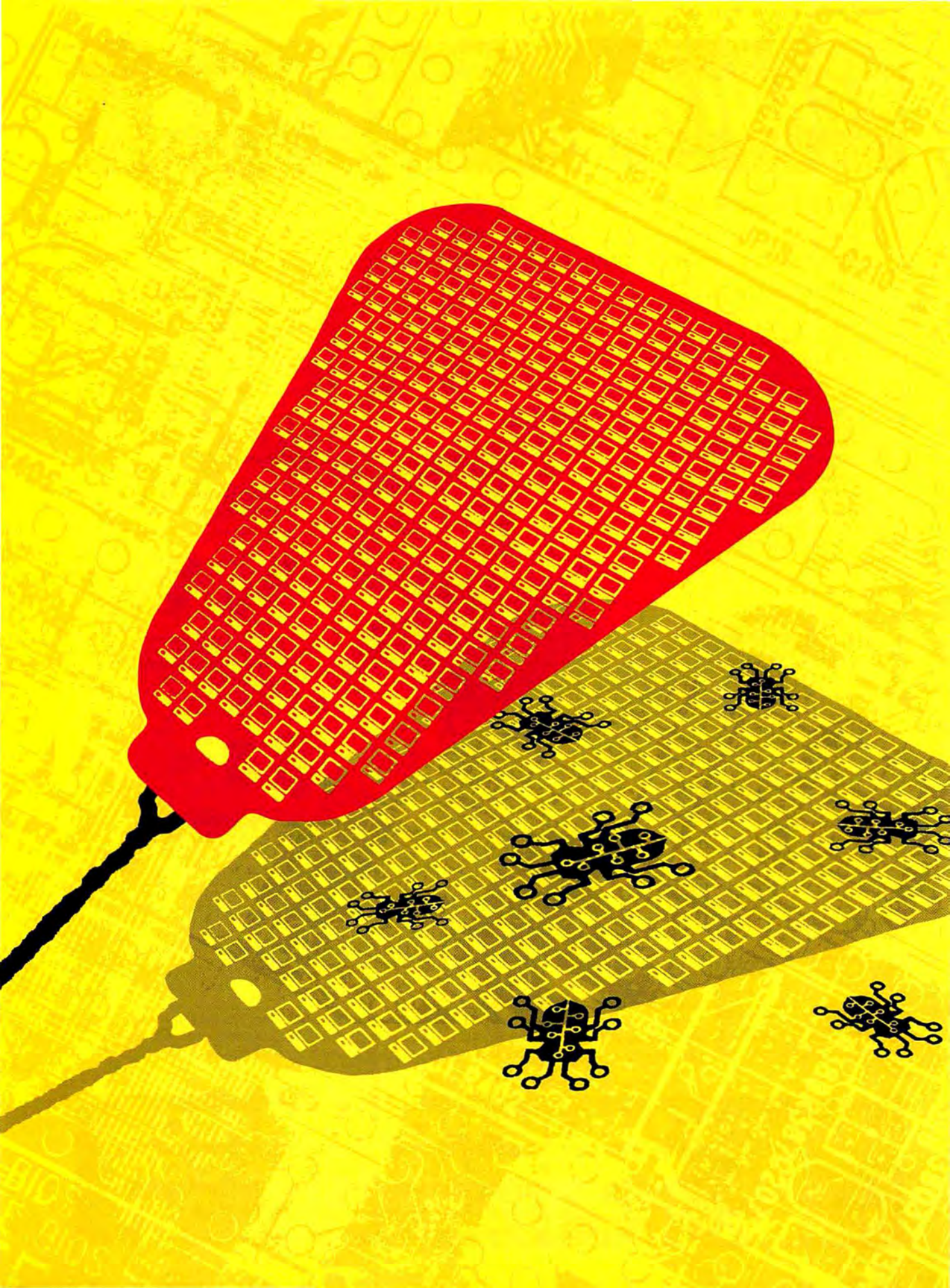

advanced antivirus

Hackers have shown that they can plant their malware even on mainstream sites—proving that you need antivirus protection now more than ever. We lab-tested ten top security programs to find the best guardians for your PC. »

BY ERIK LARKIN
TESTING BY ANDREAS MARX
ILLUSTRATIONS BY GARY NEILL

Today's vast threatscape of duplicitous Trojan horses, invisible exploits, and slithering worms make antivirus protection a must.

But that doesn't mean you have to pay top dollar for a security suite that may have features you don't want or need.

Stand-alone antivirus apps focus on blocking malicious software, without loading up on the extras that come with a suite. You typically won't find—or have to pay for—parental controls, system tuners, firewalls, or other options. That frees you to mix and match your own suite of apps, or even to stick with an on-its-own antivirus and the built-in Windows firewall. See "Suite or Stand-Alone? Picking the Right Security Software," on page 84, for more on this topic.

First, though, you need to know which programs will protect you and which could fall down on the job. To find out, we poked and prodded a large batch of applications—ten in all. In partnership with AV-Test.org, we determined the products' detection rates for malware both known and brand-new. We also measured scan speed and disinfection performance, along with rate of false alarms. For results on the top five products we tested, see the chart below.

In addition, we dug through each app's user interface and

go online

For more info on all ten programs we reviewed, free versions, and how we did our testing, check out our online package at find.pcworld.com/64104. See the latest security news and reviews at find.pcworld.com/64116.

top antivirus software picks

LAB TESTED

G Data AntiVirus takes top honors with superb malware detection. Norton AntiVirus is a close second, thanks to its well-designed interface. Visit find.pcworld.com/64104 for full rankings of all the programs we looked at for this roundup.

	PAID ANTIVIRUS PROGRAM	PCW Rating	Performance score	Antivirus and antispyware detection				Adware detection	Malware clean-up
				Detection of backdoors, bots, Trojan horses, and spyware	Heuristic detection with two-week-old signatures	Rootkit detection (active and inactive rootkits)[1]	Rootkit removal[1]	Detection of adware samples	Successful cleanup of active malware components[2]
1	BEST BUY G Data AntiVirus 2010 $25 (one year, one PC) find.pcworld.com/64111	★★★★½ SUPERIOR	Superior	99.95%	71.91%	100.00%	70.00%	100%	100%
	▸ G Data led the field on almost all of our malware detection tests, but using this program means having to make more decisions than you do with other apps.								
2	Symantec Norton AntiVirus 2010 $40 (one year, one PC) find.pcworld.com/64112	★★★★½ SUPERIOR	Superior	99.49%	42.01%	100.00%	100.00%	99%	100%
	▸ Norton AntiVirus is a good choice for nontechies; however, users who are willing to deal with a less-refined interface can find stronger protection elsewhere.								
3	Kaspersky Anti-Virus 2010 $60 (one year, three PCs) find.pcworld.com/64113	★★★★½ SUPERIOR	Superior	97.27%	66.83%	100.00%	100.00%	96%	100%
	▸ Kaspersky Anti-Virus has plenty of features but is inconsistent, with below-average traditional malware detection and a sometimes-frustrating user interface.								
4	BitDefender Antivirus 2010 $30 (one year, three PCs) find.pcworld.com/64114	★★★★½ SUPERIOR	Superior	99.66%	65.34%	90.00%	70.00%	96%	90%
	▸ Overall, BitDefender Antivirus 2010 will get the job done; however, the program's interface needs to improve—it's not particularly user-friendly.								
5	Panda Antivirus Pro 2010 $50 (one year, three PCs) find.pcworld.com/64115	★★★★☆ VERY GOOD	Superior	99.83%	53.69%	100.00%	90.00%	100%	100%
	▸ Panda Antivirus Pro does a decent job of blocking malware, but it doesn't stand out, and it did poorly in behavioral scans. It does come with its own firewall.								

CHART NOTE: Prices are as of 11/10/09. FOOTNOTES: [1]Test conducted at default settings. [2]Refers to cleanup of active malware files only; does not include removal of Registry changes or inert files.

simulated a variety of scanning scenarios.

G Data AntiVirus 2010 took top billing in our ranked software chart, doing the best job at malware detection. The program has a straightforward interface, but it also asks more questions of the user than many of the other antivirus applications we tested, and it therefore may be best suited to a more technically oriented person.

Our close second-place finisher, Symantec's Norton AntiVirus 2010, on the other hand, is smooth and simple to use. It does a generally good job of blocking and removing malware, though it trailed G Data in one type of proactive protection. Norton would be a good choice for computer owners who want a minimum of fuss from the software that they use.

Our scoring emphasized performance—or effectiveness—over all other considerations. Almost all of the programs were fully capable of detecting malware with known signatures. When confronted with more than 650,000 Trojan horses, spyware samples, and other baddies, seven of the ten apps detected more than 99 percent of the samples. And no program had a detection rate of less than 94 percent.

But these days, online crooks are good at staying ahead of signatures. Panda, maker of one of the apps we tested, says that a whopping 52 percent of the malware it sees has a digital life expectancy of less than 24 hours. So we gave weight to tests that measure how well programs can detect newer malware for which a signature doesn't yet exist. Some of those tests gauge an app's ability to identify malicious software based solely on how it acts. Absent that crucial ability, a program had no real shot at a high ranking.

Here's a look at our top five paid antivirus products.

G Data AntiVirus 2010 offers comprehensive malware detection—and it earned first place in our testing.

	Scan speed[1]		
	On-demand (in seconds)[2]	On-access (in seconds)[2]	Design score
	15	73	Very Good
	29	80	Superior
	24	61	Good
	56	80	Fair
	30	67	Good

[1] Time to scan a 741MB file; lower is better.

Symantec's Norton AntiVirus 2010, which ranked second in our tests, offers a polished user interface for nontechies.

