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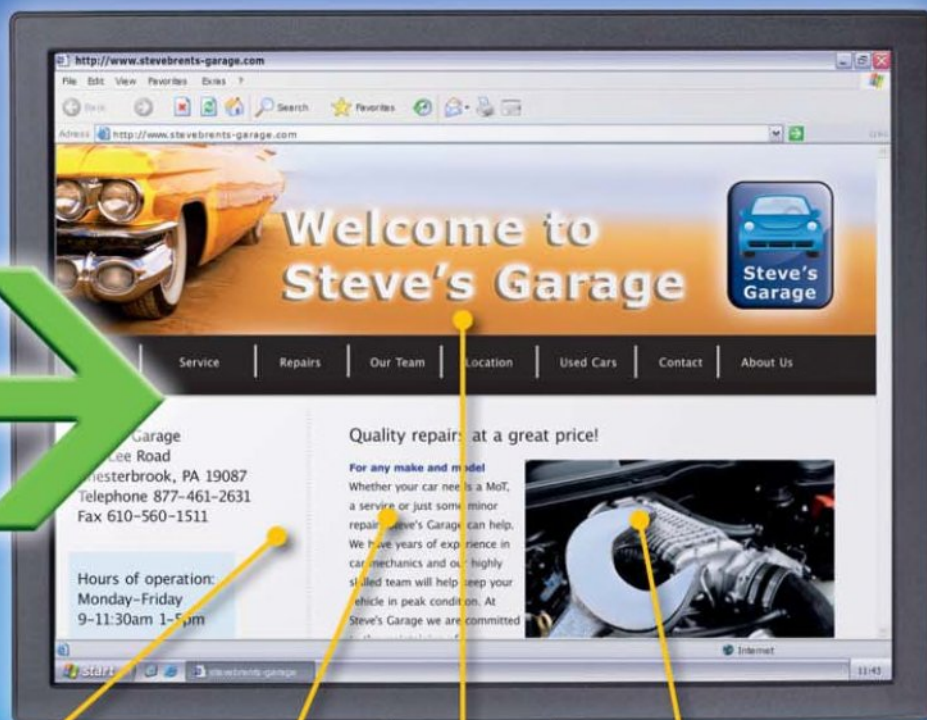
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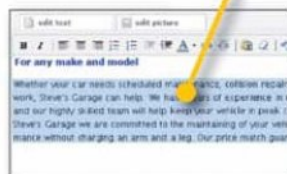
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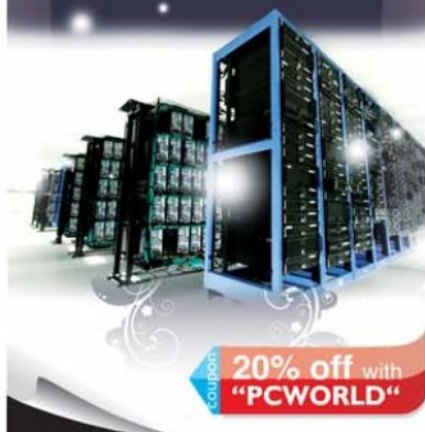
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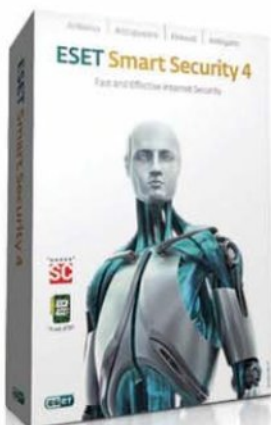


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## Will Win 7 Leave Users Champing at the Bits?

HERE WE GO again! Welcome to the hoopla, hype, and hubbub that invariably accompanies the release of any full-blown Microsoft operating system.

I'm not saying that the excitement is unjustified. For many PC users, the release of Windows 7 is a big deal; and it may be the event of the year or (considering its predecessor) the decade.

After all, Win 7 promises to shake up the computing landscape in ways that Windows Vista didn't: forcing upgrade decisions on consumers and businesses, while selling boatloads of new PCs, laptops, and netbooks to users who long ago highlighted October 22, 2009, on their Outlook calendars.

I understand the enthusiasm. As our hands-on testing demonstrates (see "Inside Windows 7," page 60), Microsoft's latest operating system is a winner and well worth the upgrade, even if you choose to take your sweet time about adopting it. Still, I can't help feeling vaguely disappointed.

Why? Because Windows 7, for most of us, will be a 32-bit operating system. Given that desktop hardware has been capable of supporting 64-bit operations since 2003, we should be expecting more by now. Yes, the Windows 7 installation disc ships with a 64-bit version of the OS. But if you're running 32-bit Windows now (and you probably are), there's no easy way to upgrade to 64-bit Win 7. So by default, most of us will be eschewing the brave and zippy new world of 64-bit computing.

Even if you're willing to go the extra mile of backing up your data, wiping your system clean, and performing a 64-bit install from scratch, you'll probably have trouble with device drivers,

It's high time that the world embraced 64-bit computing. But for that to happen anytime soon, we'll have to agitate for change.

utilities such as antivirus, and maybe even some browser plug-ins—in which case your upgrade could turn into a downgrade in a hurry. In other words, we're still stuck in 32-bit land, and I don't see that changing anytime soon.

### The Business of Bitness

In case you're not familiar with the implications of 32- and 64-bitness, I'll keep it simple. A 64-bit machine can handle

64-bit operations in order to show real improvement. The first two items are a given; the last...not so much: Most everyday apps are still compiled for 32 bits. They'll run on 64-bit Windows, but they won't give you any noticeable performance boost. Still, the fastest machine *PC World* has tested for this issue—an overclocked 2.66GHz Core i7 920 PC running at 3.6GHz—was a 64-bit powerhouse. If we had thrown any

64-bit apps at it (for compatibility, we used our standard WorldBench 6 test suite of 32-bit apps), it would have screamed.

Despite the potential advantages, we're still at least one computing generation away from a common 64-bit experience. Though plenty of brand-new machines, unencumbered by legacy drivers and software, will ship with 64-bit Windows 7, the vast majority of

PCs are not new. Furthermore, workplaces around the world are chockablock with machines that will stay at 32 bits for the rest of their useful (and in some instances not-so-useful) lives.

It's a chicken-and-egg problem. Without a critical mass of vocal users who demand better-performing systems with more than 4GB of usable RAM, vendors won't bother developing the drivers and software that would make 64-bit computing a popular option. And we'll continue to be trapped in this 32-bit morass for years to come.

Maybe it's time for impatient PC users to make some noise, bit by bit. ●

Steve Fox is editorial director of *PC World*.



far more data and memory at any instant than a 32-bit machine can. And the rule of thumb for computing is: more bits, better; fewer bits, worse.

Any PC or Mac built today has a core architecture designed to run in 64-bit mode. When you operate it instead in 32-bit mode, you let some of the system's power go to waste. In addition, 32-bit Windows (or Linux or Mac) can't take advantage of more than 4GB of RAM. In view of the minuscule prices of memory today, limiting yourself to 4GB represents a missed opportunity.

The speed advantages of more bits may seem largely theoretical at this point, since the hardware, the OS, and individual applications must support

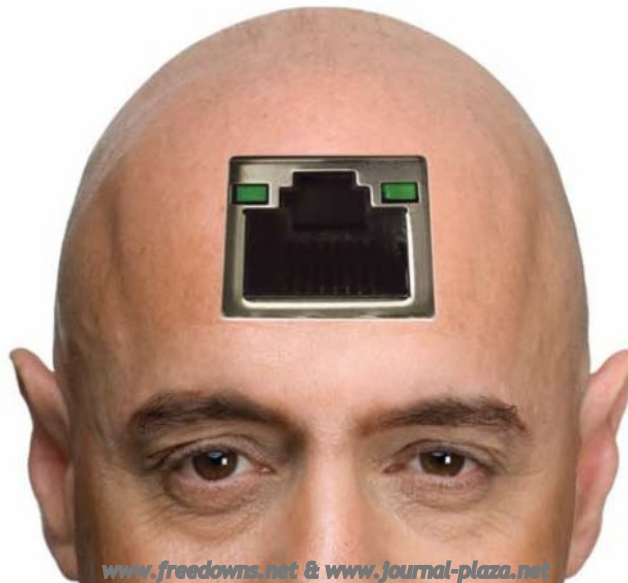


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As part of this Windows 7 preview issue, we look at what our readers and site visitors are saying about the OS. Some of them ask whether the upgrade will be worthwhile ([find.pcworld.com/63608](http://find.pcworld.com/63608)), and some are comparing it with Snow Leopard, Apple's recent update to Mac OS X ([find.pcworld.com/63609](http://find.pcworld.com/63609)).

## Windows 7

You know, Windows 7 looks like the nicest, most visually pleasing, least crappy version of Windows yet. I like it.

However, many of the nice new features that are cited [in your article] have been available to Linux users for a while. Windows 7 is appealing, but not enough so for me to give it a try, especially if I have to pay for it. And yeah, of the criticisms you can throw at it, the virus stone isn't the best one.

However, it is a valid point. Even if you're smart online, you can still get bitten. When a legitimate site gets hacked, being smart about things ain't gonna help. You trust the site, you've been going to it for years with no problems, and bammo—you're infected.

Price, plus viruses, means that both Windows 7 and Mac OS X will remain, for me [as a Linux user], interesting tech that everyone else is using.

Have fun in the struggle, guys.

*libraryeli, PCWorld.com forums*

I've seen Mac OS X at a friend's place, and while it's fine, I feel that the many improvements in Windows 7 are worth the upgrade. The [comparison] article, however, did not mention improvements under the hood: more-efficient

memory use, improved performance, better security, and many other tweaks and improvements. I think we need to go beyond the eye candy.

And so what if Win 7 is just a better Vista? In my opinion, Win 7 appears to be far better than XP. Time to move on.

*dfschmid, PCWorld.com forums*

Consider what's happened to the price of computer components in the past few years. The Pentium 4 computer I built in early 2003 cost me close to a thousand dollars in parts. Now you can build yourself a good basic PC for \$300 to \$400—excluding the operating system. The cost of components has come down, but the cost of Microsoft's operating systems hasn't. The OS could now be the single most expensive part of the system. Microsoft needs to wake up.

*RONZUREK, PCWorld.com forums*

Sure, Windows 7 may be less crappy than Vista, but there's no "there" there to make a business case for the upgrade. Why should a business plan to spend a ton of cash, time, and effort to upgrade from XP to 7? Businesses are sick and tired of being bullied by Microsoft into giving it more and more money for little benefit, just because

the company decided to release a new version with features that nobody but Microsoft seems to care much about.

*ShineOn, PCWorld.com forums*

## A Better Netbook?

Netbooks are intended to be lightweight computers with basic capabilities, access to the Web, and additional functionality supplied by the 'cloud' ["Top 10 Netbooks," *Reviews and Rankings*, September]. So why do netbooks have internal drives? The OS and needed apps should fit on a simple 4GB SDHC card. For user files, such a card or a USB key would suffice, with rarely used files stored in the cloud. This means the system could be thinner or have a larger battery. The OS and apps could be sold separately.

Perhaps people are already ignoring

Wow, it seems that the Canadian government has way too much time on its hands, 'muscling Facebook into making privacy changes' [[find.pcworld.com/63611](http://find.pcworld.com/63611)]. It worries about Facebook privacy for the dead—really?

*Zimmelman, PCWorld.com forums*

the internal drive; using a netbook with a USB key for portability and a desktop at home, office, or school seems smart to me. How about you?

*Andrew Kane, Waterloo, Ontario*

## HDTV Viewing Distance

I disagree with Becky Waring's comments in the section "Find the Right Distance" in her article "How to Get the Best From Your HDTV" [September]. The distance she indicates is way too close for most viewers. Whatever happened to using the formula of multiplying the diagonal measurement of screen inches by 2.75, and then dividing by 12 to get the approximate »



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## PCW Forum

number of feet to sit from the screen? [For a 42-inch screen, this would yield just over 9.5 feet, as opposed to 4.2 to 6.5 feet as in our article. —Editor] Maybe her experts are 21 years old or younger.

*Gil Lozano, Lancaster, California*

### Digital Camera Must-Have

Regarding your "Buying Guide: What to Look For in a Digital Camera" [Reviews and Rankings, September], I have one large *but*: A must-have feature is the optical viewer or viewfinder—the peephole that used to be on every camera made. Outside on bright days, it is almost impossible to see what is on the little screens. My granddaughter broke the screen on her camera and was still able to take pictures using the viewfinder. Hardly any of the cheaper cameras have this feature anymore.

*R. E. Spencer, Kenly, North Carolina*

### Top iPhone Annoyance

To your "Top 10 iPhone Annoyances (and How to Fix Them)" by Jared Newman [[find.pcworld.com/63610](http://find.pcworld.com/63610)], let me add my annoyance: We can't make video calls using the iPhone. Unlike with cell phones from Nokia, Sony Ericsson, and other vendors, where the camera is on the front of the phone near the screen, allowing us to see the caller when making a video call, the iPhone's camera is located on the back of the phone.

*Janice Png, Singapore*

### Laptop Keyboard Fix

Big tip of the hat to Rick Broida! My four-year-old Toshiba Satellite had a wonky keyboard—everything west of the W, S, and X keys refused to work. I read Broida's piece on how easy it is to replace a laptop keyboard (*Hassle-Free PC*, September). Ten bucks on eBay and 15 minutes of my time, and voilà—the PC is as good as new.

*B.J. Hill, Leicester, Massachusetts*

### Control Multiple PCs

Zack Stern's "Cut Costs When Controlling Multiple Computers" [*Business Center*, September] was a comprehensive

list of ways to juggle multiple machines and/or OSs, but it should have mentioned alternatives to VMware's costly virtualization software, such as Microsoft's VirtualPC and Sun's VirtualBox. VMware's own free version, VMware Workstation, works quite well, too.

My small IT office is a great example of how these multiple technologies can be employed simultaneously for maximum use of both available hardware resources and space.

We have a Linux server and a Windows server that are on a KVM switch together sharing a mouse, keyboard, and monitor. My desktop runs the Windows 7 Release Candidate and has VirtualBox installed. I have a virtual machine of Suse Linux 11.1 for my Linux-only work, another of Windows XP for legacy apps that don't work in Linux or Win 7, and a small one for testing bootable disks and pen drives.

*Jason T. Heise, Houston*

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### CORRECTIONS & UPDATES

IN OCTOBER'S *Reviews & Rankings*, we should have said that the Web-based MyCopernic on the Go service carries a subscription price of about \$10 a year.

September's *Net Work* column should have said that Sprint and Verizon customers do not necessarily have to buy new phones to use handsets overseas. Select models from both carriers support GSM networks.

UPDATE: After September's "The Web, Accelerated" was written, one application mentioned, Craigslist Reader, changed from a free to a for-pay app; it now costs \$37 after a three-day trial period.





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# Forward

## Fall HDTVs: 3D, Fewer Cables, and Skinny LEDs

Cutting-edge flat-screen TVs with innovative technologies were everywhere at the giant CEDIA home theater electronics show.

BY YARDENA ARAR

MOVE OVER, LCD—here comes lean, green LED. Make way, too, for sets that dispense with unsightly cables, and get ready for a coming wave of 3D sets.

These were the big HDTV tech trends on display at the CEDIA Expo in Atlanta this September. CEDIA (Custom Electronic Design and Installation Association) is the trade group for businesses that design and install high-end home entertainment and automation systems; its annual show has become the venue of choice for consumer electronics companies that want to show off their newest high-end wares.

One of the biggest trends is the emergence of LED (light-emitting diode) backlighting as the upscale alternative to conventional LCD screens that use CCFL (cold cathode fluorescent lamps)



**SONY'S SLENDER BRAVIA XBR10 sets feature edge-lit LED backlighting and WirelessHD technology, which eliminates cables.**

for backlighting. LEDs are more energy-efficient than LCDs (many LED sets tout local dimming—the capability to turn down brightness in dark spots—and ambient-

light-sensitive displays that get darker in dim rooms).

LEDs also dispense with environment-damaging mercury, and their superslim screens are capable of richer

color. But they also cost more than traditional LCDs, so most vendors are continuing to offer LCD sets for potential customers who are on a relatively strict budget. Either way—LCD or LED—almost all of these HDTV sets now offer 1080p high definition (as opposed to the 720p resolution that dominated the high-def market earlier in the decade).

Sony, for example, has announced a new pair of super-skinny Bravia sets, called the XBR10 series, with edge-lit LED backlighting. The sets come with either a 46-inch or a 52-inch screen. They also boast speedy 240Hz screen-refresh technology to make action video look smoother.

### Cutting Those Cables

The XBR10 sets feature another hot technology: WirelessHD. Designed to eliminate ugly cables dangling from wall-hung sets (although they still need a power cord), WirelessHD sets come with transmitter boxes that contain the myriad inputs usually found on the back of a set. You hook up all your audio and video sources—set-top boxes,



game consoles, home theater receivers—to the transmitter box, which then beams the uncompressed signals from these sources (7.1-channel audio and 1080p video) to the set over the unlicensed 60GHz band.

WirelessHD offers vastly more throughput than even the fastest versions of Wi-Fi; backers say that the first products, all based on chips manufactured by a company called SiBeam, can achieve about 4 gigabits per second (802.11n tops out at a theoretical rate of 600 megabits per second). However, WirelessHD lacks Wi-Fi's range—its maximum transmission radius is only 33 feet, versus over 250 feet for 802.11n Wi-Fi—which is why experts view it as a cable-replacement technology, not a true home-networking technology.

The bonanza of goodies in the XBR10 series doesn't come cheap, however. The 46-inch set is expected to run about \$4500, while the 52-inch model will go for \$5000. Sony plans to ship both HDTVs next month.



**MODELS IN LG'S SL80 series are conventional LCD sets, but still svelte, at 1.8 inches thick.**

**LG on the LED Train** Another vendor, LG Electronics, announced new SL90 LED sets that are extremely thin, too—less than 1.2 inches thick, with no raised bezel. They are due out later this fall with price

tags of \$2599 for the 47-inch model and \$2099 for the 42-inch. Members of a trio of new conventional LCDs, the SL80 series, are somewhat thicker—1.8 inches—but also considerably less expensive, ranging from \$1599 for the 42-inch model to \$1899 for the 47-inch television to \$2799 for the 55-inch display.

LG is also bringing three WirelessHD sets to market. The top-of-the line 55-inch LED-backlit 55LHX is expected to ship shortly at a suggested price of \$4799, while a pair of conventional LCD sets, the LH85 series, are set for later this fall with prices of \$3199 (55 inches) and \$2399 (47 inches).

### Panasonic Shows WirelessHD Set, 3D

Panasonic recently began shipping a 54-inch plasma TV with WirelessHD, the TC-P54Z1, which it had announced at the Consumer Electronics Show in January. The set/transmitter bundle runs \$5500.

However, 3D HDTV took center stage at the company's CEDIA booth, in the form of a mobile theater showing dramatic 15-minute reels that included clips from the Pixar film *Up!* and sports footage. Insisting that its technology is poised to become the industry standard for 3D, Panasonic said that it expects to begin shipping 3D-enabled TVs and Blu-ray Disc players next year. And yes, its 3D technology requires viewers to wear special glasses, but the company says that these glasses will be superior >>



**PANASONIC'S TC-P54Z1 IS a 54-inch plasma HDTV with WirelessHD. The company is also introducing sets with 3D capability.**

## PLUGGED IN

BY STEVE FOX



### BEATLES ROCK BAND HITS THE STREETS:

Boomers party like it's 1969, but anyone under 35 is mystified. Hey, man, these guys aren't even on iTunes. Just how big can they be?

### THE SKINNY ON LAP-TOPS:

Dell touts a prototype Adamo netbook measuring 0.4 inch thick. Let's hope that no PR person dares to call it the "thinnest model in America": Tyra Banks would throw a fit.

### MAPS MONOPOLY:

Online version of classic game uses Google Maps for a real-life real-estate experience. Given the legal flap over their book-scanning project, you'd think company execs would want to avoid having the words "Google" and "monopoly" appear in the same sentence.

### HARDLY WORKING?

Worker productivity soared, even as U.S. users viewed a record 21.4 billion Internet videos in July. Must have been instructional videos.

### TWEET, TWEET:

According to a Pear Analytics study, 40.5 percent of all Twitter tweets are "pointless babble." That leaves less than 60 percent for the pointed babble that we all love and value.



to those provided for 3D movies in theaters.

Panasonic isn't the only vendor to establish a stake in 3D. Jeff Goldsmith, vice president for Sony Electronics television, says that his company is committed to 1080p content in 3D.

"You can bet that we're bullish on the technology as 2010 approaches," he told reporters at the company's news conference at the CEDIA Expo.

It should be noted that one major HDTV competitor, Samsung, has for some



**JVC'S LT-32WX50, A 32-inch 1080p LED HDTV set, will likely cost almost \$3000.**

time been shipping 3D aftermarket kits. (These kits currently sell for around \$130.

Many HDTVs not formatted for 3D are convertible to 3D with such kits—see [find.pcworld.com/63695](http://find.pcworld.com/63695).)

### Sharp Thinks Big

Sharp's new offerings include a line of four LED-backlit AQUOS sets, the LE700 series; these 1080p sets range in price from \$2800 for a 52-incher to \$1100 for a 32-inch set.

Sharp also announced a pair of larger conventional LCD sets at what the company described as attractive prices, considering the dimensions involved.

The 65-inch LC-65E77UN—shipping in September—will sell for about \$4500, Sharp says, and the 60-inch LC-60E77UN will run \$3500.

JVC, meanwhile, is releasing one LED HDTV model, a petite 32-incher that will weigh a mere 12.5 pounds.

As slender as 0.25 inch at its leanest point, this model, the 1080p JVC LT-32WX50, is slated to ship in November; but don't expect anything skinny about its price (except maybe the slimming effect on your wallet), although JVC says only that it will be "less than \$3000."

## ON-BOARD INTERNET SERVICES

### HDTVs, Blu-ray Players Push Expanded Web Connections

CONNECTED TVs, set-top boxes, and Blu-ray Disc players are hardly novel, but they're making new connections with Web sites and services, from YouTube and Netflix to Amazon and Internet radio.

The definition of *connected* varies widely among consumer electronics vendors, and some vendors offer much more than others in the way of connections, but all are building up their portfolios of Web video and interactive services. A number of the newest entries were on display in September at the CEDIA (Custom Electronic Design and Installation Association) event in Atlanta.

Sony—which already markets movies, TV shows, and music from some two dozen partners, including Amazon Video on Demand, Slacker radio, and YouTube—announced that it will add Netflix to its Bravia Internet Video lineup later this fall. Available on networkable Bravia sets, the video service will also appear on the Sony BDP-N460, a new networkable Blu-ray Disc player that will ship later this fall at a price under \$250. (Sony Bravia TVs also offer Web content such as stocks, weather, and Twitter, via Bravia Widgets.)

LG Electronics, meanwhile, announced the addition (via a firmware upgrade being released in late September) of the Vudu on-demand service to the Netcast Entertainment Access service that's on its \$399 BD390 Blu-ray Disc player. This service gives access to CinemaNow, Netflix, and YouTube content, as well.

Samsung's Internet@TV service, which already had a dozen



**SAMSUNG'S BD-P4600 IS one of the company's networkable Blu-ray Disc players.**

Yahoo widgets, now offers on-screen access to Rallycast fantasy sports applications, including Facebook messaging and access to team stats. And Samsung's networkable Blu-ray Disc players, including the BD-P1600, BD-P3600, and BD-P4600, will add YouTube access to the existing Pandora and NetFlix services.

For its part, Pioneer demonstrated a new platform designed for Web-connected electronics—a kind of media hub—that is still in the late stages of development. Code-named Project ET, it will enable device designers and/or consumers to choose the content and services they want by clicking on menu buttons in the platform's Web portal. The prototypes of this platform shown at CEDIA featured everything from video-on-demand services to backup.

Pioneer officials said that the platform could exist on a set-top box of its own or on a Blu-ray Disc player or other networkable device (one demo setup featured a Blu-ray player with 1 terabyte of built-in storage). The company hopes to show a product based on the new platform sometime in the next few months.

—Yardena Arar



**SONY'S BDP-N460 BLU-RAY Disc player can access Internet video.**



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## Get Ready for the E-Reader Rumble of 2010

THINKING OF BUYING an e-book reader such as Amazon's Kindle 2? You might want to wait. An impending e-reader war will give you a bevy of new models to consider, at lower prices and with diverse designs.

A handful of companies, including Asus, Plastic Logic, and a British startup named Interead, are planning new devices intended to get you hooked on digitized books and newspapers. Their prices are expected to range between \$165 and \$400, compared with \$300 for the Kindle 2 and \$490 for the Kindle DX. Some of the devices, such as Interead's



**INTEREAD'S forthcoming Cool-er Reader will have lots of colors.**

Cool-er, may be available in time for the holiday season. (Sony has already begun shipping its newest Digital Reader models.) For the other offerings, you'll have to wait until early next year.

A word of caution, though: Competition is great, but it also could lead to compati-

bility issues among the various readers. For example, books and periodical subscriptions that you buy at Amazon's online Kindle store are currently not compatible with non-Kindle readers. Before you buy, examine the file formats and digital rights management (DRM) that each reader supports, as well as the breadth of the reader's associated online bookstores.

And watch Google's role in the e-book market. A battle has erupted over Google's scanning of millions of out-of-print books, which it wishes to make available through Google Book Search

for e-book readers. Amazon doesn't want Google to do this, out of concern that Google's deal makes it difficult for other e-book sellers (that is, Amazon) to scan and distribute these public-domain books themselves.

In any case, the wave of new e-book readers means that publishers should soon see an end to Amazon's e-reader dominance, and consumers should see lower prices and more options. The looming e-reader war can't begin soon enough.

For a look at some of the coming e-book readers, go to [find.pcworld.com/63712](http://find.pcworld.com/63712).

—Jared Newman

## BETA WATCH EDWARD N. ALBRO



### Gist: The Lowdown on You

We used to say the eyes were the windows to the soul. Now, if you want a true picture of a person, you look at their inbox. At least, that's what Gist does. Give this free service access to your mail account (Gmail, Outlook, and others), and it will figure out the people and companies that really matter to you. I was impressed by how well Gist figured out the importance of my correspondents, but I was less excited about what the service did with the information. It presents news stories about and status updates from the people who are most important to you. But I expected more help filtering the wheat from the chaff in my inbox. [gist.com](http://gist.com)

### TweetMixx: Twitter Synthesized

Does Twitter just seem like too much—too many updates with cryptic links and few connective threads? TweetMixx gives you tools to make sense of all those tweets. First, the free service takes the tiny URLs your friends have shared and creates snapshots of the pages they refer

to—headlines and a few lines of text—to let you judge their worth. Tell TweetMixx the subjects you're interested in, and it'll keep track of chatter about them in the Twitterverse. And if you just want to know what's going on, you can look at the top items people are sharing and the biggest current trends on Twitter. [tweetmixx.com](http://tweetmixx.com)

### TwoFoods: The Lesser of Two Evils

We all know what we're *supposed* to eat: carrots, brown rice, and vegan bean patties. But nobody actually wants to eat that way, so our food choices often come down to this question: Which of these two foods is less bad for me?

TwoFoods.com to the rescue! Put in two culinary options, and this site will tell you which one has more calories, fat, carbs, and protein. You can enter basic food types, such as apples or chicken breasts, or brand names like Big Mac or Whopper. Within seconds you'll know which of the two will kill you quicker. What you do with that information is between you and your waistline. [twofoods.com](http://twofoods.com)



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### Get the Right Gear

If you only need one microphone, use one with a USB output. For recording multiple voices or instruments simultaneously, use XLR mics connected to a mixer.

### Find a Quiet Place

For professional-quality sound, record in a quiet location that does not produce an echo. Avoid reflective or hard surfaces such as windows or concrete walls. Avoid air conditioning units, and most of all, people!

### Stop the Pop

Popping, or plosives, are explosive breaths that are heard after words that begin with a "p," "t," "d," or "b" sound. Windscreens and pop filters provide an acoustically transparent shield around your microphone.

### Maintain a Consistent Sound Level

Movement will change recording levels. Record any instruments separately from vocals.

### Use Effects

Digital audio effects can make both voices and instruments more pleasant to listen to. Effects processing, equalization and compression are most commonly included as unique controls within a single software package or digital mixing console.

### Listen Carefully

Monitor the sound while you are recording or editing so you are aware of vocal issues early on.



# Forward

## GEEKTECH

### How to Save \$100 on Windows 7 Pro

INSTEAD OF COUGHING up \$300 for Windows 7 Professional, try saving \$100 by buying the Home Premium edition and faking its "Pro" features with some no-cost utilities.

Replace the most attractive features of Windows 7 Professional with these freeware utilities.

#### Encrypting File System

Windows 7 Pro encrypts and protects files effortlessly; with just a few clicks you can prevent anyone lacking an encryption key—except maybe a system administrator—from reading your files.

To do the same in another version of Win 7, try TrueCrypt ([find.pcworld.com/61859](http://find.pcworld.com/61859)). This excellent app conceals files using powerful encryption algorithms.

#### Backup and Restore Center

Windows 7 Pro's Backup and Restore Center copies files to internal, external, and network hard drives. You can back up via a schedule, and even incrementally, as Windows 7 can address only the files changed since your last backup. And its Shadow Copy feature saves earlier versions of files.

The same features also exist in many free utilities, including these.

Use Clonezilla ([find.pcworld.com/63718](http://find.pcworld.com/63718)) to make full clones of your hard drive. For local, network, and remote backups, the easy-to-use CrashPlan ([find.pcworld.com/63690](http://find.pcworld.com/63690)) comes in both free and paid versions. And for incremental backups, try BackUp Maker ([find.pcworld.com/63691](http://find.pcworld.com/63691)).

For the space-conscious, SyncBackSE ([find.pcworld.com/45090](http://find.pcworld.com/45090)) can look through your backup folder and delete files you've trashed since your last backup.

#### Remote Desktop Host

Windows 7 Pro can control another PC remotely. It's perfect for telecommuters.

The free UltraVNC ([find.pcworld.com/60979](http://find.pcworld.com/60979)) accomplishes the same task, offering several connection options and easy file transfers. It can also encrypt data passing between two PCs.

#### Windows XP Mode in Win 7 Pro's Virtual PC

Windows 7 Pro users don't need to own an existing copy of Windows XP to make use of Pro's XP Mode: They can download a working version of the legacy OS from Microsoft. Plug this into Windows 7's Virtual PC program, and you'll have a perfect version of the older operating system running right on your Windows 7 desktop.

You can mimic XP Mode with the open-source app VirtualBox ([find.pcworld.com/63719](http://find.pcworld.com/63719)). To use VirtualBox, you need a full,



**THE FREE TRUECRYPT utility can create encrypted volumes, protecting your data with the strongest algorithms available.**

paid copy of Windows XP: Only Windows 7 Pro users get their virtual XP for free. However, you can install even-older Windows versions with VirtualBox—ideal for playing with older operating systems sans partitioning or reinstalling.

—David Murphy

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## Four of Autumn's Most Promising Cameras

AS THE LEAVES change, so do your digital camera options. Are big-name manufacturers saving their best models of the year for last? Perhaps they are—as evidence, here are some of the camera announcements for fall that we're excited about. (Note that some models are available now; the others should

be out in plenty of time for—already?—holiday shopping.)

For the complete online slide show of fall cameras and links to more information, go to [find.pcworld.com/63694](http://find.pcworld.com/63694). (For details about the Panasonic Lumix DMC-GF1, not included in the slide show, go to [find.pcworld.com/63696](http://find.pcworld.com/63696).) —Tim Moynihan ●



### Canon PowerShot G11

The \$500, top-of-the-line Canon PowerShot G11 follows last year's PowerShot G10. Though its megapixel count is lower (10 versus the G10's 14.7), the G11 has both an optical viewfinder and a flip-out LCD for tough-angle shots, plus a sensor optimized for low light. It offers optical image stabilization, RAW mode, a 5X optical zoom, rugged looks, and fast access to ISO and exposure compensation settings via camera-top dials. The G11 will be available in October.



### Panasonic Lumix DMC-GF1

Micro Four-Thirds cameras are non-SLR, interchangeable-lens units; the thinnest one yet, the 12-megapixel Lumix DMC-GF1 is designed for wide appeal. It offers swappable lenses, 720p video recording, a bigger sensor than a point-and-shoot, a pop-up flash, a hot shoe, and the ability to shoot in RAW format. It's due in October for \$900 with a choice of two kit lenses, and we can't wait to test its HD-video chops while getting creative with various lenses.



### Nikon Coolpix S1000pj

You want innovation? The Nikon Coolpix S1000pj (\$430) comes with a built-in projector for playing back photos and videos. The tiny projector—in the front-center of the camera—has a throw (or projection) range of 10 inches to 6.5 feet, standard-definition VGA resolution, and a brightness rating of 10 lumens. Available now, the camera will also have a 12-megapixel sensor, a 5X-optical-zoom Nikkor lens, and a 2.7-inch-diagonal LCD on the back.



### Sony Cyber-shot DSC-WX1

Using a revamped Exmor R sensor designed to capture more light in dark environments, the Sony Cyber-shot DSC-WX1 (\$350, slated for October) promises to snap crisp, well-defined low-light shots via its Handheld Twilight mode, in which it shoots several images in rapid succession and then combines them for a better final image. Other specs include a high-end Sony G lens with 5X optical zoom, 720p HD video recording, and a Sweep Panorama mode.



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Windows Vista®  
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# Consumer Watch

## When Web Sites Frustrate You by Default

BY YARDENA ARAR

AS AN AMAZON Prime member, I pay a yearly lump sum that entitles me to free two-day shipping for my many Amazon purchases. But six months ago, I noticed that small shipping charges were appearing on my bill at checkout; free two-day shipping was no longer the default choice on my purchases. Instead, a check mark appeared next to the option for paid overnight delivery.

I hadn't told Amazon to send the items overnight, so why had the company made this my default? Regrettably, many of the default choices that Web sites make for consumers are good for them, but not for us.

Some cost a bit more, some install software that you don't want, some fill your inbox with newsletters and marketing offers. Sometimes defaults mysteriously change, in the company's favor. More than ever, it's important to review shopping-cart pages and sign-up options carefully when you set up an account, install software, or buy at Web sites.

Ed Kountz, an e-commerce analyst for Forrester Research, told me that he hadn't closely examined whether Web site defaults are getting less consumer-friendly. But such a trend wouldn't be surprising, he wrote, "both because of the potential for shifting costs to the consumer, and because of the impact of the recession (when times are tough, wringing every last dollar from a relationship becomes more important)."

Some annoying defaults you can't change. For example, if you sign up for PayPal using a credit card as your funding

source, after you spend a certain amount of money (PayPal says that the amount varies from user to user), you must link your account either to a bank account or to a PayPal credit account. After that, PayPal by default draws funds to pay for your purchases from the bank or from the PayPal credit account; you can't make the old credit card the default. That

arrangement saves PayPal from having to pay fees for each transaction. You can use the old credit card, but you must manually switch the funding source for each purchase.

PayPal changes the default "because that is a more cost-effective transaction for PayPal to process," spokesperson Amanda Pires wrote in an e-mail. But, she added, "We also are currently testing some options for users to select a default for funding their transactions. Once the results of those tests are in, we may make some changes."

My unwanted Amazon shipping preference proved easier to remedy. When I e-mailed Amazon to ask why free two-day Prime shipping was no longer my default option, spokesperson Stephanie Robinett replied that Amazon never

changes defaults on its own. However, she added, when you place an order that strays from your default settings, Amazon asks whether you want to make the new settings the default.

So, Robinett suggested, after I entered a new credit card number on an order for which I happened to want overnight shipping, I may have approved a change in the default method because I wanted the new credit card kept on file.

I found it easy enough to go into my account preferences »

More and more Web sites seem to be adopting default choices in their online forms that cost their customers money, aggravation, or both.

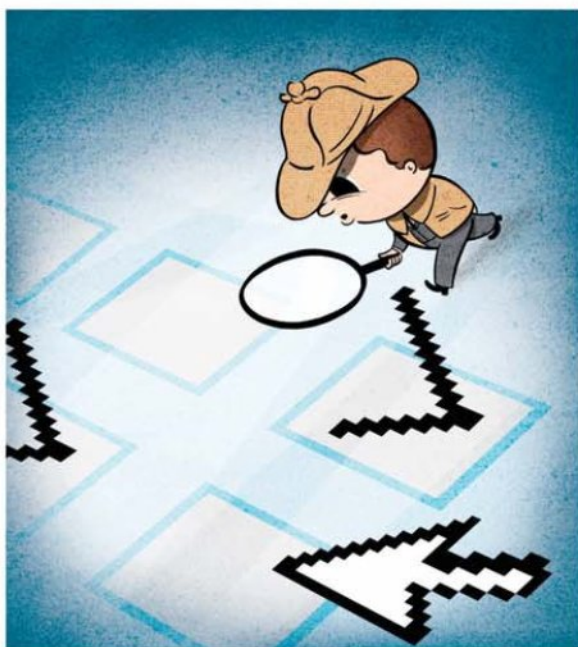


ILLUSTRATION: RYAN SNOOK

PCWORLD.COM

**For reaction to Microsoft's decision to designate Internet Explorer 8 as the default browser on unknowing consumers' PCs, see "Lawyer: IE8 Default Installation 'Troubling'" ([find.pcworld.com/63699](http://find.pcworld.com/63699)).**





## SKEPTICAL SHOPPER GINNY MIES

to restore the original settings, once I knew what had gone wrong and what steps I needed to take to put it right. But Amazon should make each specific change in default subject to approval, as opposed to presenting customers with a package of unspecified changes. I still have no memory of approving overnight shipping as a new default.

Once you start looking around, you can find defaults that are unfriendly to users almost everywhere. Think of the boxes you sometimes have to uncheck when you're installing new software (do you really want the Google or Yahoo toolbar that piggybacks on some programs?). Or the newsletters and e-mail offers you have to decline from online sellers that you buy merchandise from. Or the automatic renewals you have to remember to cancel a year later.

### Defaulting on Privacy

Then there's the issue of Web site privacy options. These options are regulated (you must be able to opt out), but they often include default settings that allow a company to send you offers or share your personal information with partners (that is, with business customers who buy such data and use it for sales leads). Even when the services offered are online, you may have to telephone or use snail mail to request changes.

Forrester's Kountz doesn't expect that penny-pinching defaults will send customers running. "Some customers may be annoyed, but I doubt the extra clickstroke is enough, by itself, to alter things significantly," he wrote.

I agree, but you have to be paying attention to know that you need to make that extra clickstroke to set your own preferences. Look over invoices carefully before you click the submit button. Be especially vigilant in scrutinizing small fees that appear underneath the base price. Examine all pre-checked boxes when you install software or sign up for an account online.

As Web sites focus on their bottom line, customers must look after theirs. And as usual, that means staying alert.

## Punishing Consumers for Paper Billing

NORMALLY, WHEN a company announces that it's taking steps to "green" its business, I applaud. But when

T-Mobile and other tech service companies announced that they would begin charging customers for paper bills, under the guise of instituting more-sustainable practices, I was doubtful. Would the tactic help save the environment, or was it just a convenient way to tack on extra charges?