G Data AntiVirus 2010

G Data AntiVirus's comprehensive malware detection helped it take first place on our chart. However, this program forces users to make more choices than do other apps we tested.

Most security programs use a single antivirus engine, but the German-made G Data ($25 for a one-year, single-PC license) uses two separate engines: BitDefender and Avast. That may have helped it rack up an impressive 99.95 percent block rate for traditional, signature-based detection of »

known malware—better than any other app we tested. It was also good at blocking annoying adware, running up a 99.8 percent score, and these strengths helped it earn top billing.

G Data's dominance continued on heuristic tests that use two-week-old signature databases and newer malware to simulate how well a program can detect threats that don't yet have a signature. In this test, G Data blocked 71.9 percent of the samples used by AV-Test.org—again, the best mark we saw. And in behavioral detection tests, it again led the pack by blocking 12 out of 15 test samples.

G Data AntiVirus isn't perfect. It put up a few false alerts in the behavioral tests. And it didn't fare well at removing active rootkits, a type of stealth malware. It identified and blocked all ten test rootkits before they could install, but in the case of already-active rootkits, G Data removed only seven—fewer than any other program tested.

In on-access scan speed (how quickly the app can automatically check files when you save or copy them, for instance), G Data finished in sixth place with a 10.15MB-per-second throughput.

The user interface is clean and well organized. Unlike many of the apps we tested, however, it requires you to select an action in a warning pop-up if it finds something suspicious on your hard drive. You can change that default action—to quarantine, for example—but this takes a little work.

If the program finds what it deems to be threatening code during a manual or scheduled scan, you'll have to double-click every item that it flagged and decide what to do with each discovery.

Symantec Norton AntiVirus

Symantec's Norton AntiVirus ($40 for a one-year, single-PC license) offers some terrific extra features and a polished user interface. But subpar performance in one detection category prevented it from capturing the top spot in our chart of stand-alone antivirus programs.

In traditional detection tests using known Trojan horses, spyware, worms, and other baddies, Norton successfully detected 99.5 percent of samples from AV-Test.org. That's a good showing, but other apps did even better, leaving Symantec's entry in a middle-tier sixth place in this category.

Norton dropped toward the bottom in heuristic tests designed to simulate a security program's ability to ward off new and unknown malware. It blocked only 42 percent of two-week-old signature files and newer malware, the second-worst showing in the bunch. But it did much better in behavioral analysis, identifying and blocking 9 out of 15 samples, for third place. And it correctly removed the same number of files based on its behavioral analysis—better than any other app.

suite or stand-alone?

picking the right security software

In security software, you have plenty of options, from free antivirus programs to paid ones to full-blown, multifunction security suites.

Suites: All-in-One Security These usually include an antimalware program and a firewall, plus other features such as protection against phishing and scams, spam filtering, parental controls, and Website filtering. Some suites also bundle system tune-up tools. Prices typically run about $50 to $70 for a one-year, one-PC subscription. For a look at the best Internet security suites, see find.pcworld.com/63215.

Stand-Alone Antivirus Apps These programs vary, but in general they have fewer additional security features than suites have, and most lack firewalls. For example, Norton AntiVirus protects against the various forms of malware, but has no firewall, phishing protection, or parental controls.

Many security companies offer free antivirus programs in addition to their paid products, and some are quite good. However, very few free apps come with any significant technical support options, so you're essentially on your own when you encounter a problem. See our roundup of free antivirus software at find.pcworld.com/64071.

Another Consideration Many free and stand-alone antivirus products lack a capability for behavioral analysis (identifying malware based on how it acts and without relying on malware signature updates). If your current antivirus program lacks that feature, consider PC Tools' Threatfire 4.5 (find.pcworld.com/64072), a free behavioral analysis–based antivirus application that works alongside your existing protection.

Do You Need a Suite? The short answer is no. Many PC users protect their computers with different combinations of security products—but you'll have to do your homework.

—Nick Mediati

ILLUSTRATION: GARY NEILL

Norton's throughput of 9.26MB per second for automatic scans of files as they're opened or saved put it squarely in the middle of the pack. But it did a superb job of dealing with rootkits, blocking and removing all ten samples of this type of stealth malware.

While Norton's protection ability is decent (albeit not the best), it is head and shoulders above the rest in features and user interface. For example, the Insight feature lets you see Symantec's assigned reputation for a running program, or for a downloaded or saved file. These reputations are based on such factors as whether the file is digitally signed and how many other Norton users have it.

Also impressive is a tool that offers a wealth of information about your PC's performance and history of changes.

Norton's settings are easy to reach, but techies might bemoan the lack of any option to have the program ask the user what to do when it finds a threat. (The default action is to remove or quarantine a discovered baddie.)

Kaspersky Anti-Virus 2010

Kaspersky's third-place ranking reflects its ability both to impress and to disappoint. It pairs competent proactive protection with below-average signature detection, and a strong feature set with an at-times annoying user experience.

In traditional detection tests performed by AV-Test.org, this Russian-made program ($60 for a one-year, three-PC license) detected 97.27 percent of known malware samples—lackluster when compared with the performance of some competing apps we tested, which caught 99 percent or more of the threats. It fared better in heuristics tests that gauge how well a program protects against new malware with no known signature. Such proactive protection is more important than ever. Here Kaspersky came in third with a 66.83 percent block rate.

Like Norton, Kaspersky did very well in rootkit detection: It managed to detect, block, and remove all ten stealth malware samples that we threw at it. It also detected and disabled all ten test infections, and proved more successful than most apps at getting rid of less harmful elements, such as Registry changes.

Though Kaspersky Anti-Virus 2010 has a strong feature set, the user experience can be annoying at times.

In speed tests for automatic scans that typically occur when you open or copy a file, Kaspersky achieved a 12.15MBps throughput. Only the application from Avira—which didn't make our chart—was more nimble in that regard.

In features, Kaspersky has much to offer, with extras such as recommendations for system hardening and a scanner for out-of-date software. But it lacks descriptions for some of its recommendations, which might leave you puzzled at times.

The app's malware warning messages tend to be more confusing than informative. In our tests it displayed multiple different warning pop-ups for successive tests involving the same sample. And for either manual or scheduled scans, you'll know what it finds only if you happen to sit around and catch the pop-ups that appear during the scan.

Kaspersky's antivirus app would likely get the job done when it comes to protecting a PC, but it's not the best bet for either detection or ease of use.

BitDefender Antivirus 2010 offers adequate malware protection, but its interface needs improvement.

BitDefender Antivirus 2010

BitDefender Antivirus ($30 for a one-year, three-PC license) holds its own at dealing with malware, but its interface isn't especially user-friendly. Overall the program earned fourth place in our roundup.

This Romanian-made software did well in traditional detection tests for known malware from AV-Test.org. BitDefender detected 99.66 percent of all samples in a huge cache of spyware, Trojan horses, worms, and the like. But several other apps did even better, so that showing was good enough only for fifth place.

BitDefender's 65.34 percent block rate in heuristic tests was respectable, but again yielded a fifth-place finish. The app did better in other proactive protection tests that measure a program's ability to block a baddie based solely on how it acts on a PC, blocking »

two-thirds of the brand-new test samples, earning it a tie for second place.

Presented with the task of disinfecting files, BitDefender disabled nine out of ten malware infections. By comparison, all but three programs in this roundup managed to remove every malware component we threw at them. And it languished in last place (along with G Data) when it cleaned up only seven out of ten active rootkits.

BitDefender's interface isn't executed particularly well. For example, any security guru will tell you that keeping Windows up-to-date is essential for good security, and BitDefender can scan for missing updates. Unfortunately, it will display a critical warning if you happen to lack an optional package on its list, even though that package isn't necessary to protect your PC.

Panda Antivirus Pro 2010

Panda Antivirus Pro 2010 ($50 for a one-year, three-PC license) ranks fifth in our roundup of ten stand-alone antivirus apps. It was buoyed by positives such as strong traditional malware detection, but dragged down by negatives like poor behavioral scans.

In AV-Test.org's scans, Panda did well on traditional signature-based detection of known malware. Its 99.8 percent block rate placed it third in that category, behind only G Data and McAfee. However, it didn't fare as well in tests gauging the program's ability to identify and block new malware that doesn't yet have a signature. In our heuristic tests, Panda identified 53.7 percent of newer malware samples, earning eighth place in that category.

The program's ability to check unknown files against Panda's online servers mitigates that unimpressive showing, since this cloud computing approach can use the latest signatures as soon as they're available. But the app also fared poorly on behavioral analysis measures. In those tests, it blocked only 2 out of 15 brand-new samples—a last-place showing among programs that include the feature (not all do).

Panda Antivirus Pro 2010 generally doesn't stand out as a PC protector, though it has a solid array of features.

Panda did well at getting rid of existing infections, successfully disabling all ten samples. It also achieved a third-place tie at cleaning up less-important files and system changes introduced by malware. However, it left one active rootkit in place; many programs we tested were able to remove all of them.

Panda Antivirus Pro does sport a solid array of features. It comes with a firewall (as all Panda products do); it scans Web, e-mail, and IM traffic for threats; and it can check for missing Windows patches. The Panda program interface is easy to navigate.

However, checking or changing the program's settings can be a pain. While some of the settings and other program areas offer links to the relevant help sections, not all do. Without such links, you're stuck manually searching for what you need. ●

a first look

spyware doctor with antivirus

Shortly before this issue went to press, PC Tools released Spyware Doctor with AntiVirus 2010 ($40 for a one-year, three-PC license). Though it came out too late for us to include in our malware detection testing for this roundup, we were able to take the program for a quick spin.

Spyware Doctor With Antivirus (SDAV) has an intuitive interface, with four buttons along the left edge to take you to the app's main functions. The status screen provides a quick overview of your current protection status. You'll know right away whether SDAV and its malware signature files are up-to-date and your subscription is active.

IntelliGuard is PC Tools' set of "real-time protection" features designed to shield your PC from various threats. Using behavioral analysis, it can block malware for which no signature exists, along with suspect files and likely phishing or malware distribution sites.

The program also includes special modes for gaming (so that active SDAV won't interrupt you when you're playing a full-screen game) and for occasions when you are operating your laptop on battery power (the application will hold off on performing any processor-intensive tasks until you have plugged your laptop into a power outlet).

If you are interested in trying Spyware Doctor with AntiVirus 2010, you can download a trial version from PC Tools' Website; simply browse to find.pcworld.com/64118.

—Nick Mediati

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BreakthroughTech

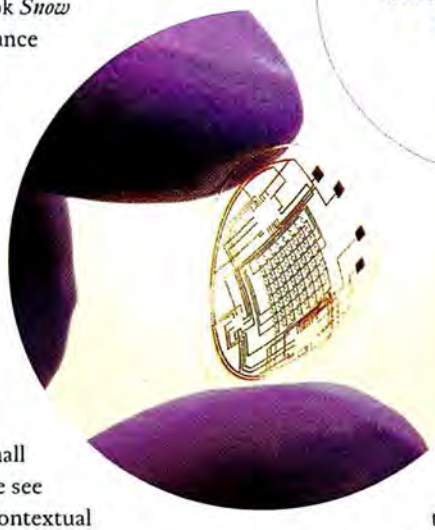
These innovations—superfast data connections, true high-definition video without wires, information that pops up precisely when and where you need it—will change the way you'll work and play for years to come. »

BY GLENN FLEISHMAN | ILLUSTRATIONS BY PAUL ROGERS

'Augmented Reality' in Mobile Devices

Hulk VI, the latest entrant in the green antihero's film franchise, has arrived, and you must see it, but you aren't sure how to find the movie theater where it's playing. A few years ago, you might have gone to MapQuest and printed out directions; but nowadays you don't need to do anything so primitive. Instead, you dock your smartphone on the dashboard as you slip into your car, and instantly it superimposes driving directions to the theater on the vehicle's windshield. As you approach your destination, you see a group of tall buildings. On your windshield, over one of the buildings you see labels identifying the building's name, the name of the movie theater inside it, the movie *Hulk VI*, and a countdown to showtime. "Turn left in 100 yards," the navigator speaks through your stereo as a large turning arrow appears, guiding you into the parking structure.

In Neal Stephenson's book *Snow Crash*, "gargoyles" are freelance intelligence gatherers who have wired themselves to see (through goggles that annotate all of their experiences) a permanent overlay of data on top of the physical world. In less immersive fashion, we may all become gargoyles as "augmented reality" becomes an everyday experience.



Babak Parviz, a professor at the University of Washington specializing in nanotechnology, is working on a bionic contact lens that paints imagery and information directly on the eye to augment reality.

Augmented reality is a catchall term for overlaying what we see with computer-generated contextual data or visual substitutions. The goal is to enhance our ability to interact with things around us by giving us information immediately relevant to those things.

At work, you might walk around the office and see the name and department of each person you pass painted on them—along with a graphical indicator showing what tasks you owe them or they owe you. Many case scenarios involve "heads-up" displays embedded in windshields or in eyeglasses, but the augmented reality we have today exists primarily on the "heads-down" screens of smartphones.

Several companies have already released programs that overlay position- and context-based data onto a continuous video camera feed. The data comes from various radios and sensors that are built into modern smartphones, including GPS radios (for identifying position by using satellite data), accelerometers (for calculating changes in speed and orientation), and magnetometers (for measuring position relative to magnetic north).

In an application called Nearest Places, the names and locations of subway stops, municipal parks, museums, restaurants, and other points of interest appear on top of an iPhone's video feed. As you walk or turn, the information changes to overlay your surroundings. "Smartphones and the related apps are the trailblazers for augmented reality," says Babak Parviz, a professor at the University of Washington who specializes in nanotechnology. "In the short to medium term, my guess is that they will dominate the field."

Other prototype applications take information dropped at particular coordinates and display it as 3D models that the user can walk around, or as animations whose details update in 3D relative to the user's position. But the technology for those apps isn't ripe yet: Handhelds require development of a more-precise positioning mechanism before they'll be able to handle that kind of data insertion. Fortunately, each smartphone generation seems to include more and better sensors than the previous one.

In other realms, augmented reality may serve to provide not just additional information, but also enhanced vision. One day, infrared cameras mounted on the front of a car will illuminate a faraway object represented as a bright-as-day image on an

PHOTOGRAPH: COURTESY OF UNIVERSITY OF WASHINGTON

in-windshield display. Wireless receivers will detect radar signals and use them to show images of cars that are out of sight; one piece of glass will host GPS and traffic reporting.

Leaping past screens, Parviz and his team are working on ways to put the display directly on the eyeball. In particular, they're attempting to develop a technology for embedding video circuitry into wearable contact lenses. While wearing such contact lenses, you would see a continuous, context-based data feed overlaid on your field of vision.

Before Parviz's lenses become a reality, augmented reality is likely to become a routine navigation and interaction aid on mobile devices. In addition, game developers may use the technology to overlay complete digital game environments over the real world that players see around them.

3D TV

You enjoyed watching *Hulk VI* on the big screen, but now you want to see what the movie looks like on your 3D TV at home. Disconnecting your active-shutter 3D glasses from their charger, you slip them on, drop into a comfy chair, tell the kids it's time for a movie, and twist the heat pouch on a bag of popcorn to start it popping. The kids grab their own 3D glasses and sit down to watch as the Hulk knocks the Predator practically into their laps!

When television makers introduced HDTVs, it was inevitable that they would come up with a way to render the technology obsolete not long after everyone bought a set. And they have. The next wave in home viewing is 3DTV—a 2D picture that includes some stereoscopic depth.

As 3D filmmaking and film-projection technology have improved, Hollywood has begun building a (still small) library of depth-enhanced movies. The potential to synthesize 2D movies into 3D could feed demand, just as colorizing technology increased some people's interest in black-and-white films in the 1980s. For computer-animated movies—such as *Toy Story 3D,* a newly rendered version of the first two films in the series—it's already happening.

The promise of 3D is a more immersive, more true-to-life experience that's substantively different from almost anything you've watched before. In commercial theaters, 3D projection typically involves superimposing polarized or distinctly colored images on each frame of the movie and then having viewers wear "passive" glasses that reveal different images to each eye. The viewer's brain synthesizes the two images into a generally convincing notion of depth.

In contrast, 3D at home will almost certainly rely on alternating between left and right views in successive frames. HDTVs that operate at 120Hz (that is, 120 cycles of refresh per second) are broadly available, so the ability to alternate left- and right-eye images far faster than the human eye can follow already exists. Fundamental industry standards are in place to allow such recording, says Alfred Poor, an analyst with GigaOm and the author of the HDTV Almanac Website.

Viewing 3DTV displays will require "active" glasses that use rapidly firing shutters to alternate the view from each eye. Active glasses are expensive today, but their price will drop as 3D rolls out. Meanwhile, designers are in the development phase of producing a 3D set that doesn't require glasses. Panasonic and Sony have announced plans to produce 3D-capable displays, and Panasonic recently demonstrated a large-screen version that the company expects to ship in 2010. As happened when HDTVs rolled out, premium 3DTVs will appear »

Toshiba and other high-definition TV makers are looking to faux 3D technology to provide stereoscopic depth—and to manufacture a fresh reason for consumers to buy a newer set.

PHOTOGRAPH: YOSHIKAZU TSUNO/AFP/GETTY IMAGES

first, followed by progressively more-affordable models.

Creating and distributing enough 3D content to feed consumers' interest may be a bigger challenge. Poor notes that film studios are currently making or adapting only a handful of features each year for 3D. But techniques to create "synthetic 3D" versions of existing films (using various tracking, focus, and pattern cues for splitting images) could fill the gap.

Existing terrestrial cable and IPTV networks should be able to distribute 3D content. The bandwidth that such networks use to deliver typical HD broadcasts will suffice for delivering 3D video once the networks upgrade to newer video compression techniques. Satellite may face a more difficult road, since such systems already use the best levels of compression.

For physical-media playback, Blu-ray can store the data, and 3D Blu-ray players are already on the drawing board. No fundamental changes in Blu-ray will be necessary, so the trade group behind the standard is focusing on compatibility—such as ensuring that a 2D TV can play a 3D disc.

Standards issues might not end up being very troublesome, so long as the 3DTVs are flexible enough. An industry group is working on setting some general parameters, much as digital TV was broken up into 480, 720, and 1080 formats, along with progressive and interlaced versions. A 3DTV may need to support multiple formats, but all will involve alternating images and a pair of shutter-based glasses.

Poor expects that 3DTV will be but a minor upgrade to existing HDTV sets. The upgraded sets will need a modified display controller that alternates images 60 per second for each eye, as well as an infrared or wireless transmitter to send synchronization information to the 3D glasses.

USB 3.0

Before leaving work the next day, you need to back up your PC (including some clips of earlier *Hulk* movies you grabbed during lunch). You push a button, and 5 minutes later your system has dumped 150GB of data onto an encrypted 512GB solid-state drive, which you eject to take with you for off-site backup. On the way home, you stop at a kiosk to buy the newly released 3D version of *Hulk III*. You plug in your drive, the kiosk reads your credentials, and the 30GB video loads onto your SSD as you watch a 90-second preview of coming attractions. You remove the drive and head home.