In August, T-Mobile stated that it would start charging customers who wished to receive paper bills via mail a \$1.50 monthly fee. The wireless company was already charging \$2 monthly for printed itemized, detailed bills—so customers who preferred getting printed, itemized bills in the mail would now have to send T-Mobile an extra \$42 per year.

Following the announcement, angry customers swarmed the forums at T-Mobile.com, accusing the company of taking advantage of older customers who might not have access to the Internet. Many complained that the T-Mobile billing site was slow and difficult to use.

Fortunately, T-Mobile caved to the pressure. As we were going to press, the carrier stated on a company Web page that it would not carry out the fees, "for now." The move to rescind the policy is a great example of the power of consumers: They spoke, and T-Mobile listened. Nevertheless, the fact that it had considered the idea is still troubling, as is the statement's language. If not "now," when?

One of the first companies to charge for dead-tree statements was Time Warner Cable in January 2009. On its Web site, the company states, "Time Warner Cable (like many service providers) is committed to moving towards more 'environmentally friendly' operating practices.

**Service companies charge customers extra for not switching to paperless billing, under the guise of going green.**

We decided that customers who choose to participate in this specific 'Go Green' initiative should receive a benefit."

What benefit did those customers receive? Time Warner said that customers who switched to its electronic PayXpress program would receive a \$1 "credit"—but the "credit" amounted to not incurring a \$1 "Paper Statement Service Charge."

I realize that paper, ink, and envelopes cost money. I know that paper creates waste if it isn't recycled. But inventing a fee that punishes customers for paper bills—while claiming to act out of environmental consciousness—is obnoxious. Want to reward customers who go paperless? Give them discounts.



### Pulp Fact and Pulp Fiction

Most of our paper supply comes not from whole trees, but from wood chips and scraps that accumulate at sawmills. Trees that do go directly to pulp mills are grown for that purpose; if they don't end up as phone bills, it isn't as though they'll go on to become majestic forest monarchs instead.

Also, companies seem to assume that customers just glance at bills and then throw them away. Though some people may do that, I suspect that most archive their bills for business or tax purposes.

As matters stand with Time Warner, you'll either have to swallow the extra charges or take steps to regain the benefits of paper bills. One approach is to save your statements as PDF files and print them out as needed. Time Warner customers who have limited Internet access can pay their bill over the phone rather than by mail by calling 800/222-5355.

ILLUSTRATION: HARRY CAMPBELL



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## ON YOUR SIDE MARLA MIYASHIRO

**WHEN MY HP L7780 All-in-One printer refused to let me set it up properly, HP sent me a replacement. Though I successfully set up that unit, it jammed when I tried to print. After I cleared the jam, the print carriage stuck on the right side. I contacted tech support and they sent a second replacement unit, but it had the same problem. Chats and e-mail correspondence failed to yield a solution, and finally I just purchased a new L7780, which has worked flawlessly. For months I've been asking HP for an RMA [return merchandise authorization] so that I can return the inoperable printer for a refund. Ironically, the HP 460c that I had been using as a backup printer is now experiencing a similar stuck-carriage issue.**

*Bruce LeBlanc, Oakland, California*

**OYS responds:** After we notified HP of LeBlanc's difficulties, a representative got in touch with him directly. LeBlanc explained his situation via an e-mail message and two attachments (one containing the lengthy e-mail exchange he'd had with tech support; the other, his letter to us), but the rep sent him a replacement for the 460c rather than giving him a refund for the L7780. After several more weeks of phone tag and e-mail exchanges, LeBlanc got his RMA and his refund. (One problem: HP repeatedly tried to call LeBlanc at work, where he couldn't take personal phone calls.) HP also agreed to apply the remaining warranty period for the old L7780 to the new printer.

We recommend stating exactly what you want a company to do to resolve your issue. Repetition can't hurt. We also recommend telling customer service representatives whether you prefer being contacted by e-mail or by phone, and if the latter, specifying the best time to call.

### Missing Mail

Thom Mason of Pahrump, Nevada, paid to update his NGWave audio editor but didn't receive a license key. He e-mailed Next Generation Software several times, and its reps said that they had sent the key.

Next Generation's CEO told us that Mason, who uses Yahoo Mail, may have run into an issue with Yahoo's spam filters. The CEO said that the filters trap his company's license e-mail because the messages are automatically generated; the company has tried to communicate with Yahoo directly, but to no avail, he said. After giv-



ing Next Generation an alternate e-mail address, Mason received his license key.

When arranging for a company to send you something by e-mail, include a second e-mail address as a backup. If the message you're expecting doesn't arrive, be sure to check your spam folder to see whether it got routed there by mistake.

### Wii Recharge Station Recall

Griffin International, in cooperation with the U.S. Consumer Product Safety Commission, is recalling about 220,000 Psyclone Essentials and React Wii 4-Dock Recharge Stations. The battery pack can overheat, posing a burn or fire hazard. Griffin has received six reports of overheating, two involving minor hand burns. Consumers should stop using these recharge stations at once and contact Griffin International at 888/344-4702 or [productsafety@psyclonegamer.com](mailto:productsafety@psyclonegamer.com) to learn how to return the product and receive a free replacement. For more information, visit the company's Web page at [www.psyclonegamer.com/Wii4Dock](http://www.psyclonegamer.com/Wii4Dock).

## Coalition Wants Stronger Web Privacy Laws

A COALITION OF ten U.S. privacy and consumer groups has called for the federal government to provide new privacy protections for Web users, including a requirement that Web sites and advertising networks obtain opt-in permission from individuals within 24 hours of collecting their personal data and tracking their online habits.

The groups, including the Center for Digital Democracy, the Electronic Frontier Foundation, and the U.S. Public Interest Research Group, want Congress to pass legislation that would bar Web sites and online advertising networks from collecting sensitive data such as information about health, finances, race, and sexual orientation.

In a broad set of recommendations for privacy regulations, the groups also called on Congress to prohibit Web sites and advertising networks from collecting behavioral information about children under age 18, whenever it's possible to distinguish the age of the

Web user, and to require that online businesses reveal to consumers the purpose of the information collection.

Many Internet users are unaware of the extent of the information that online entities—especially advertising networks engaged in targeted or behavioral advertising—are collecting about them, the groups said. The groups released their recommendations to Congress just before lawmakers were due to return to Washington, after August recess. One of the recommendations is for consumers to be able to obtain and challenge the data held about them.

—Grant Gross ●



ILLUSTRATIONS: HARRY CAMPBELL (LEFT), RYAN SNOOK (RIGHT)





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# Business Center

## Become Master of Your Internet Domain

Here is what you need to know to set up Web and e-mail hosting accounts for your small business's domain.

BY DAVID STROM

BUYING A DOMAIN name may be easy, but managing the domain and making smart technology decisions is another story. Let's take a look at what's involved in setting up Web and e-mail hosting accounts for your domain.

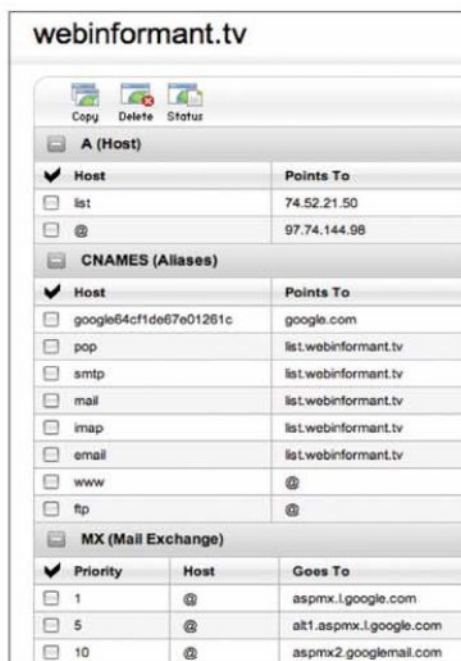
First, some basics. Setting up a new domain is the purview of a domain registrar, firms like GoDaddy.com, Network Solutions, and Register.com. The registrar takes care of the paperwork details, and bills you once a year for doing so. Each registrar handles the Domain Name System records that identify your Web, e-mail, and other servers. The screenshot at upper right shows a listing of the records for my domain, WebInformant.tv.

You can use your registrar's hosting services for both Web and e-mail services if you wish. Though convenient, what happens if you become dissatisfied with your registrar's service and want to switch providers? Relocating your site is easier if your registrar isn't also your host.

### Hosting Options

For Web hosting, you have three basic options: using a Web-based public site provider (free or nearly so); using a virtual private server as your host, running Windows or Linux Web server software (\$50 to \$500 a year); or using a managed services provider (\$200 a month or more). Cost isn't the only factor: The free public providers, such as Blogger.com, LiveJournal.com, TypePad.com, and WordPress.com, make sites easy to set up and maintain but offer little flexibility with page templates and designs. However, they simplify the tasks of updating your Web site and drawing traffic to it, and you won't require the services of a graphic designer to build a fairly attractive site.

For extremely low-cost hosting, see my blog post "Cheap choices for Web hosting" ([find.pcworld.com/63662](http://find.pcworld.com/63662)), which compares the services offered by Microsoft's Office Live Small



| webinformant.tv        |                      |                         |
|------------------------|----------------------|-------------------------|
| Copy Delete Status     |                      |                         |
| A (Host)               |                      |                         |
| Host                   | Points To            |                         |
| list                   | 74.52.21.50          |                         |
| @                      | 97.74.144.98         |                         |
| CNAMEs (Aliases)       |                      |                         |
| Host                   | Points To            |                         |
| google64cf1de67e01261c | google.com           |                         |
| pop                    | list.webinformant.tv |                         |
| smtp                   | list.webinformant.tv |                         |
| mail                   | list.webinformant.tv |                         |
| imap                   | list.webinformant.tv |                         |
| email                  | list.webinformant.tv |                         |
| www                    | @                    |                         |
| ftp                    | @                    |                         |
| MX (Mail Exchange)     |                      |                         |
| Priority               | Host                 | Goes To                 |
| 1                      | @                    | aspmx.l.google.com      |
| 5                      | @                    | alt1.aspmx.l.google.com |
| 10                     | @                    | aspmx2.googlemail.com   |

**AN ONLINE REGISTRAR maintains various Domain Name System records about your domain.**

Business and Weebly. If you want to launch a Web presence quickly, these are both good places to start.

Another option: Use WordPress.com as your main Web site. This requires asking your registrar to forward your domain to your WordPress.com site, or having WordPress do "domain mapping" for you (WordPress takes control over the domain and redirects traffic accordingly). I have done both. Forwarding your domain from your registrar is free, but domain mapping is perhaps more professional; WordPress charges about \$10 a year for the latter service.

WordPress has thousands of plug- ➤



**YOU'LL MANAGE YOUR site's programs through your provider's Web-based control panel; this one for GoDaddy is typical.**

For any company selling on the Web, few things are more important than your reputation. Read "Building Business Online" at [find.pcworld.com/63664](http://find.pcworld.com/63664) for advice on gaining and keeping your visitors' trust.





## NET WORK MICHAEL SCALISI

ins designed to extend the service's functionality. To deploy them, however, you need to run WordPress's software on your own virtual server at a separate Web hosting provider. The downside to self-hosted WordPress sites is that their support for streaming video is less capable than is the support at sites that WordPress.com hosts.

### The Server Question

Your next decision is selecting a virtual private or managed server for your site. Many companies offer server space; Hosting-Review.com lets you easily compare plans and prices. Factors to consider (besides cost) include how much storage you can buy for your plan, whether you have to pay extra for e-mail and applications such as databases, and whether telephone support is included and during what hours.

Whichever provider you choose, you'll end up using its Web-based control panel to manage the server and any related programs running on it. The screenshot at lower left on page 29 shows GoDaddy's control panel.

Next, you must decide where to host the e-mail program for your domain. You can use your registrar to host your e-mail—but if you switch registrars later, you'll run into the same complications as with Web hosting. Another alternative is to use the same provider that runs your Web site; look for special deals to make this affordable.

Or, you could use Google for your e-mail domain, as I do. Google's e-mail hosting uses the same Webmail interface as Gmail; if you prefer, you can set it up to work with your Outlook or other desktop e-mail software.

Google has two different plans: a free one (Google Apps Standard Edition) good for up to 50 users, with 7GB of storage for each, and a high-end version (Google Apps Premier Edition) that costs \$50 per user per year and sets aside up to 25GB of storage per user.

For direct links to all of the services mentioned here, see the online version of this article at [find.pcworld.com/63663](http://find.pcworld.com/63663).

## Boost Your Multimonitor Experience

A SECOND LCD panel may seem to be a luxury, but anybody who gets one quickly sees its value—and how it boosts productivity. I'll share with you a few tools I've used to help manage my multimonitor experiences.

### HP USB Graphics Adapter

Nowadays, most laptops will support two monitors, or will at least make use of both an internal and external monitor simultaneously. Most decent dedicated graphics cards can also support two monitors. But if you're using on-board video and you want to add a second monitor without cracking open your case, or if you

want to go beyond two monitors without buying a pricey quad-monitor PCIe X16 card, you'll need the \$60 HP USB Graphics Adapter ([find.pcworld.com/63653](http://find.pcworld.com/63653)).

Because of the limitations of USB graphics, I expected pathetic performance from this device, but I was pleasantly surprised. For business apps, this adapter is a champ. Even for YouTube videos, it worked just fine.

The adapter itself is a small box (0.71 by 2.13 by 3.10 inches) with a mini-USB port on one side and a DVI port on the other. It comes with a USB cable and a DVI-to-USB adapter, and it supports resolutions of up to 1600 by 1200 or 1680 by 1050 (widescreen). Driver installation was straightforward; Windows recognized the additional monitor immediately and made it available in Display Settings.

According to HP, you can use up to six adapters at once. I added a second one to my rig, bringing my monitor count to four. Having a quartet of monitors is both ridiculous and awesome. I highly recommend it. Finding uses for them all is surprisingly easy, especially as an IT pro.

The only thing better than using more than one monitor on your computer is to do so with these three tools.

### UltraMon

UltraMon is a \$40 multimonitor utility ([find.pcworld.com/47992](http://find.pcworld.com/47992)). Though a little pricey, it offers some functionality that is really useful. UltraMon allows desktop wallpaper to split across multiple displays or for different images to display on

each. It also allows the quick movement of an application from one display to another. For people who often do presentations, it can mirror one desktop onto one or more additional displays.

But the feature that makes this utility worth-

while is the Smart Taskbar, which adds a taskbar for each monitor—and each taskbar shows only the apps running on its particular display. With dual displays, this feature is nice; with four, it's mandatory.

### WinSplit Revolution

WinSplit Revolution ([find.pcworld.com/63658](http://find.pcworld.com/63658)) is freeware that solves the problem of quickly positioning multiple applications on one or more displays, and of quickly moving a program from one monitor to another. Using its system tray applet, you can also size an app to a particular half or quadrant of your monitor.

If you're willing to learn a few easy keyboard shortcuts, you'll immediately be more efficient with your monitors. To move an application from the left monitor over to the right one, press **<Ctrl>-<Alt>-<Right Arrow>**. To position a selected app into the top-left quadrant, press **<Ctrl>-<Alt>-7** (on your number pad). To cycle several predetermined window sizes, press the same key sequence several more times. I'll let you figure out the rest of the keystrokes on your own.





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## Keep Your PBX, but Save With SIP Phone Calls

WHEN LOOKING FOR ways to save in a medium-size business—or a larger one—consider your phone infrastructure. Internet-based SIP systems are cheaper than traditional office PBX systems, and you can save big by making the switch. (Long story short, SIP is a signaling protocol behind VoIP.)

Your best savings could come from cutting the phone “trunk” coming into your business. You replace it with SIP trunking to connect via your ISP, sharing phone traffic with your Internet service. You’ll have to add hardware to make this transition, however.

Many SIP systems can work with your currently installed PBX hardware. You connect the PBX phone system into border-controller hardware, which in turn connects to an Internet Telephony Service Provider (ITSP). The ITSP finally taps into the public phone network, reaching anyone on any phone.



**THE INGATE SIPARATOR is a gateway that connects your PBX system to other phones over the Internet.**

The border controller could be your biggest hardware cost. This gateway connects to your network, acting as a router and firewall. A good example is the InGate SIParator ([www.ingate.com](http://www.ingate.com)), which can also encrypt the signaling and media to make it even more secure.

Unrelated to this hardware, depending on your ITSP your business might see other cost savings. If that service provider has local infrastructure around the world, you could place long-distance

calls for local rates, since the SIP call gets transferred to the public network in that area.

Your hardware costs to switch to a SIP trunk will vary based on your current infrastructure. If your company already has a compatible PBX system, a border-controller gateway such as the InGate SIParator will, for a medium-size business, generally cost about \$5000 or less.

The best hardware fit depends on your calling needs and the number of employees you have, scaling up for bigger businesses. However, even if you have to install lots of hardware, you still might get your return on investment in a year or two, or often much sooner.

Your ROI is likely to depend largely on the volume of calls at your company. For a large enterprise handling thousands of calls per day, the payoff can come in less than one fiscal year.

—Zack Stern

## CMS External Backup Drive Is Fast, Versatile

THE \$233 CMS V2 ABSplus 1TB is easily the quickest automated backup drive I’ve looked at recently—it’s the only model with an e-SATA interface. In addition, it comes with highly capable software; but critical interface issues marred my experience.

Included on most recent PCs, e-SATA is considerably faster than USB 2.0 (which the ABSplus also supports). Thus, attached to the e-SATA port, the ABSplus 1TB took just 25 minutes to back up almost 50GB of data; over USB,

the same job took about 50 minutes.

I was shocked, however, when the included BounceBack Ultimate software partitioned the hard drive that I pointed it to—without posing any “Are you sure?” query to confirm my intentions. Still, BounceBack Ultimate is certainly packed with features and versatility.

The somewhat gaudy interface is easy to navigate, and the software-hardware combo performed well. You can set backups to begin at the first connection of the drive to the PC (USB only; e-SATA isn’t plug-and-play on most PCs), and you can schedule backups as well as back up to multiple locations.

You can set BounceBack Ultimate to a mode that protects your files in real time, too. An Instant Recovery CD handles disaster recovery. If disaster does strike, the ABSplus can double as your boot drive until you have a chance to



**THE CMS V2 ABSplus 1TB is a fast external drive designed for doing automated backups.**

rebuild your internal system drive.

Despite the drive’s virtues, I believe CMS should add confirmation dialog boxes in some key locations and also tone down the BounceBack interface.

—Jon L. Jacobi ●

**82**  
VERY GOOD

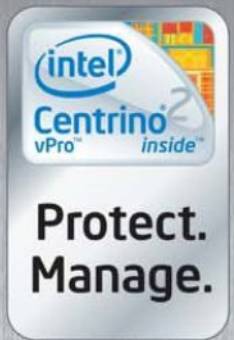
### V2 ABSplus 1TB | CMS

Backup drive is a good performer, but it has a few interface issues. List: \$233

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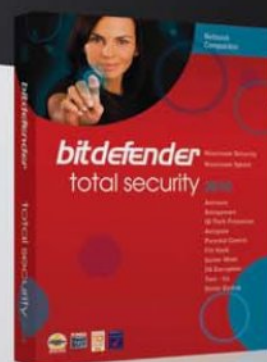


# Cybercriminals are smart.

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# Security Alert

## Go Virtual for Safer Online Shopping

BY ERIK LARKIN

EVEN IF YOU'RE diligent in protecting your computer from every online hazard imaginable, you may not be able to do much about the biggest threat to your data—and to your finances. Thieves can tap into millions of financial records belonging to companies that charge or process credit cards.

The good news is, you can make your recorded credit card number worthless to any thief. Virtual credit card numbers—which you can get from some banks, PayPal, and a new online service—allow for additional fraud protections.