USB may be one of the least sexy of the technologies that are built into present-day computers and mobile devices, but speed it up tenfold, and it begins to sizzle. Remove most of the other cables connecting to your computer, and the standard ignites. Take into consideration the potential of uncompressed video transfer, and you have a raging fire.

Any task that involves transferring data between your PC and a peripheral device—scanning, printing, or moving files, among other routine operations—will be far faster with USB 3.0 than with today's USB 2.0. In many cases, the transfer will be complete before you realize it has started.

The 3.0 revision of USB, dubbed SuperSpeed by the folks who control testing and licensing at the USB Implementers Forum (USB-IF), is on track to deliver more than 3.2 gigabits per second (gbps) of actual throughput. That transfer rate will make USB 3.0 five to ten times faster than other common desktop peripheral standards, except some flavors of DisplayPort and the increasingly out-of-favor eSATA.

In addition, USB 3.0 can shoot full-speed data in both directions at the same time, an upgrade from 2.0's "half duplex" (one direction at a time) rates. USB 3.0 jacks will be able to accept older 1.0 and 2.0 plug ends for backward compatibility, but 3.0 cables will work only with 3.0 jacks.

This technology could turn out to be a game-changer for device connectivity. A modern desktop computer today may include jacks to accommodate ethernet, USB 2.0, FireWire 400 or 800 (IEEE 1394a or 1394b) or both, DVI or DisplayPort or both, and—on some systems—eSATA. USB 3.0 could eliminate all of those except ethernet. In their place, a computer may have several USB 3.0 ports, delivering data to monitors, retrieving it from scanners, and exchanging it with hard drives. The improved speed comes at a good time, as much-faster flash memory drives are in the pipeline.

USB 3.0 is speedy enough to support transfers of uncompressed 1080p video (currently our highest-definition video format) at 60 frames per second, says Jeff Ravencraft, president and chair of the USB-IF. That would enable a camcorder to forgo video-compression hardware and patent-licensing fees for MPEG-4. The user could either stream video live from a simple camcorder (with no video processing required) or store it on an internal drive for later rapid transfer; neither of those methods is feasible today without heavy compression. Citing 3.0's versatility, some analysts see the standard as a possible complement—or even alternative—to the con-

sumer HDMI connection that's found on today's Blu-ray players.

The impending USB flavor could also transform computers into full-service charging stations. At present, USB 2.0 can generate 100 milliamperes (mA) of trickle charge for each port; but USB 3.0 ups that quantity to 150mA per device. And whereas USB 2.0 tops out at 500mA for a hub, the maximum for USB 3.0 is 900mA.

With mobile phones moving to support USB as the standard plug for charging and syncing (the shift is well under way in Europe and Asia), and with U.S. carriers having recently committed to doing the same, the increased amperage of USB 3.0 might let you do away with wall warts (AC adapters) of all kinds.

In light of the anticipated expansion in the importance and use of USB in its 3.0 version, future desktop computers may very well have two internal hubs, with several ports positioned in the front for easy accessibility to act as a charging station. Each such hub could have up to six ports and could support the full amperage. Meanwhile, laptop machines could multiply USB ports for better charging and access on the road. (Already, the Apple Mac Mini desktop includes five USB 2.0 ports on its back.)

USB 3.0 offers backward compatibility, allowing older cables to plug into newer jacks; but newer cables like this one have extra pins that boost the data rate to a theoretical maximum of 4.8 gbps.

PHOTOGRAPHS: COURTESY OF USB IMPLEMENTERS FORUM

The higher speed of USB 3.0 will accelerate data transfers, of course, moving more than 20GB of data per minute. This will make performing backups (and maintaining off-site backups) of increasingly large collections of images, movies, and downloaded media a much easier job.

Possible new applications for the technology include on-the-fly syncs and downloads (as described in the introduction to this section). The USB-IF's Ravencraft notes that customers could download movies at the gas pump of a filling station. "With high-speed USB [2.0], you couldn't have people waiting in line at 15 minutes a crack to download a movie," Ravencraft says.

Manufacturers are poised to take advantage of USB 3.0, and analysts predict mass adoption of the standard on computers within a couple of years. The format will be popular in mobile devices and consumer electronics, as well. Ravencraft says that manufacturers currently sell more than 2 billion devices with built-in USB each year, so there's plenty of potential for getting the new standard out fast.

Video **Streaming** Over Wi-Fi

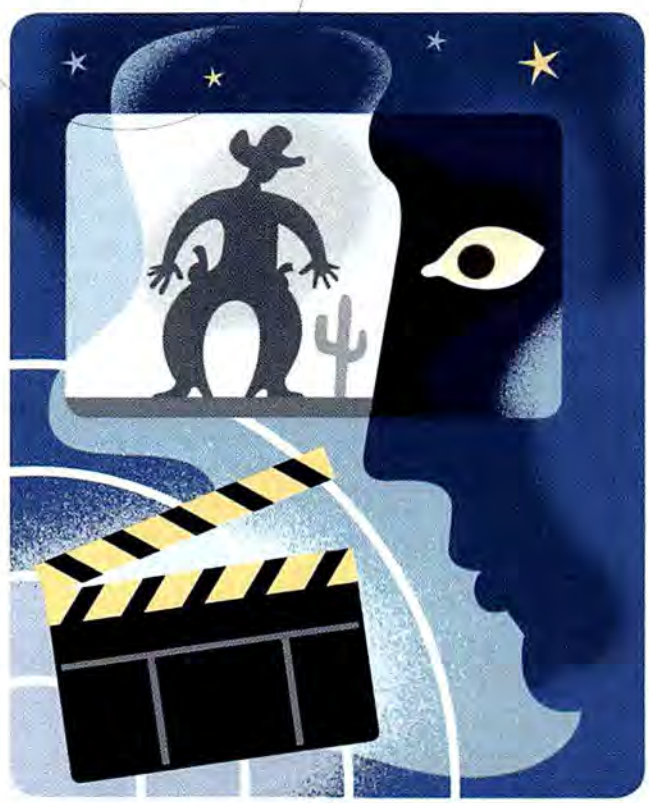
When you get home—with your high-def download of *Hulk III 3D* stored on a flash drive—you plug the drive into your laptop and transfer the flick to your network file server over a gigabit Wi-Fi connection. A couple of minutes later, the movie is ready to stream via a 60GHz wireless link from your networked entertainment center to your wall-mounted HDTV.

Wired ethernet has consistently achieved higher data speeds than Wi-Fi, but industry groups engaged in developing and updating wireless standards are constantly trying to figure out new ways to help Wi-Fi catch up. By 2012, two new protocols—802.11ac and 802.11ad—should be handling over-the-air data transmission at 1 gbps or faster.

As a result, future users will be able to work with multiple high-definition video streams and gaming streams active across a house and within a room. Central media servers, Blu-ray players, and other set-top boxes can sit anywhere in the home, streaming content to end devices in any location. For example, an HD video display, plugged in with just a power cord, can stand across the room from a Blu-ray player, satellite receiver, or computer—no need for expensive, unsightly cables. »

The 802.11ac and 802.11ad standards should be suitable for home use, though their applications will certainly extend far beyond the home. The names reflect the internal method of numbering that the IEEE engineering group uses: 802 for networking, 11 for wireless, and one or more letters in sequence for specific task groups (that's how we got 802.11a, b, g, h, n, and others).

Today's Wi-Fi will be left in the dust by 802.11ac and 802.11ad, both of which will be capable of carrying multiple video streams and of operating at far higher data rates.



The 802.11ac standard will update 802.11n, the latest and greatest of a decade's worth of wireless local area networking (WLAN) technology that began with 802.11b. With 802.11ac, wireless networking performance will leap from a theoretical top speed of 600 mbps to a nominal maximum of more than 1 gbps. In practice, the net data 802.11ac carries will be likely be between 300 mbps and 400 mbps—up from 160 mbps or so for a good real-world 802.11n setup, and more than enough capacity to carry multiple compressed video streams over a single channel simultaneously. Or users may assign individual streams running on unique frequencies to a number of separate channels. Like 802.11n, 802.11ac will use many antennas for receiving and sending data wirelessly.

The 802.11ac flavor still won't be able to carry lossless high-def video (a format that retains the full fidelity and quality of the raw source), however. Today, lossless video is common over wired connections after decompression or decoding of a data stream from a satellite, cable, or disc. Suitable hardware will take the 802.11ac compressed data stream and send it directly to a decoder in an HDTV set; some HD sets already have this capability today. But when uncompressed video has to stream at a rate faster than 1 gbps, a speedier technology must be used.

That's where 802.11ad comes in. It abandons the 2.4GHz and 5GHz bands of the spectrum (where today's Wi-Fi works) for the newly available 60GHz spectrum. The 60GHz spectrum will have many frequencies available in most countries—the United States among them—so multiple distinct channels will be able to carry more than 1 gbps of uncompressed video each.

Unfortunately, the millimeter-long waves that make up 60GHz signals penetrate walls and furniture poorly, and oxygen readily absorbs the waves' energy. So 802.11ad is best suited for moving data across short distances between devices in the same room. Apart from supporting fast video transfers, 802.11ad will permit you to move files or sync data between devices at speeds approaching that of USB 3.0—and 1000 times faster than Bluetooth 2.

The 802.11ad spec is one of three competing ideas for using the 60GHz band of the spectrum. The Wireless HD trade group, a consortium of consumer electronics firms, is focusing on video use of the 60GHz band, while the Wireless Gigabit Alliance is looking at networking and consumer uses. Membership in the various groups overlaps, increasing the possibility that an interoperable and perhaps unified spec will emerge. Though 802.11ad doesn't specifically address video, it will be a generic technology that can accommodate many kinds of data. At a minimum, the groups will work to prevent interference with one another's purposes.

The combination of 802.11ac and 802.11ad, coupled with USB 3.0, will allow you to set up clusters of computer and entertainment hardware around your home. USB 3.0 and gigabit ethernet might connect devices located in a cabinet or on a desk; 802.11ac will link clusters across a home; and 802.11ad will carry data to mobile devices, displays, and other gear within a room.

Allen Huotari, the technical leader at Cisco Consumer Products (which includes Linksys products and which ships millions of Wi-Fi and ethernet devices each year), says that the change in home networks won't result from "any one single technology in the home, but rather a pairing of technologies or a trio of technologies—wired and/or wireless—for the backbone and the wireless on the edges."

That will mean fewer wires and cables, better speeds, and higher-quality video playback than anything possible today. By 2012, both specifications should be readily available. ●

ILLUSTRATION: PAUL ROGERS

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DAS Storage Expansion	✗	✓	✓
VMware® Ready Certified	✗	✗	✓
Independent OS Drive	✗	✗	✓
Out of Band RAID Management	✗	✗	✓
Available w/ 2TB Drives	✗	✗	✓
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Windows Storage Server 2008	$3,419	$4,635	$2,995
Linux Storage System	Not Available	Not Available	$2,995

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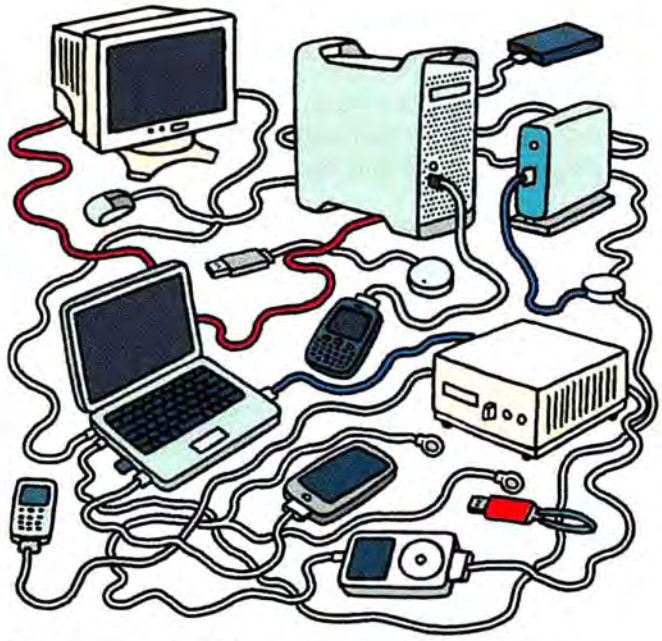
Here's How

Synchronize Your Data With Multiple Devices

No longer must you carry important files on optical discs and thumb drives. Here's how to sync your files easily across multiple platforms.

BY DAVID MURPHY



EVERY DAY, YOU probably work with multiple keyboards, touchpads, and button arrays. But getting the various products to talk to one another can be tricky.

You could use removable media to transfer files, but that process is inventory-intensive, potentially expensive, and slow. And you can't do anything by phone.

The answer is synchronization. Lots of free apps and utilities are designed to keep your critical files up-to-date and accessible to all of your deskbound or mobile systems. The result is a smooth, seamless, free way to ensure access to the latest versions of the files you need.

Different devices have different foibles that may affect their ability to sync easily. I'll focus here on three types of synchronization: from PC to PC, from PC to Mac, and from PC to mobile device.

Sync PCs to PCs

The two primary ways to synchronize files across desktops, laptops, or a combination of machines are direct, system-to-system synchronization, and use of a third-party online cloud service.

Direct synchronization benefits from faster transfer speeds and an unlimited capacity for changed data (because you perform the sync directly across two connected computers on your personal network). Its primary disadvantage is that you have to run both systems simultaneously to perform the synchronization, which eats up electricity and limits your ability to sync files when you're on the go.

Cloud-based synchronization services act as a third-party host for your files. Anything you upload will exist in its own protected space on the Internet, accessible from any device that you allow into your cloud network. PCs will sync with your virtual storage space whenever they go online, so you don't need to keep two or more systems running in order to keep files matched between the two.

The major drawback of the cloud is its limited capacity. No service provider gives you access to more than a few gigabytes of free storage space for your files. And because the bandwidth available between you and your ISP effectively puts a cap on your synchronization speed, relying on the cloud to handle large file transfers may not be a good idea.

Windows Live Mesh offers the best of both worlds. This beta tool for Windows XP, Vista, and 7 systems combines Microsoft's Windows

WINDOWS LIVE MESH splits the difference between a peer-to-peer design and cloud-based synchronization for PC-to-PC connections.

ILLUSTRATION: ANDREW RAE

Live Sync utility—a free, direct-synchronization tool—and 5GB of space in a Microsoft-hosted cloud. Soon it will support Macs and phones, though these services have not yet been enabled. At this writing, the service is entirely free for download and use.

To get started with the service, visit the Live Mesh site (www.mesh.com) and click the *Sign In* link. To work with Live Mesh, you must have a Windows Live ID; if you don't have one, create it now. After logging in through a new account or by typing your log-in name and password, you'll jump to the 'Review and accept agreements' page for Live Mesh. Click the *I Agree* button to move to the main Live Mesh screen.

The Live Desktop screen is where you'll be managing the connections between your various PCs and your Microsoft cloud. But before you can examine the contents of your cloud-based storage, you'll want to add a system or two to synchronize. Click the large *Add Device* button, and download the accompanying Live Mesh software. Then run the installation routine, which adds a small Live Mesh icon to the lower-right portion of your taskbar. Do the same on each PC you want to add.

USE THIS LIVE Mesh configuration screen to select PCs to sync with specific folders, and to drop your files into your cloud storage.

You can complete your basic Live Mesh configuration in three steps: Sign in to Live Mesh with your Windows Live ID, assign your current system a name, and click the *Add Device* button. Repeat these steps for each additional system that you want to have in your synchronization network.

Once you're done, you can start adding files and folders to sync. Select a folder (excluding Windows system folders, hidden folders, your desktop directory, and folders on removable media or mapped network drives) on one of your systems, right-click the folder, and left-click the *Add Folder to Live Mesh* option that appears in the context menu. Give the folder a name, and click *OK*.

A shortcut to the folder will appear on the desktop of every other computer that runs Live Mesh. Go to one of these systems and double-click the new desktop shortcut. Use the screen that appears to assign the selected folder to a different location on your PC, if you wish. Once you make the change, Live Mesh will sync the folder on this computer with the one on your original computer. Repeat this process for all of the connected systems in your Live Mesh.

If you want to perform synchronizations exclusively as peer-to-peer transfers (and thus bypass the 5GB limit for the Live Mesh cloud), click *Show synchronization options* after you double-click the desktop Live Mesh folder shortcut. From there, select the *Never with this device* option for the 'Live Desktop' device. Otherwise, anything that you add to the folders will transfer to the cloud as well—which you can view by signing in to the Live Mesh Website and then double-clicking your Live Desktop.

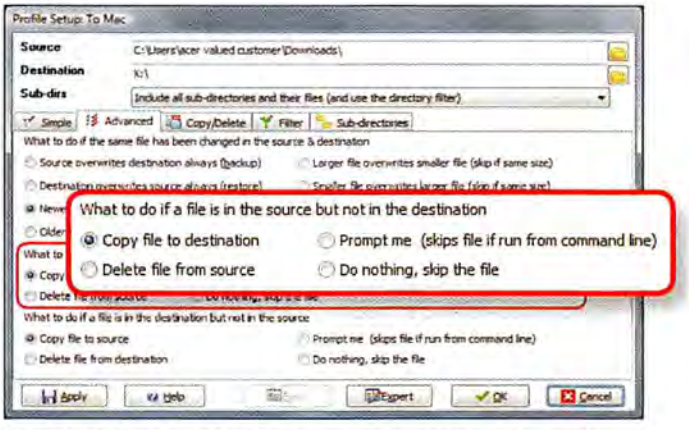
Sync PCs to Macs

To sync directly between a Windows PC and a Mac, you must first confirm that full network sharing is in effect between the two platforms. Setting this up can involve a complicated series of steps on the OS X side, so be sure to read Apple's handy walk-through (find.pcworld.com/64056). Once you can see shared folders on your Windows PC, and that machine can see shared folders on your Apple system, you're ready to start synchronizing.

Visit 2BrightSparks (www.2brightsparks.com), and grab the SyncBack Freeware program. While the app installs itself on your Windows machine, use Windows Explorer to browse to a shared network folder on your Apple system. Right-click the folder, map it as a network drive, and assign it a unique drive letter for your Windows PC.

Once the SyncBack Freeware installation is complete, launch the executable file »

THE SMALL SHORTCUT icon that appears superimposed on the New Folder desktop icon indicates that the folder is synchronized between PCs and not to the user's Live Mesh cloud.



USE SYNCBACK'S ADVANCED features judiciously. You don't want to field hundreds of pop-up warnings related to conflicting file versions.

and create a profile, which represents a single link between a folder on your Windows PC and a folder on your Apple system. After you give this link a name, a screen full of options will appear.

If you want to run a one-way backup between the mapped network folder on your Apple system and a Windows-based folder (or vice versa), the first three backup options are for you. Here we're interested in synchronization, however, to ensure that the mapped network drive and an individual Windows-based folder will always contain the same items on both systems.