Banks typically offer fraud liability protection to guard against stolen or misused card numbers, but the hassle of proving your innocence and dealing with the aftermath might be just as painful as losing your money. Virtual credit card numbers keep you from having to deal with either scenario. Merchants process a virtual number just as they would a standard card number, and you can use a virtual number for online or phone purchases that don't require showing your card. However, if you're buying will-call tickets or anything else that requires you to present the card used to make the purchase, you shouldn't use a virtual number.

Virtual credit card numbers may be your best defense against credit card theft these days. A regular credit card number has real value on the Internet black market, and data breaches in which criminals steal such numbers are on the rise. In August, the U.S. Department of Justice charged a Florida man with

taking part in a huge heist of data from credit card processor Heartland Payment Systems. By the time authorities caught that suspect, the damage may have already been done: The stolen numbers almost certainly changed hands and appeared on underground sites that offer card numbers for a mere \$2 each.

To foil online fraudsters looking to steal or sell your regular credit card number, you may want to use a virtual credit card instead.



A crook who steals a virtual credit card number, however, gets only a meaningless string. If you have a credit card (not a debit card) from Bank of America, Citibank, or Discover, or if you use PayPal, you already have free access to the feature. A new online service called ShopShield also provides various levels of protection.

All of those offerings add an extra step to any purchase, since you must first create a number through a banking site, desktop software, or a browser plug-in. That extra step is worth it, though, as every virtual number is tied to the first merchant that uses it, so any subsequent charges to the same virtual number are denied. Other options may allow you to set a spending limit or an expiration date.

Bank of America cardholders can make a virtual number by logging in to online banking, clicking *View Options* to the right of the account, and choosing *Create a ShopSafe account number*. You can set a spending limit and expiration date, too (see [find.pcworld.com/63635](http://find.pcworld.com/63635) for more).

If you have a Discover card, you can create a virtual number via the Secure Online Account Number page at [find.pcworld.com/63636](http://find.pcworld.com/63636). Discover also offers downloadable Windows software that runs in the system tray. (Click the *Download Now* button under Desktop Version on the same Web page.) The soft- ➤

ILLUSTRATION: GARY NEILL

PCWORLD.COM

**Symantec recently compiled a list of the year's "dirtiest" Web sites—online destinations that could infect your PC even if you don't click any links. To learn more about them, see [find.pcworld.com/63637](http://find.pcworld.com/63637).**



ware can pop up for you to create a virtual number when you're making an online purchase, and it can fill in forms.

For Citibank, log in to online banking and click on *Virtual Account Numbers* in the upper right. You can also download software by logging in to [citicards.com](http://citicards.com) or [universalcard.com](http://universalcard.com), selecting *Get a Virtual Account Number* from 'Tools and Services', and then clicking *Download Now*. Citi's software works much the same as Discover's desktop app does.

PayPal users can grab a browser plug-in for Internet Explorer or Firefox (only for Windows) by logging in, choosing *Products & Services*, and then clicking *PayPal Plug-in* under 'More Products and Services'. The plug-in adds an icon to the upper-right corner of the browser with drop-down menu options to create a Secure Card virtual number and perform other PayPal tasks.

## Virtual Cards, Virtual Profiles

You can tie ShopShield ([www.shopshield.net](http://www.shopshield.net)) to any credit card or checking account. It creates not only a virtual credit card number but also a faux e-mail address, name, and other contact info for use with the number. You can create such profiles either at the company's site or through a Firefox add-on (installed as part of your signing up; a version for IE is in the works). The add-on recognizes shopping sites and autofill forms. ShopShield offers a free service for checking accounts; a pay-as-you-go service for debit and credit cards (\$1.99 per use, plus a \$0.49 fee for transactions less than \$25); and an "unlimited," \$99-per-year service for checking, debit, and credit-card accounts.

Soon, you may be able to add some benefits of virtual numbers, such as spending limits and merchant restrictions, to regular credit and debit cards. MasterCard, which bought the company that licenses the software used for most virtual credit card offerings, says it is working on a service with both features. In the meantime, virtual credit card numbers will keep potential data thieves chasing a moving target.

## BUGS & FIXES ERIK LARKIN

### File-Sharing Vulnerability Hits Vista

WINDOWS VISTA USERS (and IT folks taking care of Server 2008 computers) should watch for a hole in

Windows file sharing—a remote attacker could assume control of a system via a flaw in the SMB protocol. Most home users should have a firewall that stops attempts to reach the ports that SMB uses (139 and 445). A fix may be out by the time you read this. See [find.pcworld.com/63642](http://find.pcworld.com/63642) for more.

In Microsoft's latest monthly release, the ActiveX repair continues with an additional fix for the buggy Microsoft Active Template Library (ATL), plus updates for Windows Media Player and other software created with ATL. It's critical for Windows 2000 SP4, XP, Server 2003, Vista, and Server 2008 ([find.pcworld.com/63646](http://find.pcworld.com/63646)).

Another patch closes holes in how Windows 2000, XP, Server 2003, Vista, and Server 2008 handle AVI video files. Opening a poisoned file may give an attacker command of your PC. Other critical patches apply more to businesses; they include fixes for Remote Desktop Connection ([find.pcworld.com/63648](http://find.pcworld.com/63648)) and the Windows Internet Name Service ([find.pcworld.com/63649](http://find.pcworld.com/63649)).

### Browsers Bump Up

A new Firefox 3.0 closes a hole in the handling of SSL certificates that could allow an attacker to decipher encrypted traffic to and from protected sites, such as online banking sites. And a new 3.5 version fixes a JavaScript bug that crooks

Plus: Pick up patches for ActiveX controls, Firefox, Chrome, and Safari, as well as Mac OS X 10.5.8 security fixes.

could use to install malware (also fixed in the new 3.0). Head to *Help•Check for Updates* to make sure you have at least Firefox 3.0.13 ([find.pcworld.com/63647](http://find.pcworld.com/63647)) or 3.5.2 ([find.pcworld.com/63650](http://find.pcworld.com/63650)).

Viewing a tainted image or site could trigger an attack for Safari users lacking the latest patch. Flaws in the CoreGraphics and ImageIO components hit only Windows, but problems in the WebKit browser core affect Macs too, as does a flaw that could promote a malicious site

in Top Sites. Run Apple Software Update to confirm that you have Safari 4.0.3 or later.

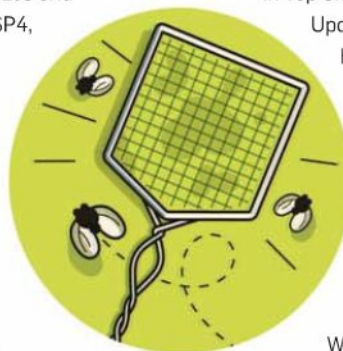
Google Chrome got an automatic update to 2.0.172.43, which closes high-priority holes that could let bad guys launch attacks via poisoned JavaScript or XML on a Web page; it also includes

a restriction against SSL certificates signed with old and insecure algorithms. See [find.pcworld.com/63652](http://find.pcworld.com/63652).

### Security Updates for Macs

Mac OS X 10.5.8 addresses lots of issues, including attacks that could trigger if you view a poisoned image or site. Mac threats are coming more often now, as evidenced by the Mac OS X Snow Leopard scanners meant to block two Trojan horses ([find.pcworld.com/63651](http://find.pcworld.com/63651)). Run Software Update from the Apple menu to grab the new OS; see [find.pcworld.com/63654](http://find.pcworld.com/63654) for details.

Speaking of Snow Leopard, the new Mac OS installs an old, unsafe version of Adobe Flash, even if you had a new, fixed version before upgrading. Check your Flash version at [find.pcworld.com/63655](http://find.pcworld.com/63655), and if necessary nab the latest version from [get.adobe.com/flashplayer](http://get.adobe.com/flashplayer).



#### BUGGED?

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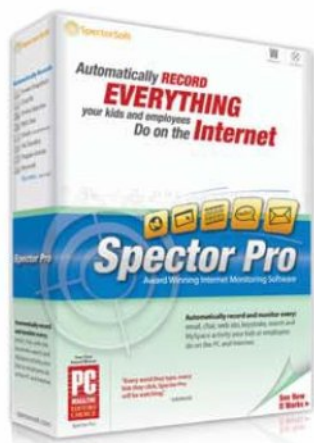




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## PRIVACY WATCH ERIK LARKIN

### Banking by Phone: Convenient and Safe?

WITH THE introduction of an iPhone app that lets you deposit a check by taking a picture of it, options for

mobile banking are growing. And though you might think the boost in convenience comes at the expense of security, banking on your phone can be safer than using your PC if you take basic precautions.

You have three options for mobile banking: downloading a program for your cell phone, using your phone's browser to access a mobile version of your bank's site, or simply sending an SMS message.

Downloadable programs vary, but an iPhone app from USAA is at the cutting edge. Qualified USAA customers (limited to credit-approved military personnel) can use it to make deposits by taking a picture of a paper check, which they then void and toss (see a demo at [find.pcworld.com/63640](http://find.pcworld.com/63640)).

But while the USAA app allows for sending money to a pre-defined payee, it doesn't let you create a new payee (though you can do so on the USAA Web site). It's a common restriction among downloadable apps, intended to prevent someone else from grabbing your phone and sending themselves your cash.

Online banking via a phone's browser generally offers all the same options as on a PC. Both downloadable apps and mobile sites typically require logging in with the same user name and password you'd use on your PC. They also encrypt communications to and from the bank.

SMS messages are the least secure method, as SMS doesn't normally use encryption. This option is also limited. Wells Fargo's SMS service, for example, allows only for low-risk activities such as checking your balance or finding an ATM.

Using any of these options on a device

**Handling your monetary transactions on an easily lost device may seem dangerous, but you have secure options.**

you might easily lose may seem inherently insecure. But any phone option is largely safe from malware, one of the biggest threats to online banking. Also, the variety of mobile operating systems and other factors mean that, for now, you have no real risk of leaving your phone open to baddies. Tom Wills, a senior analyst for Javelin Strategy and Research, says mobile banking can be safer than banking on a PC—as long as the phone's security features are enabled. Because your phone may someday end up in the backseat of

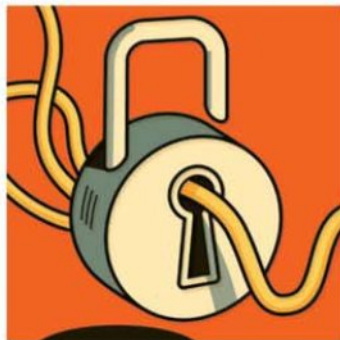
a taxi without you, those precautions go beyond the ones you'd use on a PC.

#### Practice Safe Mobile Banking

Using a PIN or a password to lock your phone is the first step; just knowing which bank you

use can help a potential ID thief. Next are remote-wipe options that let you clean out your phone should you ever lose it. Wills says some banks offer the feature for their downloadable apps. You can wipe BlackBerrys and iPhones (if you pay for the MobileMe service), too, and some apps such as Kaspersky Mobile Security offer the feature for Symbian OS or Windows Mobile phones. Finally, SMS messages can provide security support if you instruct your bank to text you after large or potentially suspicious transactions.

Considering how much personal info most people keep in their e-mail, losing your phone can be a risk even if you don't use mobile banking. But the combination of power-on passwords and safeguards from the banks can make mobile banking just as secure as it is handy. ●



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# Reviews & Rankings



## Ultraportable Projectors: LED Models Arrive

LED-based miniature projectors are ready to hit the presentation highway—but how good are they?

**PCW Test Center** TAKING YOUR SHOW on the road has never been easier, thanks to today's incredible shrinking projectors. And these days you can choose between two types of technology.

Traditional models use replaceable, high-intensity lamps with brightness rated in the thousands of lumens, and are powerful enough for presentations in large, well-lit conference rooms. Such units typically have multiple connections, high native resolutions, and optical-zoom lenses capable of in-

creasing the display size at greater projection distances.

Meanwhile, new lamp-free miniature projectors use LED (light-emitting diode) illumination with brightness rated in the hundreds of lumens. Though smaller than traditional models, they're bigger (and brighter) than pocket-size pico projectors, which weigh just ounces.

LED models are useful for small-group presentations, and for displaying photos, videos, games, and DVDs. Compared with traditional units, they have fewer connections, lower native resolutions, and smaller (fixed-focal-length) lenses.

But LED mini projectors have some advantages over lamp models. They consume

less power, they run cooler and more quietly, and their light source has a 10,000-to-30,000-hour life, versus the 2000-to-3000-hour life of conventional lamps. Some LED units can display images without a PC, via built-in media players that connect to USB storage devices.

### LED vs. Lamp

To see how well LED units stand up against traditional models, we compared the performance, features, and usability of seven of the smallest projectors we could corral. Our three LED models each weighed 2 pounds or less and had a brightness level of at least 50 lumens and a resolution of at least 800 by 600 (SVGA). Our four

**INFOCUS'S IN1102 (LEFT) and Acer's P3250, both traditional projectors, lead the pack thanks to great images and features.**

lamp-based models weighed between 2 and 3 pounds. (We limited our chart to the top three of each type. For our look at the fourth lamp-based unit, the ViewSonic PJ260D, see [find.pcworld.com/63716](http://find.pcworld.com/63716).)

All seven use Texas Instruments' Digital Light Processing display technology.

We judged how well each model could display assorted still images with text and graphics, as well as animated presentations, videos, and DVD movies. As our chart on page 42 indicates, the traditional models got higher ratings, largely due to





50 MIO MOOV S510


54 LINKSYS BY Cisco  
Conductor


56 NOKIA SURGE



56 MOTOROLA H790

their much brighter images. But you can expect to see more LED projectors making their way into small meeting rooms (plus dorm rooms and living rooms) as the technology evolves.

### InFocus IN1102

The 2.75-pound InFocus IN1102 (\$1099) is a superior lamp-based projector that delivers bright, colorful images. With its substantial light output of 2200 lumens, it can excel in rooms with lots of ambient light. Its native 1280 by 800 (WXGA) resolution and wide aspect ratio make it perfect for WXGA laptops, widescreen DVDs, and HDTV. But its 1.0-watt mono speaker is barely audible, so use another audio source.

The IN1102 was first in motion and video tests, and tied for first in text and graphics. It rendered sharp, legible text in our Word, Excel, and PowerPoint documents. In graphics tests it

generated accurate colors, including blacker blacks and whiter whites. As for DVDs, it was tops at displaying the high contrast, muted colors, and gritty details in *Quantum of Solace*, and it accurately reproduced the garish, saturated hues in *Speed Racer*.

The IN1102 is the only unit here that can link to two PCs at once, as it has both a VGA input and a mini-USB input

Color-coded inputs make the IN1102 a breeze to set up. Besides its computer inputs, it provides composite video, S-Video, and audio, but not HDMI.

The well-labeled control panel and remote are easy to use, and both have a hot-button for the seven preset picture modes. The remote also provides page up/down control when you're using

lamp-based projector here, and it has excellent image quality. Its 3000-hour replacement lamp costs less than the lamps for the other two models, too. Since its native resolution is 1024 by 768 (XGA), however, you'll need to use a laptop running at the same resolution to obtain the best sharpness and clarity for presentations.

This model placed second for overall performance, close behind the InFocus. While it delivered crisp, legible fonts in all of our text-rendering tests, it was strongest in displaying colorful images. It tied for first in graphics, delivering vivid color with fine details in both light and dark areas, and it came in second on motion and video. It did exceptionally well in capturing the bright reds, yellows, and blues in *Speed Racer*, as well as in rendering the browns, tans, and greens in *Quantum of Solace*.

The P3250's high brightness rating of 2000 lumens makes the unit suitable for a large conference room. In our tests it effectively displayed an 8.5-foot-diagonal image at 15 feet from the screen, under moderate



THE LED-BASED Samsung SM-P410M can work PC-free.

that supports DisplayLink technology (a mini-USB cable is included). You can even leave the VGA cable behind and use only DisplayLink, which reduces this model's 4.75-pound traveling weight by a few ounces. In our hands-on tests using DisplayLink, the IN1102 did well on text and graphics (including PowerPoint slide shows), but DVD playback was a bit choppy at times.

the DisplayLink connection.

The IN1102 costs more than the other 2-to-3-pound models here, and its replacement lamp doesn't come cheap. But considering its superior image quality and its versatility, it's arguably worth the extra bucks.

### Acer P3250

If you're pinching pennies, the 2.7-pound Acer P3250 (\$791) is the most affordable

### MORE ONLINE

For projector reviews, news, and how-to articles, visit our Projectors Product Center at [find.pcworld.com/63680](http://find.pcworld.com/63680).



ambient daylight. However, like most of the other models equipped with a 1.0-watt mono speaker, in audio it proved too weak.

Inputs include VGA, composite video, S-Video, audio, USB (for page up/down via remote), and an HDMI (HDCP-compliant) port for displaying digital content from a computer, a TV tuner, or another video source.

While the control panel on top of the projector is somewhat small, most of the buttons are big enough to prevent you from pushing the wrong one. The large and easy-to-use remote includes a laser pointer but lacks a



**OPTOMA'S EW330 lamp-based model has a wide aspect ratio.**

hot-button for instant access to the six preset picture modes. The well-designed on-screen display is simple to navigate, and offers an array of image adjustments.

## Optoma EW330

The 2.4-pound, lamp-based Optoma EW330 (\$899) has 1280 by 800 (WXGA) resolu-

tion and sufficient power—2200 lumens—for use in a large conference room. In our tests it successfully displayed a 10-foot-diagonal image at 15 feet away from a white wall, in a room with moderate ambient daylight.

Like the InFocus, the EW330 has a native wide aspect ratio (16:10), ideal for

widescreen laptops, widescreen DVDs, and HDTV. It also has an HDMI (HDCP-compliant) port. You'll need to use a separate device for sound, though, since this model lacks a speaker.

In our tests the EW330 was a close third in overall image quality. It tied for first place on text, and shared second place on graphics. In motion and video tests, it came in third. It was at its best with the *Quantum of Solace* DVD, showing excellent contrast and fine details in dark areas. We saw pixelation in light areas during a few Windows Media Video clips; but by changing the default display mode (from "Presentation" to "Movie"), we were able to reduce the artifacts significantly.

Like all portable projectors, this model has a key-stone control to adjust the image distortion caused by tilting, but the amount of correction is 18 degrees, while most rivals here can achieve as much as 30 to 40 degrees of correction.

In addition to its HDMI connection, it has inputs for VGA, S-Video, composite video, and mini-USB (cable included), the last of which adds mouse and page up/down controls to the remote.