Choose a folder on your Windows system to serve as one of these portals, and then select the mapped network drive you created earlier as the destination folder. Highlight the syncing option that best applies to your folder structure and click *OK*. A description of your synchronization setup will appear below the listed options; to tweak the description, click the program's *Advanced* tab. Select options in the Filter tab to include or exclude content to a greater specificity; this is useful if you want to limit syncing to, say, all of the music files contained in your Windows downloads folder.

Finally, click the *OK* button to set up your profile. You can create multiple profiles for additional syncing tasks as you see fit. You can manually run them via the SyncBack program whenever you like, or you can instruct Windows to run synchronizations at fixed time intervals. To do the latter, right-click a newly created profile and select *Schedule*. Click the *set password* button and enter the password associated with your Windows User Account. From there, click the *Settings* tab and then set the syncing frequency. Remember, this procedure will work only if your Apple system is running and your Windows computer is set to log in to your mapped network drives at boot-up.

Sync PCs to Phones and Mobile Devices

The right way to synchronize contacts, e-mail, calendars, and files from your PC to your mobile device depends on the phone you have.

If you carry an iPhone, you'll find that the synchronization options built into Apple's iTunes software are more than adequate to sync your device with Windows Mail, Outlook, Internet Explorer, and Safari—as well as with your photo, video, and music folders. All of these options congregate under the Info tab when you click on your iPhone device in iTunes.

USE THIS IPHONE app to view the contents of your PC's Dropbox folder and to open Word documents, Excel spreadsheets, PDF files, .wav audio, and .mov or .mp4 movies.

iTunes doesn't provide built-in support for file and folder syncing between your PC and your iPhone's hard drive. To handle that operation, you need Dropbox (www.getdropbox.com). When you install the app, you'll receive 2GB of free, cloud-based storage, represented by a new Dropbox folder in your My Documents folder. Any file you assign to this folder will sync up to your Dropbox storage. Install the free Dropbox application on your iPhone, and you'll be able to access (and download for offline viewing) any iPhone-readable file while you're on the go.

If you use a BlackBerry, an Android phone, or a Windows Mobile device, the appropriate tool to use is SugarSync (www.sugarsync.com). Functionally it's similar to Dropbox: To move the files that you want to sync into the 2GB of free cloud space you're allowed, you assign them to a single shared folder. Depending on your phone's functionality, you may even be able to edit files, in addition to viewing, sharing, and sending them remotely. Consult the SugarSync Website for customized instructions and applications for your specific phone model.

YOU CAN LINK your mobile device to Windows Mobile Device Center via a Bluetooth or infrared connection if your system supports it.

For phones that run some variant of the Windows Mobile operating system, Windows Mobile Device Center (find.pcworld.com/64058) is the ticket for syncing e-mail, contacts, calendars, and media files between a Vista or Windows 7 PC and your mobile device over USB. Systems running Windows XP can use a tool called ActiveSync (find.pcworld.com/64059) to perform the same task. If you have access to a Microsoft Exchange Server, you can use either app to synchronize your data wirelessly.

Another option is to sync data wirelessly through a Google Sync app (find.pcworld.com/64060) for your phone. In this case, Google's Exchange Server will ensure that data stays up-to-date, without requiring a physical link to a PC. Instructions for using the service vary by device, but Google's walkthroughs are exemplary.

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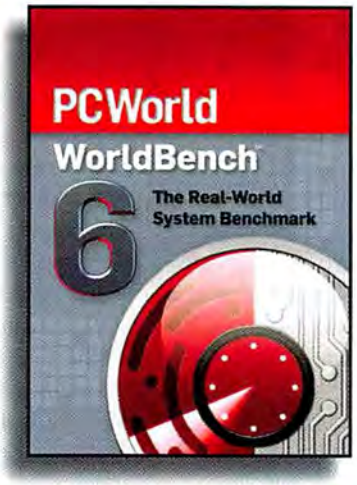

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Visit www.worldbench.com today and secure your DVD of WorldBench 6.

Ten Essential, Inexpensive Windows 7 Downloads

This gallery of free and cheap tools will help you migrate to and settle in with Microsoft's newest operating system.

WINDOWS 7 IS new, yet plenty of free (or cheap) utilities are available to enhance it. Here are ten great software tools—many free to download—that will surely make your Windows 7 experience more rewarding.

MICROSOFT SECURITY ESSENTIALS offers solid, simple malware protection without causing your PC to bog down the way full security suites do.

Microsoft Security Essentials

Like its predecessors, Windows 7 doesn't offer built-in protection against viruses, spyware, and other malware. (It does have a firewall, however.) You could pay McAfee or Symantec for this service, but why bother with their protection racket when Redmond's service does the same thing for free? Microsoft Security Essentials (find.pcworld.com/64078) provides solid protection for home PCs, and it's gratis. If you prefer third-party security products, check out AVG Anti-Virus Free Edition.

Ninite

Brave souls who upgrade to Windows 7 from XP must do a clean install—a tedious process that involves reinstalling all apps. To speed things up, why not load most of your free and open-source programs at the same time? Ninite can do it. Go to Ninite's site (ninite.com), and select the programs you want (for instance, Firefox, iTunes, and Skype). Then download Ninite, which installs the apps on your PC without adding junkware. Ninite is free for personal use.

Windows Live Photo Gallery

To keep Windows 7 slim—and to avoid the code bloat that slowed Vista—Microsoft left a few utilities out of its new operating system. One such app is Windows Live Photo Gallery (find.pcworld.com/64075), a free download that's perfect if you don't already use Google Picasa to manage your photos and videos.

Windows Easy Transfer

If you're moving to Windows 7 from XP or Vista, check out this utility (find.pcworld.com/64076). It helps you copy files and settings from one PC to another. (Easy Transfer comes with Windows 7.)

The new version of Windows Easy Transfer adds a file explorer, which simplifies the task of selecting the specific files you want to copy. Easy Transfer won't hang if it encounters a file or setting that it can't move. Rather, it will complete the transfer and then provide a report detailing everything it couldn't copy.

There is some bad news, though: Windows Easy Transfer won't copy your programs. To set up a PC-to-PC connection, you'll need an Easy Transfer Cable

NINITE LETS YOU choose common free, open-source applications from a checklist, and then install all of them at the same time.

WINDOWS EASY TRANSFER automatically transfers all of the files and settings you want to keep, from your old computer to your new one.

(about $20). Other transfer options include a USB flash drive, an external hard disk, and a network connection.

Ultimate Windows Tweaker v2

This free customization tool (find.pcworld.com/64079) detects whether you're running Windows 7 or Vista, and offers only the tweaks relevant to your OS. "Ultimate" is a fitting description for this mega-tweaker, which provides dozens of configuration options for UI, network, security, and system settings. If you're all about personalizing Windows 7, this app is for you.

WinZip 14 Standard

If Windows 7 has zip compression built in, you're undoubtedly wondering, why do I need the latest version of WinZip? Well, if you seldom use zip archives, you probably don't. But zip fans will appreciate the improvements in WinZip 14 Standard (find.pcworld.com/64080), which has simplified the process of zipping and mailing archives in Windows 7.

The latest version offers better compression ratios than the previous one, too. WinZip 14 Standard is $30.

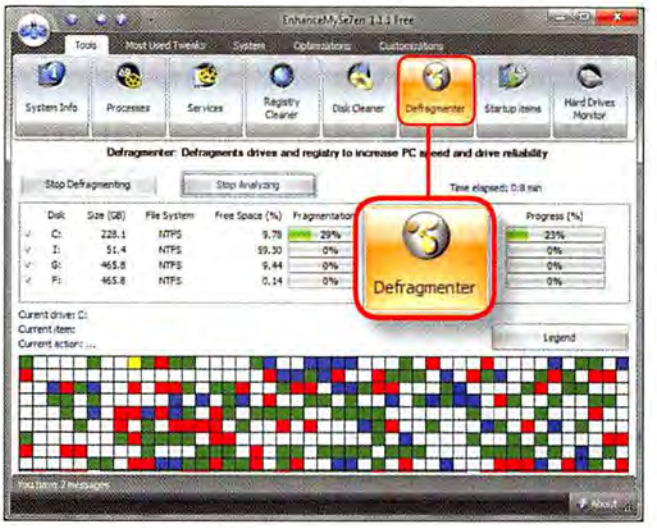
EnhanceMySe7en Free

Windows 7 may be easier to use than Windows Vista or XP, but performing diagnostic and maintenance chores remains tricky. EnhanceMySe7en Free (find.pcworld.com/64081) is a utility bundle for anyone interested in doing a little system housekeeping.

This free app does a fine job of helping you select which programs to permit to load at startup. It also lets you monitor your hard drive's performance, health, and temperature; and it enables you to fiddle with the Registry—if you dare.

Image Resizer Powertoy Clone

Need to resize pictures in Windows 7? This free utility (find.pcworld.com/64082) makes it easy. First right-click one or more image files in Windows Explorer, and then select one of four sizes: small (640 by 480); medium (800 by 600); large (1024 by 768); or handheld PC (240 by 320). You can create your own custom sizes, too.



ENHANCEMYSE7EN FREE PROVIDES a handy all-in-one package of utilities for maintaining and tweaking your Windows 7 system.

Systerac Tools for Windows 7

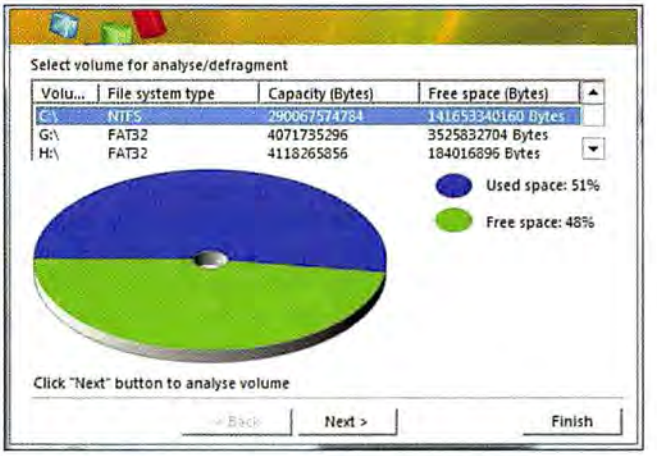
This bundle of 16 tools from Systerac (find.pcworld.com/64083) has utilities you need to keep Windows 7 running smoothly. You can tweak Windows' performance and appearance, optimize memory, clean up the hard drive, cover your tracks by shredding files, and so on. The Systerac interface is aesthetically appealing, nicely organized, and a snap to learn. The $20 Windows 7 version runs on Vista as well.

Windows 7 Upgrade Advisor

Run this free Microsoft utility before you upgrade to Windows 7. Upgrade Advisor (find.pcworld.com/64084) scans your PC to see whether it's ready for Win 7. If it detects a problem—from insufficient memory to incompatible hardware to outdated software—it will let you know in a summary report.

—Jeff Bertolucci

IMAGE RESIZER POWERTOY Clone lets you change the dimensions of any image on your hard drive without launching a full photo editor.



SYSTERAC TOOLS FOR Windows 7 optimizes your PC's settings, cleans your hard drive, and frees system resources from needless bondage.

Let Friends See Your High-Res Photos Online

WHEN YOU TAKE a high-resolution photo, a lot of detail gets locked away in your image. You can zoom in and see minutiae in the background, for example. It's fun to see how much you can enlarge the image and still see somewhat sharp, meaningful visuals that you never noticed when you took the photo to begin with.

Unfortunately, few people ever see those subtle details. When you share a photo in e-mail or online, you generally need to shrink the image down to a manageable size, throwing away most of those pixels in the process. A few thousand pixels of unexamined background action shrinks to a dozen indistinct pixels. And if you print the photo, the detail locked into the original photo is too small to see.

Closr, a free Web site, addresses this problem by letting you upload your photos in their full-resolution glory: 8 megapixels? 10? 20? No problem. The only limitation is that the file must be under 100MB—and a 12-megapixel photo is about 3MB or 4MB.

The Big Picture

Closr is also a great place to show off huge panoramic photos made by stitching several high-megapixel images together. Closr accepted 20MB and 30MB panoramas from me without a hiccup.

To use Closr, you must register with a screen name, e-mail, and password. Then upload a photo. It will appear in a widget on the Website, which you can use for panning and zooming to see the details that your camera captured. The magic happens when you go full screen. Click the icon in the upper-right corner of the widget, and the photo will go full screen, so you can zoom in and pan around more easily.

TO VIEW YOUR image in all its high-resolution glory, simply click the + symbol above its upper-right corner to switch to full-screen mode.

You can share uploaded photos by sending the URL via e-mail. If you have a Web site or blog, you can embed the widget: Click *Share* at the bottom of an image, and then copy the script at the bottom of the next page.

The posted image isn't static. Rather, the widget is interactive, so you can click in the picture and drag it around or use the zoom buttons for a better view.

I could complain that Closr doesn't take full advantage of the resolution in your photos. You can zoom in only a bit, which is disappointing when you know a lot more detail is locked away in the photo. But it's free, and it's a good start.

—Dave Johnson

ANSWER LINE

ASK YOUR QUESTION AT FORUMS.PCWORLD.COM

Windows turned my PC's drive F: into drive G:. How can I change it back?

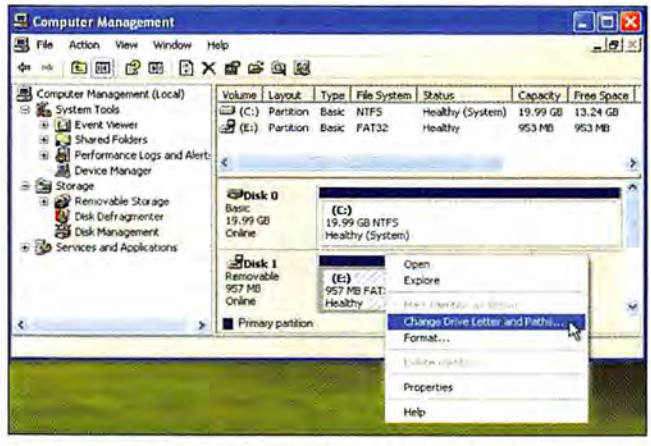
—060798ale, PCWorld.com forums

YOUR BEST BET is to manually reassign the drive letter you want.

Click *Start*, right-click *My Computer* (just *Computer* in Vista), and select *Manage* to bring up the Computer Management application. In the window's left pane, under the Storage heading, select *Disk Management*. When Windows brings up a map, right-click the drive you want to change and select *Change Drive Letter and Paths* to fetch the 'Change Drive Letter and Paths...' dialog box. Click *Change*.

In the resulting dialog box, select a drive letter from the pull-down menu and click *OK*. Restart your computer if prompted to do so.

Thanks to forum regular Mphenterprises for answering the reader's question in the original forum discussion.



REVIEW WINDOWS' MAP of your assigned drives, right-click the one you want to change, and select 'Change Drive Letter and Paths...'.

Five Technology Tips for Mobile Professionals

PC World's mobile computing expert shares some insights he has gained through years of working and traveling with electronic devices.

FOR NEARLY EIGHT years, I've been advising *PC World* readers on mobile technology, social media, and other topics. Here are five lessons I've learned along the way.

1. Most GPS Devices Aren't a Good Deal

As a fan of portable gadgets, I've purchased at least one of nearly every device you can image. And yet I've never been tempted to buy a portable GPS device. That's because every GPS device I've ever tested has given me some wacky, if not downright convoluted, directions.

For example, a Garmin Nuvi 1370T suggested that I drive past my destination and circle back around, when all I had to do to get there was make a legal left turn.

GPS devices are improving. But for now, I'll stick with getting directions via Google Maps on my iPhone (except when I'm traveling internationally). I'll probably get better routes, and I'll definitely save money and reduce the number of gadgets I need to keep track of.

2. Avoid Incurring Restocking Fees

As stores where you can get hands-on time with digital cameras, laptops, and other devices dwindle, you may have to buy a product online that you've never touched.

That's why it's essential to study online retailers' return policies, including their policy on restocking fees. Many retailers charge 15 percent of the purchase price if you return a nondefective product for reasons other than that the seller erred (such as by sending you the wrong product). On a $1000 laptop, that's $150—an expensive fee for a test drive.

A plus with one store I like to buy from is that it doesn't automatically hit me with a restocking fee. Two caveats, however: Like many online retailers, the store requires buyers to obtain a return authorization from it before returning a product. And you won't avoid the restocking fee if the item you return is no longer in as-new condition or is missing an included accessory or some of the original packaging material.

3. Don't Overplan Your Tech Purchases

Timing your purchase of a portable device to avoid instant buyer's remorse seems logical. But obsessively trying to buy a new electronic device at the right moment can drive you nuts. Certainly you should do your homework before buying. For instance, the longer a product has been on the market, the closer it is to being replaced by something cheaper, faster, and better (usually).

Also, try to find out what the next generation of a product might look like and how soon it might arrive. Ultimately, though, you should just buy the product that best meets your needs and budget; buy it when you need it, and then move on.

4. Live in the Cloud

In March, Random House's Broadway Business imprint will publish *Getting Organized in the Google Era*, a book I collaborated on with Douglas C. Merrill, Google's former CIO. The book explains why information is crucial to being organized. One key to efficient organization today is to keep important information on the Internet (aka "the cloud") so you can access it whenever you want from a smartphone, a laptop, or some other device.

This advice is especially relevant for mobile professionals who have more than one computer. By using a Web-based e-mail system, such as Gmail or Zoho Mail, you can reach your e-mail from any device equipped with an Internet connection and a Web browser.

And because Gmail and Zoho Mail offer tons of storage, you don't have to delete old messages to make room for new ones. So if your Web-based e-mail system has strong search capabilities, and you have years of messages stored in it, your e-mail account can function as an always-available personal data archive.

Web-based e-mail is still far from perfect, as a recent Gmail outage reminds us. But the advantages of keeping vital information online far outweigh the pitfalls.

5. Disconnect Now and Then

Technology lets us stay constantly connected to e-mail and the Web—and that's exactly what many of us do. But I believe we pay a price for being ceaselessly online. So the next time you're outside, instead of focusing on an electronic device as you pass through the offline world, consider switching the device off and experiencing what's around you. Your e-mail will still be there when you get back to the office.

—James A. Martin

ILLUSTRATION: ANDREW RAE

RICK BROIDA'S HASSLE-FREE PC

Three Easy Ways to Save Time, Frustration, and Your Data

I LOVE MY PC, and the data on its drives is my livelihood. So I take protecting the machine and the data it contains extremely seriously. This month, I'll share some sage advice for preventing your computer from failing catastrophically in a power outage, along with a good way to recover a corrupted user profile in Microsoft Outlook. But before I get to those data-saving tips, let me offer a fun Firefox trick to make your favorite Web pages refresh as if by magic.

Refresh Firefox Tabs Automatically

Reader Kevin asks: "Is there a way to have Firefox refresh automatically, without my hitting the refresh button? It would be nice when Woot.com is having a 'Woot off' or when I'm watching an eBay item."

Yes, indeed. All you need is ReloadEvery (find.pcworld.com/64077), a Firefox extension that can reload a tab at designated intervals.

After installing ReloadEvery and restarting Firefox, simply head to a page that you want to automatically refresh, click the little arrow next to the Refresh button, and choose your desired interval.