The circular control panel puts some buttons so close together that it's easy to push the wrong one. On the small remote, the menu button and selection keys are buried, and you get no hot-button for changing the preset display mode, but the unit's laser pointer is a plus. The on-screen display is easy enough to navigate, and its

## PC WORLD TOP ULTRAPORTABLE PROJECTORS

| LAMP-BASED PROJECTORS  |  | PCW Rating             | Performance   | Features and specifications   |
|--|--|------------------------|---|---|
| 1  | <b>BEST BUY</b><br>InFocus IN1102<br>\$1099<br><a href="http://find.pcworld.com/63679">find.pcworld.com/63679</a>  | <b>86</b><br>VERY GOOD | <ul style="list-style-type: none"> <li>Text quality: Superior</li> <li>Graphics quality: Superior</li> <li>Motion: Superior</li> </ul>  | <ul style="list-style-type: none"> <li>2.75 pounds minimum weight</li> <li>1280 by 800 resolution</li> <li>2200 lumens; 3000-hour lamp life</li> <li>Lamp price: \$325</li> </ul>         |
| BOTTOM LINE: The IN1102 delivers bright, widescreen images with laser-sharp text and splendid color graphics, but it's pricey.     |  |                        |   |   |
| 2  | Acer P3250<br>\$791<br><a href="http://find.pcworld.com/63682">find.pcworld.com/63682</a>                          | <b>85</b><br>VERY GOOD | <ul style="list-style-type: none"> <li>Text quality: Very Good</li> <li>Graphics quality: Superior</li> <li>Motion: Superior</li> </ul> | <ul style="list-style-type: none"> <li>2.7 pounds minimum weight</li> <li>1024 by 768 resolution</li> <li>2000 lumens; 3000-hour lamp life</li> <li>Lamp price: \$240</li> </ul>          |
| BOTTOM LINE: Superior color quality, well-rounded features, and a great price help the P3250 rise toward the top of the chart.     |  |                        |   |   |
| 3  | Optoma EW330<br>\$899<br><a href="http://find.pcworld.com/63683">find.pcworld.com/63683</a>                        | <b>84</b><br>VERY GOOD | <ul style="list-style-type: none"> <li>Text quality: Superior</li> <li>Graphics quality: Very Good</li> <li>Motion: Superior</li> </ul> | <ul style="list-style-type: none"> <li>2.4 pounds minimum weight</li> <li>1280 by 800 resolution</li> <li>2200 lumens; 3000-hour lamp life</li> <li>Lamp price: \$399</li> </ul>          |
| BOTTOM LINE: The EW330 impresses with its superior text and moving-image quality, rendered in widescreen resolution.               |  |                        |   |   |
| LED-BASED PROJECTORS   |  | PCW Rating             | Performance   | Features and specifications   |
| 1  | <b>BEST BUY</b><br>Samsung SP-P410M<br>\$749<br><a href="http://find.pcworld.com/63684">find.pcworld.com/63684</a> | <b>76</b><br>GOOD      | <ul style="list-style-type: none"> <li>Text quality: Good</li> <li>Graphics quality: Good</li> <li>Motion: Good</li> </ul>              | <ul style="list-style-type: none"> <li>2.1 pounds minimum weight</li> <li>800 by 600 resolution</li> <li>170 lumens; 30,000 hours of LED light</li> <li>USB-based media player</li> </ul> |
| BOTTOM LINE: The SP-P410M can play PC-free slide shows and videos, but its low brightness limits it to small groups.               |  |                        |   |   |
| 2  | BenQ Joybee GP1<br>\$499<br><a href="http://find.pcworld.com/63681">find.pcworld.com/63681</a>                     | <b>75</b><br>GOOD      | <ul style="list-style-type: none"> <li>Text quality: Good</li> <li>Graphics quality: Good</li> <li>Motion: Good</li> </ul>              | <ul style="list-style-type: none"> <li>1.4 pounds minimum weight</li> <li>858 by 600 resolution</li> <li>100 lumens; 20,000 hours of LED light</li> <li>USB-based media player</li> </ul> |
| BOTTOM LINE: This compact LED unit displays good-looking images with or without a PC, but works best in low room lighting.         |  |                        |   |   |
| 3  | Dell M109S<br>\$449<br><a href="http://find.pcworld.com/63686">find.pcworld.com/63686</a>                          | <b>65</b><br>FAIR      | <ul style="list-style-type: none"> <li>Text quality: Fair</li> <li>Graphics quality: Fair</li> <li>Motion: Fair</li> </ul>              | <ul style="list-style-type: none"> <li>12.8 ounces minimum weight</li> <li>858 by 600 resolution</li> <li>50 lumens; 10,000 hours of LED light</li> </ul>                                 |
| BOTTOM LINE: Due to its low light output, the tiny M109S is limited in usefulness to very small groups in dark or dimly lit rooms. |  |                        |   |   |
| CHART NOTES: Ratings are as of 8/07/09. Minimum weights exclude cables, adapters, and other accessories.                           |  |                        |   |   |



extensive options include more color controls than most other models have.

### Samsung SP-P410M

The 2.1-pound Samsung SP-P410M (\$749) has a traveling weight of 4.2 pounds, more than the BenQ and Dell, but its bundle (remote, cables, power adapter, and carrying case) is also larger. It has an 800 by 600 (SVGA) resolution, a 30,000-hour lifetime for its LED light source, and a brightness rating of 170 lumens. It's best for small groups, in rooms where you can control the lighting. Its twin 1.0-watt mono speakers sounded better than most rivals.

The SP-P410M was third in text, fourth in graphics, and fifth in motion and video. Although it displayed legible lettering in most tests, its moderately low brightness made reading small, light-colored text on dark backgrounds more difficult. In some graphics it produced oversaturated colors, such as reddish skin tones and too-green grass, while in others it rendered gorgeous hues.

In DVDs, it properly captured the vivid colors of *Speed Racer* but produced less-successful results with the gritty earth tones of *Quantum of Solace*. Even when we switched display modes, for the most part it continued to show more color saturation than was present in the originals.

The built-in USB reader port allows the unit to stand alone, without a PC. In our tests of this feature using a USB flash drive, the P410M did well with PowerPoint

(though it showed slides as stills, with no animation or effects). In addition, the Samsung was able to play more file formats than the BenQ, which also has a USB media player for PC-free shows.

Inputs cover VGA, composite video, and audio, but not S-Video or HDMI. The fixed-focal-length lens is easy to focus, but the touch-sensitive control panel is

graphics and motion tests, it lost details in dark areas.

Its fixed-focal-length lens (no optical zoom) is easy to focus. The short (3-foot) multi-input cable provides connections for VGA and composite video with audio.

The touch-sensitive control panel is fairly easy to use, and it has a button for choosing one of the five preset picture options. Alterna-

very small groups in dimly lit or dark rooms. At merely 12.8 ounces (and a traveling weight under 2 pounds), it's the smallest unit here.

Unfortunately, Dell had to sacrifice some features. The low native resolution of 858 by 600 means you need to run your PC at SVGA resolution to get the best clarity. The unit also has a small, fixed lens; provides only two



**THE BENQ GP1 (left) and Dell M109S LED models are best suited for small-group presentations.**

small and slightly awkward to use—fortunately, using the remote is a breeze. The on-screen display offers six preset display modes and all of the basic options.

### BenQ Joybee GP1

The 1.4-pound (3 pounds traveling weight) BenQ Joybee GP1 (\$499) LED-based model has a brightness rating of just 100 lumens, which makes it a good choice only for very small groups. Its native resolution of 858 by 600 means that you need to run an attached PC at SVGA resolution to obtain the sharpest image.

It took fourth place on text, fifth on graphics, and sixth on motion tests. Its low brightness made reading small, light-colored text on dark backgrounds harder; in

tively you can use the card-size remote to access the on-screen display and control the media player functions. One nice feature: The on-screen display can switch between the essentials (such as brightness and contrast) and advanced controls.

Like the Samsung, the GP1 has a USB reader port, which allows it to deliver PC-free presentations. In our tests it did a decent job playing media from a USB flash drive. It displayed PowerPoint slides as still images (with no animation or effects), though, and it played our video and music files only after we used a bundled conversion app.

### Dell M109S

The tiny Dell M109S (\$449) LED projector, rated at only 50 lumens, is best suited for

input options (VGA and composite video); and lacks a remote and a speaker.

The M109S wound up in last place on all of our tests. Its lack of brightness and its low contrast made discerning the content in some screens difficult, and its rendering of small type wasn't sharp. In motion tests, some colors looked washed out in an animated PowerPoint presentation, and dark areas in DVD movies lacked detail.

The touch-sensitive controls are so small that pressing the wrong one is too easy. (The menu options are fairly extensive, though, and include five preset picture modes.) It's also daunting to use the focus ring, since the thumbwheel moves very little in either direction.

—Richard Jantz



## Budget-Friendly Laptops Battle It Out

**PCW Test Center** **ALTHOUGH THE** Lenovo ThinkPad T400s captures the top spot on our list of all-purpose laptops, don't ignore the rest of the chart. A couple of spunky newcomers break in this month, offering a good balance of performance and features for under \$1000.

Of those two models, the HP Pavilion dv4-1465dx is certainly affordable at \$749, but it's a little sluggish in the turns (its WorldBench 6 score of 75 is only Fair).



**SAMSUNG'S NP-Q320 is our Best Buy this month.**

By far the better bang for the buck came from Samsung's NP-Q320, a somewhat svelte—but reasonably powered—notebook. This 13.4-inch machine rode a 2.53GHz Core 2 Duo P8700 processor and a tiny dedicated GPU (for basic gaming and good video playback) to a solid 94 in WorldBench 6. Drawbacks include a screen that didn't impress and a slightly below average (just under 4 hours) battery life.

—Darren Gladstone

### MORE ONLINE

For more laptop news and in-depth reviews, visit PCW's Laptops Product Center at [find.pcworld.com/62004](http://find.pcworld.com/62004).

### PC WORLD TOP 10 ALL-PURPOSE LAPTOPS

| MODEL  | PCW Rating                    | Performance   | Features and specifications  |
|--|-------------------------------|---|--|
| <b>1</b> <b>Lenovo ThinkPad T400s</b><br><b>\$2130</b><br><a href="http://find.pcworld.com/63623">find.pcworld.com/63623</a>       | <b>81</b><br><b>VERY GOOD</b> | <ul style="list-style-type: none"> <li>WorldBench 6 score: 112 Superior</li> <li>Overall design: Very Good</li> <li>Tested battery life: 4:56</li> </ul>  | <ul style="list-style-type: none"> <li>2.53GHz Core 2 Duo SP9600</li> <li>14.1-inch widescreen</li> <li>4.0 pounds</li> <li>DVD+R DL/DVD±RW</li> </ul>     |
| <b>BOTTOM LINE:</b> With the T400s, Lenovo heaps on features, cuts the girth, and builds a lean, mean business laptop.             |                               |   |  |
| <b>2</b> <b>Samsung X460</b><br><b>\$1600</b><br><a href="http://find.pcworld.com/63626">find.pcworld.com/63626</a>                | <b>81</b><br><b>VERY GOOD</b> | <ul style="list-style-type: none"> <li>WorldBench 6 score: 93 Very Good</li> <li>Overall design: Very Good</li> <li>Tested battery life: 4:33</li> </ul>  | <ul style="list-style-type: none"> <li>2.26GHz Core 2 Duo P8400</li> <li>14.1-inch widescreen</li> <li>4.2 pounds</li> <li>DVD±R DL/DVD±RW</li> </ul>      |
| <b>BOTTOM LINE:</b> Samsung's unit provides solid competition—even for ultraportables—with slicker looks and more features.        |                               |   |  |
| <b>3</b> <b>Apple Macbook Pro (15")</b><br><b>\$2299</b><br><a href="http://find.pcworld.com/63628">find.pcworld.com/63628</a>     | <b>81</b><br><b>VERY GOOD</b> | <ul style="list-style-type: none"> <li>WorldBench 6 score: 105 Superior</li> <li>Overall design: Good</li> <li>Tested battery life: 3:40</li> </ul>       | <ul style="list-style-type: none"> <li>2.8GHz Core 2 Duo T9600</li> <li>15.4-inch widescreen</li> <li>5.5 pounds</li> <li>DVD+R DL/DVD±RW</li> </ul>       |
| <b>BOTTOM LINE:</b> Apple's new midsize model offers upgraded specs, superior performance, better value, and more options.         |                               |   |  |
| <b>4</b> <b>Dell Studio XPS 16</b><br><b>\$1804</b><br><a href="http://find.pcworld.com/63629">find.pcworld.com/63629</a>          | <b>80</b><br><b>VERY GOOD</b> | <ul style="list-style-type: none"> <li>WorldBench 6 score: 92 Very Good</li> <li>Overall design: Very Good</li> <li>Tested battery life: 3:41</li> </ul>  | <ul style="list-style-type: none"> <li>2.4GHz Core 2 Duo P8600</li> <li>16.0-inch widescreen</li> <li>7.0 pounds</li> <li>BD-ROM</li> </ul>                |
| <b>BOTTOM LINE:</b> The Studio XPS 16 provides sharp design, performance, and smart features without a too-hefty price tag.        |                               |   |  |
| <b>5</b> <b>HP HDX16</b><br><b>\$1734</b><br><a href="http://find.pcworld.com/63630">find.pcworld.com/63630</a>                    | <b>79</b><br><b>GOOD</b>      | <ul style="list-style-type: none"> <li>WorldBench 6 score: 100 Very Good</li> <li>Overall design: Very Good</li> <li>Tested battery life: 2:13</li> </ul> | <ul style="list-style-type: none"> <li>2.8GHz Core 2 Duo T9600</li> <li>16.0-inch widescreen</li> <li>7.0 pounds</li> <li>BD-ROM</li> </ul>                |
| <b>BOTTOM LINE:</b> The HDX16 brings desktop replacement performance and features to the all-purpose class—and does it well.       |                               |   |  |
| <b>6</b> <b>Toshiba Satellite U505-S2940</b><br><b>\$950</b><br><a href="http://find.pcworld.com/63631">find.pcworld.com/63631</a> | <b>78</b><br><b>GOOD</b>      | <ul style="list-style-type: none"> <li>WorldBench 6 score: 80 Good</li> <li>Overall design: Very Good</li> <li>Tested battery life: 6:49</li> </ul>       | <ul style="list-style-type: none"> <li>2GHz Core 2 Duo T7350</li> <li>13.3-inch widescreen</li> <li>5.6 pounds</li> <li>DVD+R DL/DVD±RW</li> </ul>         |
| <b>BOTTOM LINE:</b> A solid choice for general use if you don't need the slimmest (or lightest) travel companion.                  |                               |   |  |
| <b>7</b> <b>Apple Macbook Pro A1278</b><br><b>\$1499</b><br><a href="http://find.pcworld.com/63632">find.pcworld.com/63632</a>     | <b>78</b><br><b>GOOD</b>      | <ul style="list-style-type: none"> <li>WorldBench 6 score: 99 Very Good</li> <li>Overall design: Very Good</li> <li>Tested battery life: 3:50</li> </ul>  | <ul style="list-style-type: none"> <li>2.53GHz Core 2 Duo P8700</li> <li>13.1-inch widescreen</li> <li>4.5 pounds</li> <li>DVD±R DL/DVD±RW</li> </ul>      |
| <b>BOTTOM LINE:</b> Apple's retake on its 13-inch laptop sees a boost in power, a drop in price—and the return of FireWire.        |                               |   |  |
| <b>8</b> <b>BEST BUY Samsung NP-Q320</b><br><b>\$930 NEW</b><br><a href="http://find.pcworld.com/63638">find.pcworld.com/63638</a> | <b>77</b><br><b>GOOD</b>      | <ul style="list-style-type: none"> <li>WorldBench 6 score: 94 Very Good</li> <li>Overall design: Good</li> <li>Tested battery life: 3:56</li> </ul>       | <ul style="list-style-type: none"> <li>2.53GHz Core 2 Duo P8700</li> <li>13.4-inch widescreen</li> <li>4.8 pounds</li> <li>DVD±R DL/DVD±RW/-RAM</li> </ul> |
| <b>BOTTOM LINE:</b> This slick (except for a lackluster screen) laptop offers very good performance for its cost.                  |                               |   |  |
| <b>9</b> <b>HP Pavilion dv4-1465dx</b><br><b>\$749 NEW</b><br><a href="http://find.pcworld.com/63633">find.pcworld.com/63633</a>   | <b>76</b><br><b>GOOD</b>      | <ul style="list-style-type: none"> <li>WorldBench 6 score: 75 Fair</li> <li>Overall design: Very Good</li> <li>Tested battery life: 6:08</li> </ul>       | <ul style="list-style-type: none"> <li>2.10GHz Core 2 Duo T6500</li> <li>14.1-inch widescreen</li> <li>5.6 pounds</li> <li>DVD±R DL/DVD±RW/-RAM</li> </ul> |
| <b>BOTTOM LINE:</b> This notebook expands upon HP's earlier all-purpose Pavilion dv3 while coming in at a lower price.             |                               |   |  |
| <b>10</b> <b>Dell Studio 14z</b><br><b>\$750</b><br><a href="http://find.pcworld.com/63634">find.pcworld.com/63634</a>             | <b>75</b><br><b>GOOD</b>      | <ul style="list-style-type: none"> <li>WorldBench 6 score: 80 Good</li> <li>Overall design: Very Good</li> <li>Tested battery life: 4:32</li> </ul>       | <ul style="list-style-type: none"> <li>2.10GHz Core 2 Duo T6500</li> <li>14.1-inch widescreen</li> <li>4.5 pounds</li> </ul>                               |
| <b>BOTTOM LINE:</b> The sleek, slim 14z delivers a great package overall—so long as you don't crave an optical drive.              |                               |   |  |
| <b>CHART NOTES:</b> Ratings are as of 9/1/09. Weight does not include AC adapter, power cord, docking station, or extra batteries. |                               |   |  |



# New.



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## MiFi 2200 Puts Internet Access in Your Pocket

TRAVELERS WHO need constant Internet access have more options than ever these days, but the choices aren't always satisfactory. Sometimes a Wi-Fi hotspot isn't handy. A mobile broadband USB modem from a major carrier typically requires installing special software, which can be a hassle. And some gadgets lack USB ports.

Novatel Wireless's MiFi

2200 marries the convenience of Wi-Fi to the ubiquity of mobile broadband, side-stepping all of those issues. It needs no special software (you connect to it just as you would to any Wi-Fi hotspot) and lets you share an account with other people.

Small and thin—about the size of three stacked credit cards—the MiFi is a compact Wi-Fi router that derives its Internet access from a single mobile broadband account (instead of DSL or cable). Turn it on within range of a 3G signal, and it instantly creates a Wi-Fi hotspot for up to five users. But even if you're flying solo, its ease of use and sup-



**NOVATEL'S POCKETABLE MIFI 2200 makes mobile broadband easy and convenient.**

port for all Wi-Fi devices make it truly appealing.

The MiFi does run on its own power source, giving you one more gadget to recharge at night. Fully charged, it ran for about 4 hours, as advertised. (Novatel Wireless's manual states that the device will run down more quickly if multiple devices are using it for broadband access; I was unable to test this.) If a wall

outlet is nearby, the MiFi can run while it is connected to its included charger.

My Sprint unit came preactivated: I just had to perform the same type of setup as with any Wi-Fi router. Accessing the unit's hot-

spot via Windows Vista's Wi-Fi utility took a few seconds, after which I had excellent broadband access; service was generally zippy on a range of Web sites.

Sprint charges \$60 a month for up to 5GB of bandwidth usage, but does not offer a cheaper option, which makes the MiFi more suitable for frequent users than for occasional travelers.

—Yardena Arar

**96**  
SUPERIOR

### MiFi 2200 | Novatel Wireless

Device lets you use and share mobile broadband, but it's pricey.

List: \$300 (with two-year contract and before rebates)

[find.pcworld.com/63622](http://find.pcworld.com/63622)

## Opera 10 Browser Is Fast and Feature-Packed

OPERA HAS NEVER garnered the kind of publicity Internet Explorer, Firefox, and Chrome enjoy. That's a shame, because version 10 (downloadable at [find.pcworld.com/63079](http://find.pcworld.com/63079)) adds a slew of features that anyone who surfs the Web will welcome.

Opera 10 is fast, configurable, and clean-looking,

with just about everything you'd expect in a modern browser, including a pop-up blocker, plug-ins, an anti-phishing tool, and an RSS reader. It also has a surprisingly good e-mail client built in, with support for POP3 and IMAP servers, the ability to create incoming message rules, and a spam filter. Plus, the interface is elegant, yet simple to use.

Tab handling has improved: You can now configure the browser so that tab thumbnails appear above each tab, and the images are resizable.

Another worthy addition is the Speed Dial feature. You can customize the page



**OPERA 10'S SPEED Dial lets you click on site thumbnails to visit them.**

that appears when you open a new tab so that anywhere from 4 to 24 of your favorite sites display as thumbnails—and you just click on one to visit that site.

Opera has always displayed pages quickly, and this version is even speedier, particularly on interactive sites such

as Facebook and Gmail.

Surprisingly, Opera still lacks one feature that IE, Firefox, and Chrome all have: a privacy mode that makes all traces of your session vanish after you close the browser. For some people, that means Opera isn't for them.

—Preston Gralla

**85**  
VERY GOOD

### Opera 10 | Opera Software

Update packs almost every feature a modern browser should have.

Free

[find.pcworld.com/63621](http://find.pcworld.com/63621)



# HP Inkjet's Killer App: Poster-Size Printing

## PCW Test Center

**JUST ONE WORD:** Posters. At a time when multifunction devices are overshadowing plain old inkjet printers, HP's new Officejet 7000 fights back with its wide-format printing capability. It can print tabloid-size or larger sheets, up to 13 inches wide by 19 inches long.

That's a useful feature for a small business that needs to make simple signs or other promotional materials. Graphic designers and artists also need this kind of versatility in paper size.

Consider, too, the issue of price: Laser-based wide-format models that we've reviewed cost upwards of

\$2000 or \$3000, compared with just \$230 at press time for the Officejet 7000.

## Livin' Large

The HP Officejet 7000 debuts at number four—a shade below its older, pricier wide-format cousin, the Officejet Pro K8600dn. We like the Officejet 7000's print quality a little better, but the \$350 Officejet Pro K8600dn's higher paper capacity and automatic duplexing give it an edge.

Both of these printers are fast—especially the K8600dn, whose top speed of 13.8 pages per minute (ppm) is one of the fastest we've seen. Their graphics speeds



HP'S OFFICEJET 7000 offers wide-format printing capabilities.

are also pretty good. Note that we test letter-size samples only; a tabloid page is four times that size and would, theoretically, take four times as long to print. A bigger page means more

ink—but these printers won't charge you a fortune for it. The 7000's inks are cheaper than average, at 4.8 cents per letter-size page of plain text and 14.7 cents per page with all four colors (based on industry-standard measures). The K8600dn's inks cost even less: 2.8 cents for text, 8.1 cents for color. And its high-yield cartridges cost a rock-bottom 1.7 cents for text and 6.3 cents for color—making the K8600dn extremely competitive with color laser models.

## Why Go Wide?

For anyone who wants ultimate printing flexibility, wide-format is the way to go. HP's Officejet 7000 delivers it for a price that anyone can afford. Though the Officejet Pro K8600dn costs more than the 7000, it also gives you even more, including supercheap inks and better paper handling. With one of these units and a monochrome laser printer, you'd be ready for almost anything.

—Melissa Riofrio

## PC WORLD TOP 5 COLOR INKJET PRINTERS

| MODEL  | PCW Rating                    | Performance   | Features and specifications   |
|--|-------------------------------|---|---|
| <b>1</b><br><b>BEST BUY</b><br><b>HP Photosmart D7560</b><br><b>\$150</b><br><a href="http://find.pcworld.com/62349">find.pcworld.com/62349</a>    | <b>86</b><br><b>VERY GOOD</b> | <ul style="list-style-type: none"> <li>Text quality: Superior</li> <li>Graphics/photo quality: Good/Superior</li> <li>Tested speeds (ppm): 11.8 text/3.3 graphics</li> </ul>  | <ul style="list-style-type: none"> <li>33 ppm text</li> <li>31 ppm graphics</li> <li>9600-by-2400-dpi maximum resolution</li> </ul> |
| BOTTOM LINE: This fast printer offers some cool features, including a touchscreen LCD and CD/DVD printing.   |                               |   |   |
| <b>2</b><br><b>HP Photosmart D5460</b><br><b>\$100</b><br><a href="http://find.pcworld.com/62493">find.pcworld.com/62493</a>                       | <b>83</b><br><b>VERY GOOD</b> | <ul style="list-style-type: none"> <li>Text quality: Good</li> <li>Graphics/photo quality: Very Good/Superior</li> <li>Tested speeds (ppm): 11.4 text/3.4 graphics</li> </ul> | <ul style="list-style-type: none"> <li>33 ppm text</li> <li>31 ppm graphics</li> <li>9600-by-2400-dpi maximum resolution</li> </ul> |
| BOTTOM LINE: Strong performance and CD/DVD printing distinguish this model from other low-priced competitors.                                      |                               |   |   |
| <b>3</b><br><b>HP Officejet Pro K8600dn</b><br><b>\$350</b><br><a href="http://find.pcworld.com/60715">find.pcworld.com/60715</a>                  | <b>83</b><br><b>VERY GOOD</b> | <ul style="list-style-type: none"> <li>Text quality: Superior</li> <li>Graphics/photo quality: Good/Very Good</li> <li>Tested speeds (ppm): 13.8 text/4.1 graphics</li> </ul> | <ul style="list-style-type: none"> <li>35 ppm text</li> <li>35 ppm graphics</li> <li>4800-by-1200-dpi maximum resolution</li> </ul> |
| BOTTOM LINE: Feature-packed model does wide-format printing and automatic duplexing; it also has supercheap inks.                                  |                               |   |   |
| <b>4</b><br><b>HP Officejet 7000 Wide Format Printer</b><br><b>\$230 NEW</b><br><a href="http://find.pcworld.com/63411">find.pcworld.com/63411</a> | <b>83</b><br><b>VERY GOOD</b> | <ul style="list-style-type: none"> <li>Text quality: Superior</li> <li>Graphics/photo quality: Very Good/Good</li> <li>Tested speeds (ppm): 11.9 text/3.4 graphics</li> </ul> | <ul style="list-style-type: none"> <li>33 ppm text</li> <li>32 ppm graphics</li> <li>4800-by-1200-dpi maximum resolution</li> </ul> |
| BOTTOM LINE: Printing posters and other large pieces is easy with this fast, wide-format model. Inks are cheap.                                    |                               |   |   |
| <b>5</b><br><b>Epson WorkForce 40</b><br><b>\$100</b><br><a href="http://find.pcworld.com/62351">find.pcworld.com/62351</a>                        | <b>79</b><br><b>GOOD</b>      | <ul style="list-style-type: none"> <li>Text quality: Fair</li> <li>Graphics/photo quality: Fair/Good</li> <li>Tested speeds (ppm): 18.4 text/5.1 graphics</li> </ul>          | <ul style="list-style-type: none"> <li>38 ppm text</li> <li>38 ppm graphics</li> <li>5760-by-1440-dpi maximum resolution</li> </ul> |
| BOTTOM LINE: A fast unit, but the pricey inks produce fuzzy text and grainy prints—hardly a good deal for a small office.                          |                               |   |   |
| CHART NOTES: Ratings are as of 8/31/09. Printer speeds are in pages per minute (ppm).  |                               |   |   |

## MORE ONLINE

For in-depth reviews of all the printers in this chart, and for information on how we test, go to [find.pcworld.com/63644](http://find.pcworld.com/63644).



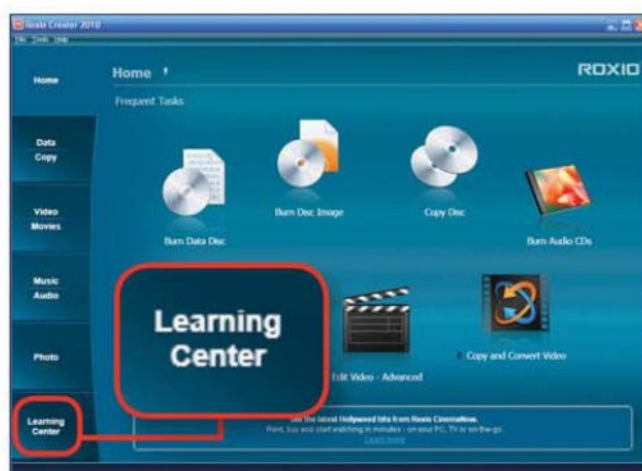
## Roxio Creator 2010 Does Everything Disc-Related

ROXIO'S CREATOR SUITE for optical-disc burning lets you produce professional-looking disc menus, labels, and the like without a lot of artistic effort. But the \$99 Creator 2010 does more than just burn discs; it also improves on its predecessor's interface and feature set, though perhaps not

enough to justify the upgrade cost for current users.

When augmented with the separately sold Blu-ray plug-ins (a \$20 add-on), Creator 2010 is as comprehensive a burning suite as you can find. It covers all aspects of video/audio capture and editing, disc authoring, and everything else disc-related. The most noticeable change: The launch screen has a Learning Center option hosting tutorial videos covering some of the more-complex tasks that Creator handles. Otherwise, appearance and workflow are much as in Creator 2009.

A major convenience is the new smart-encoding feature,



ROXIO CREATOR 2010 lets you access video tutorials in its interface.

which reencodes only the parts of a video you've edited and changed. This makes encoding much faster and may help preserve image quality.

All versions of Creator 2010 can save Internet audio and video, back up AVCHD video to DVD and Blu-ray, perform BD-RE editing on

disc, and support nVidia CUDA and ATI Stream video conversion acceleration. The \$130 Creator 2010 Pro includes the Blu-ray plug-ins and adds bundled apps such as LightZone, which corrects lighting problems in images.

If you have the most recent previous version of Creator, the \$60 upgrade price may be too high. Upgrading from an older version will cost \$70. And if you want Blu-ray playback, count on paying another \$30 for Roxio CinePlayer BD. The suite costs significantly more than the equally powerful Nero 9 (\$70 without Blu-ray playback); and even Cyberlink's DVD Suite 7 Ultra with Blu-ray playback (\$130) is competitive, although the plug-ins included with Roxio Creator 2010 Pro help make it good value.

Many free programs can handle basic burning and even audio/video chores, so spend your dollars carefully on any software that aims to make video editing, disc authoring, and Blu-ray playback easy. Creator 2010 shines in those areas, but so do a host of less expensive individual competitors.

—Jon L. Jacobi

—Jon L. Jacobi

**82**  
VERY GOOD

**Creator 2010** | Roxio

Disc-burning suite is comprehensive, but Blu-ray plug-ins are \$20. List: \$99

[find.pcworld.com/63627](http://find.pcworld.com/63627)

## Video Editor Improves in New Version

POWERDIRECTOR 8 ULTRA is a powerful application, and its interface is stylish and friendly—when you work with it in full-screen mode. Version 8 introduces a number of usability improvements and adds features, notably the TrueTheater video correction and enhancement tool. However, the upgrade fixes none of the previous version's interface



VIDEO EDITOR POWERDIRECTOR 8 works best in full-screen mode.

faults, such as its tendency to obscure its tools when you run the program at less than full screen. The company says that corrective code for these problems will be available soon as a free update.

Welcome new features include TrueTheater HD up-sampling, audio and video denoise tools, video stabilization, motion frame inter-

polation, three music tracks (up from one in version 7), and nine picture-in-picture tracks (up from six).

Upgrades cost \$60 for current retail owners and \$70 for OEM owners; your purchasing decision should depend on your need for PowerDirector 8's video and audio enhancements.

—Jon L. Jacobi

**85**  
VERY GOOD

**PowerDirector 8 Ultra**  
Cyberlink

Good video editing power, despite some interface annoyances.

List: \$100; \$60 upgrade

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## Mio's No-Frills GPS Device

PRICED AT \$200, Mio Technology's Moov S510 offers a large, uncluttered screen, voice directions that name streets, and an extensive points-of-interest database in a sleek, good-looking package. But the device has some usability issues, and you must forgo (or pay extra for) connected GPS features

(such as real-time traffic alerts) that several competitors offer at no extra charge.

Less than 0.75 inch thick, the Moov S510—along with its smaller, less expensive sibling, the Moov S410—introduces a user-friendly interface called Spirit that lets you eliminate unwanted information from its handsome, 4.7-inch, 480-by-272-pixel antiglare touchscreen. Navigating between moving maps and menus involves tapping large arrows and return buttons.

The text-to-speech feature worked pretty well: Only twice did I have difficulty understanding a street



THE MOOV S510'S menu options appear in large colored blocks.

name. Lane guidance was helpful, too, and the routing was generally sensible. A new Explore option shows points of interest near your current location—a useful option when you take a road trip to an unfamiliar location.

The S510 has no built-in real-time Internet connec-

tion, but you can hook it to your PC via the supplied USB cable and use the included MioMore desktop software to download data updates. As long as you don't mind doing such syncing from time to time, the S510 covers a lot of bases at a moderate price.

—Yardena Arar

PHOTOGRAPHS: ROBERT CARDIN

**84**  
VERY GOOD

### Moov S510 | Mio

GPS device is a solid choice, if you don't mind paying for traffic alerts. List: \$200

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# GPS/UMPC Hybrid Isn't as Versatile as It Looks

PUT A GPS navigation system into an ultramobile PC, and you have the Clarion Mind (NR1UB). With its 4.8-inch display, the Mind looks like a largish personal navigation device, but its scrolling, icon-based touchscreen menu offers such options as

a Web browser, e-mail, and music and video players.

The Mind may sound like a bargain at \$299, but you have to provide Internet connectivity for every non-GPS feature. The device boasts a fairly good GPS navigation system with Navteq maps, and the large display offers plenty of space for useful information such as the current speed limit and estimated time of arrival. Another plus is text-to-speech technology, which lets the voice directions provide actual road names. You can instantly receive points



CLARION'S MIND comes with a car charger and a dashboard mount.

of interest on any computer, plotted from Google Maps.

On the road, the Mind can search Google Maps on the fly and deliver CNN news updates, traffic reports, and YouTube videos. With the device docked in my car, the unit's speaker often sounded muffled. YouTube video

playback was jerky over my Wi-Fi network, and the screen was dark in daylight.

The Clarion Mind is a good GPS device, but it's just so-so as a UMPC. A data-capable phone can handle many of its functions (especially e-mail) as well or better.

—Yardena Arar



Mind (NR1UB) | Clarion

GPS/UMPC hybrid with tempting price has iffy Internet features.

Street: \$299

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## Nikon, Canon Continue to Lead the DSLR Pack

**PCW Test Center** this month's *Top 10 Digital SLR Cameras*

chart: the Olympus E-30 in sixth place and the white-bodied Pentax K2000 in eighth. In addition, two full-frame models—Sony's Alpha DSLR-A900, ranked third, and Nikon's D700, ranked tenth—capture spots.

Meanwhile, Nikon's D90 edges Canon's EOS 50D at the top of the list thanks to its superior overall design.

Also of note: Though we rank the Nikon D300 here at number four, Nikon has replaced this model with the



**THE NIKON D90 shoots terrific stills and high-def video, as well.**

D300s. The D300 remains on sale in many retail locations, however; watch for deals on this highly capable but older model. The newer D300s, which we couldn't test in time for this issue, handles very similarly to the D300. It comes with a button for Live View access, and it supports 1080p video recording.

—Melissa J. Perenson

### MORE ONLINE

For more on the digital SLR cameras ranked in this chart, including testing details, visit [find.pcworld.com/62107](http://find.pcworld.com/62107).

### PC WORLD TOP 10 DIGITAL SINGLE-LENS REFLEX CAMERAS

| MODEL  | PCWRating       | Performance   | Features and specifications  |
|--|-----------------|---|--|
| <b>1</b> <b>BEST BUY</b> Nikon D90<br>\$1300<br><a href="http://find.pcworld.com/62058">find.pcworld.com/62058</a>               | 88<br>VERY GOOD | <ul style="list-style-type: none"> <li>Image quality: Superior</li> <li>Overall design: Superior</li> </ul>   | <ul style="list-style-type: none"> <li>12.3 megapixels</li> <li>5.8X optical zoom (18-105mm)</li> <li>6 scene modes</li> <li>5.2 by 3.0 by 4.1 inches</li> </ul>     |
| BOTTOM LINE: This Nikon delivers great image quality and terrific design—including basic video recording, a digital SLR first.   |                 |   |  |
| <b>2</b> Canon EOS 50D<br>\$1400<br><a href="http://find.pcworld.com/62060">find.pcworld.com/62060</a>                           | 88<br>VERY GOOD | <ul style="list-style-type: none"> <li>Image quality: Superior</li> <li>Overall design: Very Good</li> </ul>  | <ul style="list-style-type: none"> <li>15.1 megapixels</li> <li>11.1X optical zoom (18-200mm)</li> <li>6 scene modes</li> <li>5.7 by 2.9 by 4.2 inches</li> </ul>    |
| BOTTOM LINE: The EOS 50D isn't a must-buy upgrade over the 40D, but it has some friendly new features and shooting modes.        |                 |   |  |
| <b>3</b> Sony Alpha DSLR-A900<br>\$4800<br><a href="http://find.pcworld.com/62069">find.pcworld.com/62069</a>                    | 86<br>VERY GOOD | <ul style="list-style-type: none"> <li>Image quality: Very Good</li> <li>Overall design: Superior</li> </ul>  | <ul style="list-style-type: none"> <li>24.6 megapixels</li> <li>2.9X optical zoom (24-70mm)</li> <li>13 scene modes</li> <li>6.1 by 4.6 by 3.3 inches</li> </ul>     |
| BOTTOM LINE: This Sony digital SLR is a respectable member of its camera class, but it handled noise poorly above ISO 800.       |                 |   |  |
| <b>4</b> Nikon D300<br>\$2400<br><a href="http://find.pcworld.com/60338">find.pcworld.com/60338</a>                              | 85<br>VERY GOOD | <ul style="list-style-type: none"> <li>Image quality: Good</li> <li>Overall design: Superior</li> </ul>       | <ul style="list-style-type: none"> <li>12.3 megapixels</li> <li>11.1X optical zoom (18-200mm)</li> <li>No scene modes</li> <li>5.8 by 4.5 by 2.9 inches</li> </ul>   |
| BOTTOM LINE: The D300 has high (but no longer exceptional) resolution, a fast burst-shooting capability, and great flexibility.  |                 |   |  |
| <b>5</b> Canon EOS Digital Rebel XSi<br>\$750<br><a href="http://find.pcworld.com/61257">find.pcworld.com/61257</a>              | 84<br>VERY GOOD | <ul style="list-style-type: none"> <li>Image quality: Very Good</li> <li>Overall design: Very Good</li> </ul> | <ul style="list-style-type: none"> <li>12.2 megapixels</li> <li>3.1X optical zoom (18-55mm)</li> <li>6 scene modes</li> <li>5.1 by 3.8 by 2.4 inches</li> </ul>      |
| BOTTOM LINE: The Rebel XSi's feature set is strong, but it may cost more money than entry-level buyers are willing to spend.     |                 |   |  |
| <b>6</b> Olympus E-30<br>\$1200 <b>NEW</b><br><a href="http://find.pcworld.com/63234">find.pcworld.com/63234</a>                 | 83<br>VERY GOOD | <ul style="list-style-type: none"> <li>Image quality: Very Good</li> <li>Overall design: Very Good</li> </ul> | <ul style="list-style-type: none"> <li>12.3 megapixels</li> <li>3.9X optical zoom (14-54mm)</li> <li>14 scene modes</li> <li>5.6 by 4.2 by 3.0 inches</li> </ul>     |
| BOTTOM LINE: This model packs many features and impressed us in daylight, but its high-ISO performance was pedestrian.           |                 |   |  |
| <b>7</b> Sony Alpha DSLR-A700<br>\$1500<br><a href="http://find.pcworld.com/59473">find.pcworld.com/59473</a>                    | 83<br>VERY GOOD | <ul style="list-style-type: none"> <li>Image quality: Good</li> <li>Overall design: Very Good</li> </ul>      | <ul style="list-style-type: none"> <li>12.24 megapixels</li> <li>6.6X optical zoom (24-157.5mm)</li> <li>No scene modes</li> <li>5.6 by 3.1 by 4.1 inches</li> </ul> |
| BOTTOM LINE: A complex, well-made camera with tons of controls, the A700 takes unusually sharp, well-exposed shots.              |                 |   |  |
| <b>8</b> Pentax K2000 White<br>\$500 <b>NEW</b><br><a href="http://find.pcworld.com/63702">find.pcworld.com/63702</a>            | 82<br>VERY GOOD | <ul style="list-style-type: none"> <li>Image quality: Superior</li> <li>Overall design: Very Good</li> </ul>  | <ul style="list-style-type: none"> <li>10.2 megapixels</li> <li>3.1X optical zoom (18-55mm)</li> <li>15 scene modes</li> <li>4.8 by 3.6 by 2.7 inches</li> </ul>     |
| BOTTOM LINE: The K2000 is a beginner-friendly DSLR with body-based stabilization; autofocus speed and controls are subpar.       |                 |   |  |
| <b>9</b> Nikon D5000<br>\$800<br><a href="http://find.pcworld.com/62963">find.pcworld.com/62963</a>                              | 81<br>VERY GOOD | <ul style="list-style-type: none"> <li>Image quality: Very Good</li> <li>Overall design: Very Good</li> </ul> | <ul style="list-style-type: none"> <li>12.3 megapixels</li> <li>3.1X optical zoom (18-55mm)</li> <li>19 scene modes</li> <li>5.0 by 4.1 by 3.1 inches</li> </ul>     |
| BOTTOM LINE: Among this model's many features is a handy tilt-and swivel screen. Automatic-mode images were middling.            |                 |   |  |
| <b>10</b> Nikon D700<br>\$2900<br><a href="http://find.pcworld.com/62059">find.pcworld.com/62059</a>                             | 80<br>VERY GOOD | <ul style="list-style-type: none"> <li>Image quality: Good</li> <li>Overall design: Very Good</li> </ul>      | <ul style="list-style-type: none"> <li>12.1 megapixels</li> <li>5X optical zoom (24-120mm)</li> <li>No scene modes</li> <li>5.8 by 4.8 by 3.0 inches</li> </ul>      |
| BOTTOM LINE: A pleasure to use, the D700 offers versatility via its full-frame sensor (for true wide angles) and built-in flash. |                 |   |  |

CHART NOTE: Ratings are as of 8/31/2009.