Alternatively, right-click anywhere you wish on the page and select the *ReloadEvery* menu. The extension lets you choose different refresh rates for different sites you visit. But be careful not to use it with Web-based e-mail, forms, blog tools, and the like; otherwise, you could lose some work in progress.

Protect Your PC From Power Outages

Recently my neighborhood experienced a brief power outage—and it happened just when my system was in the process of booting up. I know from bitter experience that if a computer loses power while starting up or shutting down, the result can be disastrous. One possible outcome in the parade of nightmare scenarios: a damaged copy of Windows and a PC that will no longer boot.

That's why I was so grateful for my battery-backed uninterruptible power supply (UPS), which saved the day (or night) like Mighty Mouse at an alley-cat convention and kept my computer alive and booting when the lights went out around me. A UPS is also indispensable if the power dies while you're working, as it gives you time to save your documents and shut down safely.

LOVE YOUR UPS: Saving your PC is a surely a smoochworthy service (except for the electrocution thing).

Because their machines already have a "battery backup" built in, laptop users have less need for a UPS. On the other hand, if you've followed my previous advice and removed the battery while working at a desk, having a UPS in place is every bit as essential for your attached laptop as it is for a thoroughly immobile desktop PC.

> Protect your PC from major damage if a power outage occurs at a critical moment; rescue lost Outlook data; and refresh Firefox automatically.

What kind should you buy? Plenty of good choices are out there, so I have no specific recommendations; but I will point out that you can find popular, reliable models like the APC Back-UPS ES for as little as $50. (That model is very similar to the one I'm using now, and I have no complaints. Quite the opposite, in fact.)

Yep, a battery backup will cost you a few bucks, but I think it's worth the expense. The computer you save could be your own.

Fix a Corrupt Outlook Profile

Not long ago, I fired up Outlook, just as I always do, only to be greeted by this oh-so-helpful error message: 'Cannot start Microsoft Office Outlook. Cannot open the Outlook window.'

This is neither the time nor place for me to complain about what a buggy, overwrought, confusing, user-hostile piece of software Outlook is. That would suggest some sort of rancor on my part.

No, I'm here to provide solutions, my friends, and that's what I now have in my hot little hands. After some earnest troubleshooting (aka Google spelunking), I determined that this particular error was in all likelihood caused by a corrupt Outlook profile.

The underlying problem is actually pretty major—yet another reason why it's so important to make regular backups. That said, I managed to recover fairly easily by making a copy of the profile and then forcing Outlook to load that copy when it started up.

Here's how to proceed (in Windows Vista):

1. Open Control Panel, type **view 32-bit** in the search box, and then click *View 32-Bit Control Panel Items*.
2. Double-click *Mail* to bring up the Mail Setup window, and then click the *Show Profiles* button.
3. Among the profiles that appear should be one called 'Outlook'. If that profile isn't already highlighted, click it, and then click *Copy*. Give the new profile a name (I decided to call mine Outlook-Rick, but that's only because StupidPoopy-MeanieOutlookIHateYouSoMuchForeverandEver was too long); then click *OK*.
4. Click the drop-down menu below *Always use this profile*, choose your new profile, and finish by clicking *OK*.

With luck, you should be able to start Outlook and get back to work, with all of your e-mail, contacts, and other data intact. The only glitch I encountered was that Outlook no longer knew where to find my auto-complete database for e-mail addresses. I'm sure that there's a way to restore it, but one problem at a time. ●

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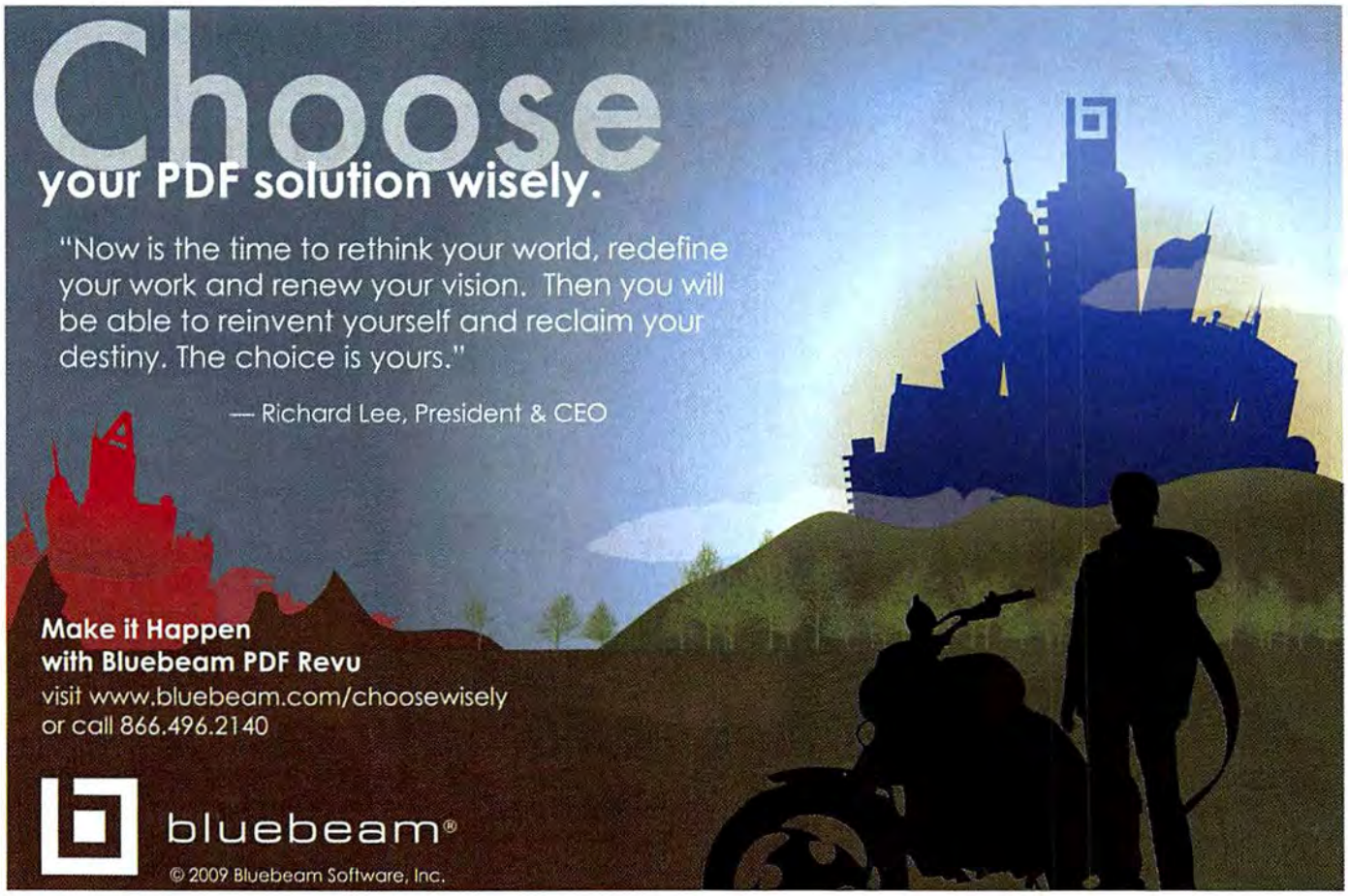

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The Back Page

Fun *with* Autocomplete

Sure, you can hit Google's 'I'm Feeling Lucky' button if you don't want to slog through pages of results. But an even better option is the autocomplete feature, which predicts what you're searching for as you type terms into the box. Most of Google's guesses make sense—others, not so much. Here are a few of our current favorites.

WE TYPED	GOOGLE SUGGESTED
Why Bill Gates...	Why Bill Gates quit Facebook *and* Why Bill Gates hates my book
Why does Steve Jobs...	Why does Steve Jobs wear the same thing
Steve Ballmer...	Steve Ballmer going crazy
Why does Apple...	Why does Apple use i *and* Why does Apple juice give you the runs

QUIZ: Spot the Fake Product

In each pair below, one item is legit and one isn't. Can you tell which is which?

iPod dock toilet-roll holder — iPod dock towel rack

Doggie camera — Doggie laptop

Inflatable mouse pad — Inflatable mouse

Pickle Bluetooth handset — Banana Bluetooth handset

Real products: *iPod dock toilet-roll holder (find.pcworld.com/64064), doggie camera (find.pcworld.com/64066), inflatable mouse (find.pcworld.com/64067), banana Bluetooth handset (find.pcworld.com/64068).*
Note: *The doggie computer (find.pcworld.com/64065) is a mockup created as a joke by Toshiba.*

Plugged In

Microsoft Beefs
Japanese Burger Kings sell Windows 7 Whoppers to help promote the operating system's launch. No truth to the rumor that the sandwiches cause users' stomachs to reboot for hours.

One Billion Served
YouTube announces that it's now streaming a full billion video views a day. Man, that's a lot of piano-playing cats.

Internet Intelligence
According to a recent UCLA study, surfing the Web stimulates the brain. And at certain sites, other parts of the body.

CES Redefined
A Consumer Electronics Show official proclaims that "*Green* is the new *black*, and *flat* is the new *up*." Here's hoping that CES isn't the new Comdex.

New iPhone Killer?
The Droid phone woos Verizon customers with an all-out ad campaign. A suggested AT&T counterattack: Obi-Wan Kenobi waving his hand and saying, "These aren't the droids you're looking for." ●

—Steve Fox and JR Raphael

Have a great idea for a Back Page item, from crazy hacks to twisted tech billboards? Send your suggestion to TheBackPage@pcworld.com. You'll earn a small slice of fame, our undying gratitude, and a nifty PC World mug.

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