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## Wireless Music, Maestro!

THE \$700 LINKSYS by Cisco Conductor (DMC350) is the flagship product in Cisco's suite of networked audio devices. All components of the Linksys by Cisco wireless digital audio suite let you choose your audio sources and where to play the files, through an infrared remote provided with each device, or on an optional (\$350) Wi-Fi touchscreen remote

device called the Controller.

Alternatively, you can tap the Conductor's 7-inch touchscreen display to select music. But Linksys's system is no Sonos killer—in large part because it is subject to Wi-Fi interference.

The Conductor has its own amp and speakers, so you can put it anywhere in your home within wireless range of your network (or on a hard-wired ethernet connection). The unit is a little over a foot tall, a bit under a foot wide, and about 8 inches deep, and it weighs about 8.5 pounds. Its 800-by-600-pixel touchscreen is easy to read. The speakers produce pleasing sound for casual listening, and an optional \$80



THE LINKSYS BY Cisco Conductor comes with its own CD player.

dock lets you play iPod music through the device.

At times the Conductor played Rhapsody, Internet radio, and local content well, but it suffered intermittently from balky performance, unresponsive software, and remote control

(line-of-sight) limitations.

For \$700, I expected superior performance, but the Conductor fell short. Until someone resolves the network issues (especially those involved in Internet music), I plan to save my money.

—Yardena Arar

**87**  
VERY GOOD

### Conductor | Linksys by Cisco

Pricy, versatile streamer delivers pleasing but flawed Wi-Fi audio.

Street: \$700

[find.pcworld.com/63643](http://find.pcworld.com/63643)

## Belkin's New Powerline Kit: Fast, but Not Gigabit Fast

POWERLINE networking kits let you connect hardware all over your house to your home network. They link your router to a power outlet at one end and to another power outlet elsewhere in the house at the other, turning the outlets into ethernet ports. And unlike most Wi-Fi options, they provide the stable high-speed connections required for HD video streaming.

If Belkin's \$150 Gigabit Powerline HD Starter Kit

reached its nominal transfer rate of 1000 megabits per second, it would be five times faster than the company's AV+ Starter Kit, which claims a link rate of 200 mbps. (In my testing, the AV+ kit averaged 68 mbps, so I hoped that the Gigabit would reach 300 mbps.)

But the new kit's throughput actually ranged from 112 to 157 mbps; and though the Gigabit kit is twice as fast as the AV+ kit, I prefer the latter. Since streaming full HD video from a PC to a



BELKIN'S GIGABIT kit offers plug-and-play installation.

TV requires a transfer rate of only 20 to 25 mbps, the extra speed is mainly useful for tasks like network backup.

The Gigabit kit seemed more susceptible than the AV+ kit to interference, too. And the Gigabit kit's two adapters have one port each

(the AV+ kit's one adapter has three ethernet ports). Finally, the Gigabit kit can't sit on a desk because it has to plug directly into the wall.

According to Belkin, the Gigabit and the AV+ are interoperable products, but the Gigabit has yet to receive HomePlug AV

certification, which would guarantee interoperability.

The Belkin Gigabit Powerline HD Kit delivers top performance and is a snap to install. I just wish it didn't omit valuable features found in the earlier AV+ kit.

—Becky Waring

**81**  
VERY GOOD

### Gigabit Powerline HD Kit | Belkin

Fast network hardware loses some amenities of the earlier AV+ kit.

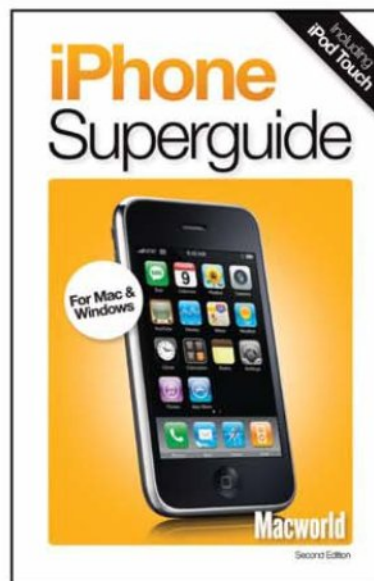
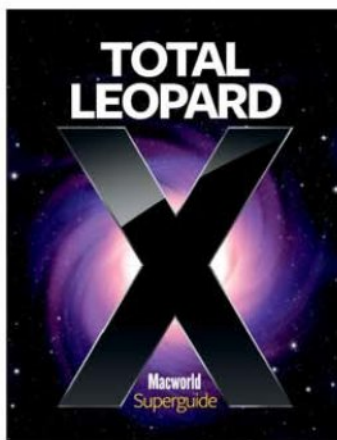
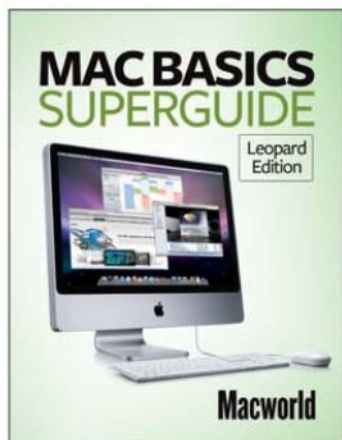
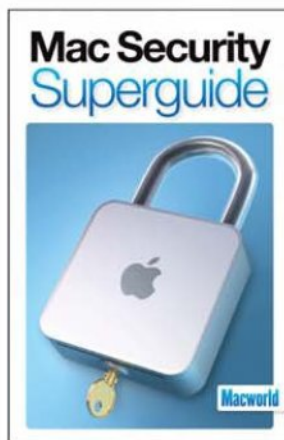
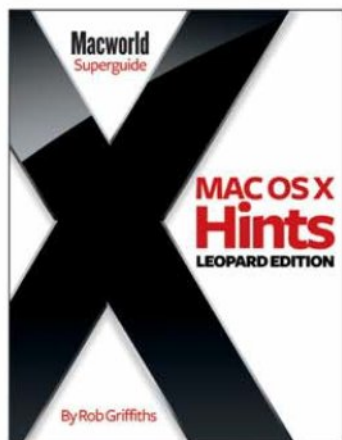
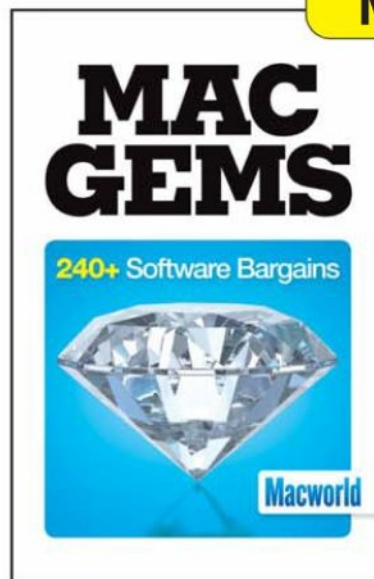
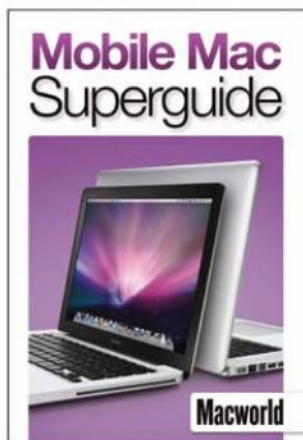
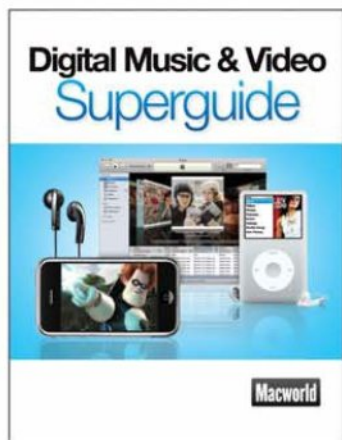
List: \$150

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## Nokia's Surge Suits as an Entry-Level Smartphone

NOKIA'S SURGE (\$80 with a two-year AT&T service contract) is a great starter smartphone. It has a few design quirks and doesn't feel very sturdy, but you get a nice feature set for a good price.

At 3.8 by 2.2 by 0.6 inches, the Surge is highly pocketable; and it weighs a feathery 4.3 ounces. But the handset's plastic body is a dull

black, with no color options.

Call quality over AT&T's 3G network sounded great, too. Since the Surge has no separate numeric keypad, however, you must have the slide-out keyboard open every time you dial a number.

The Surge's hardware buttons are laid out horizontally, for use with the slide-out QWERTY keyboard. To the right of the display are talk and end/power buttons, with a comfortable directional pad between them. Shortcut keys for browser, home, and e-mail occupy the lower right of the display, but they offer little tactile feedback.

The uncramped keyboard slides out easily, feels solid,



A BRIGHT, CRISP 2.4-inch display dominates the Surge's face.

**78**  
GOOD

**Surge** | **Nokia**

Svelte phone is feature-packed for the price, but hurt by design flaws.

List: \$80 with two-year contract

[find.pcworld.com/63614](http://find.pcworld.com/63614)

and has a generous-size spacebar; but its keys are stiff and difficult to press.

The Surge's Symbian S60 platform supports productivity apps, a handy social networking app called Juice-Caster, and Flash Lite for

viewing Web pages that have considerable Flash content.

The Nokia Surge offers a lot for the price, but its young target audience may dislike its awkward design and lackluster interface.

—Ginny Mies

## Bluetooth Headset Is a Good Fit at a Bargain Price

MOTOROLA'S H790 Bluetooth headset is lightweight, comfy, and unobtrusive. The \$80 device's chintzy-looking fixed-shape plastic loop isn't flexible for curving around the ear, but it gripped my small ear just fine.

The earbud felt snug inside my ear canal; folks with larger ears can try the various replacement earbuds to obtain a better fit. The H790 barely

touched my cheek, yet it stayed securely attached as I moved around.

The H790's sliding power switch shows orange when the unit is switched off and black when it's powered up. You get a voice announcement of the battery's status when you turn the unit on.

Call quality on the H790 was very good—in some cases, better than handset quality. My conversations sounded loud and clear to call recipients, and the H790 blocked considerable background noise, such as chatter, music, and traffic roar. When the ambient noise level peaked, callers could hear indistinct sounds in the background, especially when



THE MOTOROLA H790's ear loop fits well despite being inflexible.

with my voice breaking up.

At my end, callers' voices came through clearly, but I consistently noticed static; though irritating, the crackling wasn't bad enough for me to abandon the headset.

The H790's power switch is on one side, and its volume buttons are on the other; getting a feel for the controls took some fumbling around. The main call button—for activating voice commands and for accepting and ending calls—perches at the top of the headset and is easy to maneuver.

An \$80 headset with solid call quality and background-noise elimination, and a comfortable fit, is a good deal.

—Aoife M. McEvoy

**83**  
VERY GOOD

**H790** | **Motorola**

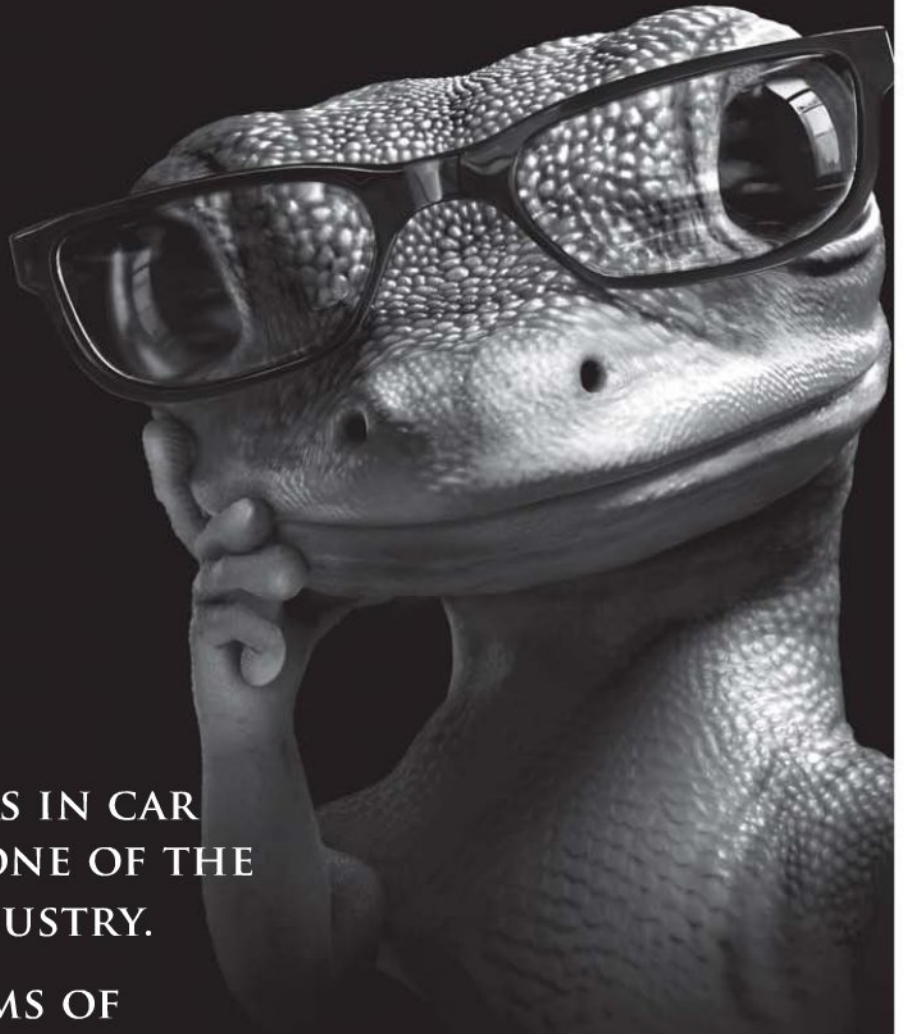
Light-feeling Bluetooth headset delivers generally good call quality.

Street: \$80

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I stopped talking. I did have a few bad calls: One party said that my voice sounded as if I were underwater, and other calls sounded shaky,





## A NOTE ON 70 YEARS IN CAR INSURANCE FROM ONE OF THE GIANTS IN THE INDUSTRY.

(WELL, NOT IN TERMS OF  
HEIGHT, OF COURSE.)

What the Gecko lacks in stature he certainly makes up for in ability. In fact, under the ownership of Warren Buffett's Berkshire Hathaway Inc., he's helped GEICO rise to become the nation's third-largest car insurance company. Of course, the fact that GEICO has been helping people save money on car insurance for over 70 years hasn't hurt either. And when it comes to financial security, GEICO is consistently ranked "excellent" or better by independent experts. But even though it's not common practice to have geckos in the highest levels of business, this one inspired three million drivers to switch to GEICO last year (and never missed a day of work). Perhaps proving that you can be both big and small at the same time.

**GEICO**

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GEICO is the third-largest private passenger auto insurer in the United States based on 2008 market share data as reported by the National Association of Insurance Commissioners, March 2009. At December 31, 2008 Government Employees Insurance Company had admitted assets of \$12.5 billion, and policyholder surplus of \$4.1 billion (including \$33.4 million in paid up capital stock). Total liabilities were \$8.4 billion, including \$7.7 billion in reserves. Additional information is available at: <http://www.geico.com/about/corporate/financial-information>. Government Employees Insurance Co. • GEICO General Insurance Co. • GEICO Indemnity Co. • GEICO Casualty Co. These companies are subsidiaries of Berkshire Hathaway Inc. GEICO: Washington, D.C. 20076. GEICO Gecko image © 1999 – 2009. © 2009 GEICO





**THE VILIV S7'S touchscreen is easily the device's best feature.**

## Touchscreen Saves Tablet Netbook

AT 8.3 BY 4.6 BY 1.0 inches and 1.76 pounds, the Viliv S7 tablet netbook is tiny. Yet it has enough going for it that I'd consider buying one if not for the projected \$800 asking price. Viliv provided us with a production-level unit but warned us that specs haven't been finalized.

Unfortunately, the keyboard and mouse-button layout is insane, with an odd cluster of punctuation buttons in the lower-right part of the keyboard arranged seemingly at random. The unit's mousing strike zone is the worst I've ever seen, too.

The 7-inch touchscreen is a 1024-by-600-pixel backlit beauty with fairly good viewing angles and the ability to fold back into a tablet.

The S7 in its current form is a flawed product, but it has the potential to become a popular digital sidekick.

—Darren Gladstone

**Viliv S7 | Viliv**

Not yet rated

Poor touchpad and steep price mar an interesting netbook package.

List: \$800

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## DOWNLOAD THIS

### Helpful Assistants for Firefox and Windows

THE MORE YOU rely on your Firefox browser and your Windows OS, the more you notice their flaws. We've found three helpful downloads to improve these ubiquitous programs. An add-on protects you from sneaky Flash cookies in Firefox. A utility finds the reason

behind Windows' dreaded Blue Screen of Death; another beefs up mouseover tooltips for better file management. Each is free, making them all the better.

#### Better Privacy

Firefox add-on Better Privacy can get rid of privacy-busting Flash cookies, also known as local shared objects (LSOs), which many sites use to supplement their normal HTTP cookies. Flash cookies can perform many of the same tasks as HTTP cookies, including saving preferences and tracking where you surf, but you can't use basic browser options to delete them, as you can regular cookies. The straightforward Better Privacy add-on automatically determines where LSOs exist on your hard drive, and you can set it to delete them automatically when your browser starts or exits, or after a certain amount of time. By default the add-on displays a small confirmation pop-up when you close the browser, before it deletes anything.

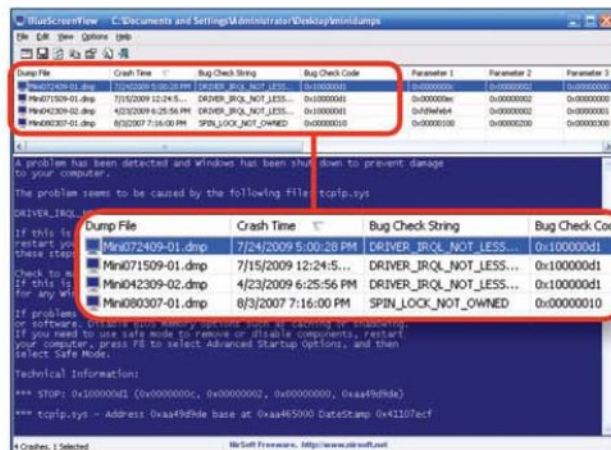
If you're concerned about maintaining your privacy online and you use Firefox, you'll want Better Privacy. [find.pcworld.com/63668](http://find.pcworld.com/63668)

—Erik Larkin

#### BlueScreenView

You've probably seen a Blue Screen of Death. The culprit may simply be a bad driver, and your machine will reboot politely. Or it may be something more serious, such as a hardware failure. Either way, it's a sign of system instability. But a BSOD is usually cryptic, and since Windows usually reboots itself automatically within a short period of time—with no assurance that you won't get the same error—you need analytical help from BlueScreenView.

BSV opens, displays, and interprets the data that Windows saves in minidump (.dmp) files, which usually appear in C:\Windows\Minidump after a BSOD. Once you've pointed BSV at the minidump folder (you can't just drag and drop or open a minidump file with the program),



**BLUESCREENVIEW ANALYZES MINIDUMP (.dmp) files to find the problems underlying an occurrence of the Blue Screen of Death.**

you'll be able to see the exact programs and DLLs involved in the crash, all the DLLs running at the time, or even a simulated BSOD. This information helps experienced users diagnose the cause of the crash in a minimal amount of time. And less-savvy users can relay it to a more-savvy pal on the phone for quicker analysis of what went wrong. [find.pcworld.com/63666](http://find.pcworld.com/63666)

—Jon Jacobi

#### InfoTag Magic

InfoTag Magic is a shell extension that simplifies the task of browsing for files—especially music files—on your PC. It enhances the often useless file tooltips (the white boxes that pop up when you hover your pointer over files) with extra information, so you can learn more about a file without wasting time opening it. If you already tend to find the right files in Windows Explorer pretty quickly, InfoTag Magic may not do much for you. But if you work with music files extensively, or have lots of text files scattered across your system, this can be a very useful program. [find.pcworld.com/63665](http://find.pcworld.com/63665)

—Gabe Gralla





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# Inside Windows

After the Vista disaster, expectations for Microsoft's new operating system are high. Can it deliver? We'll discuss our favorite features, detail exclusive performance tests from the PC World Test Center, and explain how to make a smooth transition to Windows 7.





## Features

63

Will Windows 7 cause you to avert your eyes from Vista and make XP your ex-OS? Harry McCracken examines Microsoft's new operating system from stem to stern.

**PCW Test  
Center**

## Performance

75

A crucial issue for any new OS is its effect on system performance. We tested Windows 7 to see whether the OS upgrade represents a performance downgrade.

## Upgrading

81

Okay, you've decided to upgrade to Windows 7—but what's the best way to go about it? Lincoln Spector shows how to make your upgrade as painless as possible.

ILLUSTRATION BY KEITH NEGLEY





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# Windows 7 Not Flashy, Just Effective

Microsoft's new OS won't blow you away with major innovations, but it gets the basics right. Here's what you'll love about Windows 7—and what you'll still complain about.

BY HARRY McCracken  
ILLUSTRATIONS BY KEITH NEGLEY





WHAT IF A NEW VERSION of Windows didn't try to dazzle you? What if, instead, it tried to disappear except when you needed it? Such an operating system would dispense with glitzy effects in favor of low-key, useful new features. Rather than pelting you with alerts, warnings, and requests, it would try to stay out of your face. And if any bundled applications weren't essential, it would dump 'em.

It's not a what-if scenario. Windows 7, set to arrive on new PCs and as a shrink-wrapped upgrade on October 22, has a minimalist feel and attempts to fix annoyances old and new. In contrast, Windows Vista offered a flashy new interface, but its poor performance, compatibility gotchas, and lack of compelling features made some folks regret upgrading and others refuse to leave Windows XP.

Windows 7 is hardly flawless. Some features feel unfinished; others won't realize their potential without heavy lifting by third parties. And some long-

standing annoyances remain intact. But overall, the final shipping version I test-drove appears to be the worthy successor to Windows XP that Vista never was.

Of course, an OS can't be a winner if it turns a zippy PC into a slowpoke or causes installation nightmares. Consult "Much Slimmer and Slightly Faster" (page 75) for Windows 7 performance test results, and "The Smartest Way to Upgrade" (page 81) for hands-on advice on how to install it. Read on here for an in-depth look at how Windows 7 has changed the OS—mostly for the better.

**85**

VERY GOOD

Windows 7 Ultimate | Microsoft

This workmanlike operating system is a practical, well-designed, and slightly faster upgrade over Vista.

Street: \$320

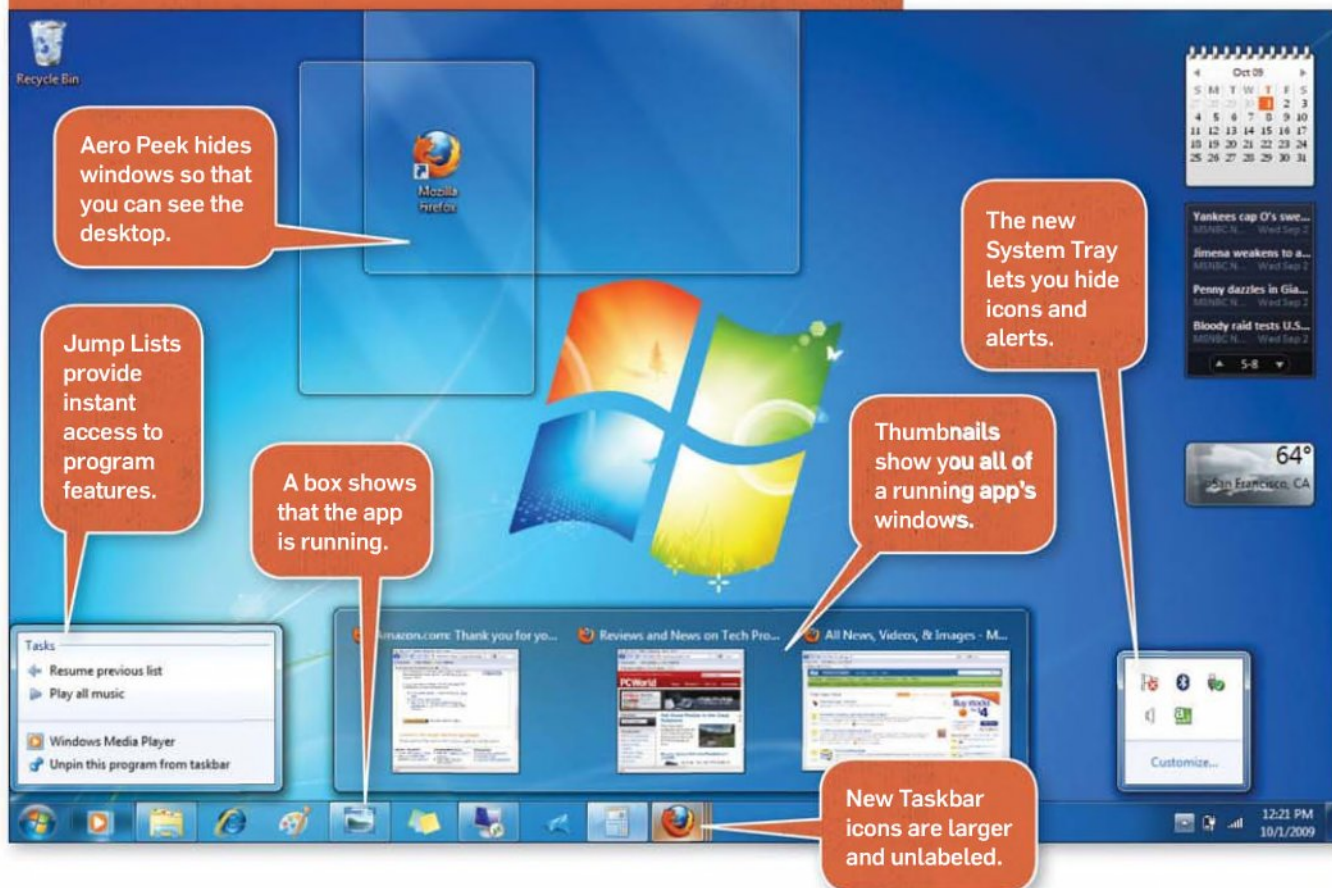
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## Interface: The New Taskmaster

The Windows experience occurs mainly in its Taskbar—especially in the Start menu and System Tray. Vista gave the Start menu a welcome redesign; in Windows 7, the Taskbar and the System Tray get a thorough makeover.

The new Taskbar replaces the old small icons and text labels for running apps with larger, unlabeled icons. If you can keep the icons straight, the new design painlessly reduces Taskbar clutter. If you don't like it, you can shrink the icons and/or bring the labels back.

## Meet the New Windows 7 Taskbar





In the past, you could get one-click access to programs by dragging their icons to the Quick Launch toolbar.

Windows 7 eliminates Quick Launch and folds its capabilities into the Taskbar. Drag an app's icon from the Start menu or desktop to the Taskbar, and Windows will pin it there, so you can launch the program without rummaging around in the Start menu. You can also organize icons in the Taskbar by moving them to new positions.

To indicate that a particular application on the Taskbar is running, Windows draws a subtle box around its icon—so subtle, in fact, that figuring out whether the app is running can take a moment, especially if its icon sits between two icons for running apps.

In Windows Vista, hovering the mouse pointer over an application's Taskbar icon produces a thumbnail window view known as a Live Preview. But when you have multiple windows open, you see only one preview at a time. Windows 7's version of this feature is slicker and more efficient: Hover the pointer on an icon, and thumbnails of the app's windows glide into position above the Taskbar, so you can quickly find the one you're looking for. (The process would be even simpler if the thumbnails were larger and easier to decipher.)

Also new in Windows 7's Taskbar is a feature called Jump Lists. These menus resemble the context-sensitive ones you get when you right-click within various Windows applications, except that you don't have to be inside an app to use them. Internet Explorer 8's Jump List, for example, lets you open the browser and load a fresh tab, initiate an InPrivate stealth browsing session, or go directly to any of eight frequently visited Web pages. Non-Microsoft apps can offer Jump Lists, too, if their developers follow the guidelines for creating them.

Other Windows 7 interface adjustments are minor, yet so sensible that you may wonder why Windows didn't include them all along. Shove a window into the left or right edge of the screen and it'll expand to fill half of your desk-

## Windows 7's Ten Best Features

For once, Microsoft has focused on putting the user in control.

**1. THE TASKBAR RELOADED:** Windows 7's version of the Taskbar is less cluttered than Vista's, and it handles both running and nonrunning apps with equal aplomb.

**2. SLICKER, QUICKER TASKBAR PRE-VIEWS:** Now they show you all of an application's open windows, all at once.

**3. THE CONVENIENCE OF JUMP LISTS:** These context-sensitive Taskbar menus let you start accomplishing things in applications before you even open them.

**4. A SYSTEM TRAY YOU CAN LOVE:** New controls prevent the System Tray from overflowing with unwanted apps and distracting you with unhelpful, irrelevant messages.

**5. A MORE MEDIA-SAVVY WINDOWS MEDIA PLAYER:** Love Apple's iTunes Store but hate iTunes? New file-format support enables Windows Media Player 12 to play back unprotected audio and video from Apple's online store.

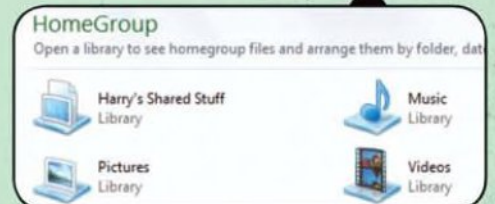


**6. ALERTS VIA ACTION CENTER:** Windows 7's version of Vista's Security Center queues up system messages so that you can

respond to them on your schedule—not when Windows feels like interrupting you.

**7. USER ACCOUNT CONTROL THAT YOU CONTROL:** If you're okay with this security feature's raison d'être but can't stand the rapid-fire prompts in Vista, take heart: You can tune Windows 7's versions to make them less paranoid and intrusive.

**8. LIBRARY PRIVILEGES:** You can bundle folders from locations all across your hard drive into Libraries designed to



provide one-click access from the left pane of Windows Explorer to related files.

**9. REASONABLE HARDWARE REQUIREMENTS:** Historically, new versions of Windows have gobbled up twice the amount of CPU power and RAM that their predecessors did. But Windows 7 runs a bit better than Vista on the same system; it's even tolerable on a netbook.

**10. THE POTENTIAL OF TOUCH:** Windows 7's support for multitouch input doesn't change anything overnight—but it does lay necessary groundwork for third-party developers to build their own software. If they build killer touch apps, Windows 7 deserves some of the credit.

top. Nudge another into the opposite edge of the screen, and it'll expand to occupy the other half. That makes comparing two windows' contents easy. If you nudge a window into the top of the screen, it will maximize to occupy all of the display's real estate.

The extreme right edge of the Taskbar now sports a sort of nub; hover over it, and open windows become transparent, revealing the desktop below. (Microsoft calls this feature Aero Peek.) Click

the nub, and the windows scoot out of the way, giving you access to documents or apps that reside on the desktop and duplicating the Show Desktop feature that Quick Launch used to offer.

Getting at your desktop may soon become even more important than it was in the past. That's because Windows 7 does away with the Sidebar, the portion of screen space that Windows Vista reserved for Gadgets such as a photo viewer and a weather applet. »



Instead of occupying the Sidebar, Gadgets now sit directly on the desktop, where they don't compete with other apps for precious screen real estate.

**OLD TRAY, NEW TRICKS** Windows 7's Taskbar and window management tweaks are nice. But its changes to the System Tray—aka the Notification Area—have a huge positive effect.

In the past, no feature of Windows packed more frustration per square inch than the System Tray. It quickly grew dense with applets that users did not want in the first place, and many of the uninvited guests employed word balloons and other intrusive methods to alert users to uninteresting facts at inopportune moments. At their worst, System Tray applets behaved like belligerent squatters, and Windows did little to put users back in charge.

In Windows 7, applets can't pester you unbidden because software installers can't dump them into the System Tray. Instead, applets land in a holding pen that appears only when you click it, a much-improved version of the overflow area used in previous incarnations of the Tray. Applets in the pen can't float word balloons at you unless you permit them to do so. It's a cinch to drag them into the System Tray or out of it again, so you enjoy complete control over which applets reside there.

More good news: Windows 7 largely dispenses with the onslaught of word-balloon warnings from the OS about troubleshooting issues, potential security problems, and the like. A new area called Action Center—a revamped version of Vista's Security Center—queues up such alerts so you can deal with them at your convenience. Action Center does issue notifications of its own from the System Tray, but you can shut these off if you don't want them pestering you.

All of this helps make Windows 7 the least distracting, least intrusive Microsoft OS in a very long time. It's a giant step forward from the days when Windows thought nothing of interrupting your work to inform you that it had detected unused icons on your desktop.

## Windows XP: Now and Forever?

Nominally, Windows 7 is an upgrade to Windows Vista. But what everyone wants to know is whether it's better than Windows XP.

THE VAST MAJORITY of PC users never adopted Vista. Eight years after its release, and months after Microsoft officially discontinued it, Windows XP is still beloved.

Will Windows 7 convince XP loyalists to switch? In August, we conducted an online survey of more than 8000 people who told us that XP was their primary OS. The top three reasons they haven't upgraded to Vista: satisfaction with XP, lack of desirable Vista-only features, and concern over driver and compatibility issues.

Vistaphobia ran high among respondents who had tried Vista or who merely knew of it (62 percent and 81 percent, respectively, said their opinion of the OS was somewhat or very negative). Most of our respondents said that they had an open mind about Windows 7.

Of the 26 percent of respondents who said they had already used Windows 7, 73 percent had a somewhat or very positive opinion of Win 7, while 11 percent viewed it very or somewhat negatively. Also, 56 percent said they intended to move to Windows 7 immediately or eventually. Among respondents who had read about Windows 7 but hadn't used it, 56 percent said their opinion of the OS was somewhat or very positive; only 12 percent said it was somewhat or very negative.

Still, 40 percent said that they intended to stick with XP indefinitely. But when will it become impractical to keep using XP?

Microsoft formally discontinued Windows XP on June 30, 2008, and it ended mainstream support on April 14, 2009.

But the company will permit PC builders to ship Windows 7 machines with XP downgrades for 18 months after Win 7's release or until it ships the first Service Pack for the new OS—whichever comes first.

But as of April 8, 2014, Microsoft has announced, it will no longer take support calls and issue security fixes for Windows XP. And from that point on, XP holdouts, you'll be on your own.



## File Management: The Library System

Compared to the Taskbar and the System Tray, Explorer hasn't changed much in Windows 7. However, its left pane does sport two new ways to get at your files: Libraries and HomeGroups.

Libraries could just as appropriately have been called File Cabinets, since they let you collect related folders in

one place. By default, you get Libraries labeled Documents, Music, Pictures, and Videos, each of which initially directs you to the OS's standard folders for storing the named items—such as My Pictures and Public Pictures.

To benefit from Libraries, you have to customize them. Right-click any folder on your hard drive, and you can add it to any Library; for instance, you can transform the Pictures Library into a



collection of all your folders that contain photos. You can create additional Libraries of your own from scratch, such as one that bundles up all folders that relate to your vacation plans.

Libraries would be even more useful if Microsoft had integrated them with Saved Searches, the Windows feature (introduced in Vista) that lets you create virtual folders based on searches, such as one that tracks down every .jpg image file on your system. But while Windows 7 lets you add standard folders to a Library, it doesn't support Saved Searches.

**HOMEGROUPS, SWEET HOMEGROUPS?** Closely related to Libraries are HomeGroups, a new feature designed to simplify the notoriously tricky process of networking Windows PCs. Machines that are part of one HomeGroup can selectively grant each other read or read/write access to their Libraries and to the folders they contain, so you can perform such mundane but important tasks as providing your spouse with access to a folderful of tax documents on your computer. HomeGroups can also stream media, enabling you to pipe music or a movie off the desktop in the den onto your notebook in the living room. And they let you share a printer connected to one PC with all the other computers in the HomeGroup, a useful feature if you can't connect the printer directly to the network.

HomeGroups aren't a bad idea, but Windows 7's implementation seems half-baked. HomeGroups are password-protected, but rather than inviting you to specify a password of your choice during initial setup, Windows assigns you one consisting of ten characters of alphanumeric

gibberish and instructs you to write it down so you won't forget it. To be fair, passwords made up of random characters provide excellent security, and the only time you need the password is when you first connect a new PC to a HomeGroup. But it's still a tad

are running Windows 7, a scenario that won't be typical anytime soon. A version that also worked on XP, Vista, and Mac systems would have been cooler.

Federated Search, a new Windows Explorer feature, feels incomplete, too. It uses the OpenSearch standard ([find.pcworld.com/63700](http://find.pcworld.com/63700)) to give Win

7's search "connectors" for external sources. That capability allows you to search sites such as Flickr and YouTube from within Explorer. Pretty neat—except that Windows 7 doesn't come with any of the connectors you'd need to add these sources, nor with any way of finding them. (They are available on the Web, though. Use a search engine to track them down.)

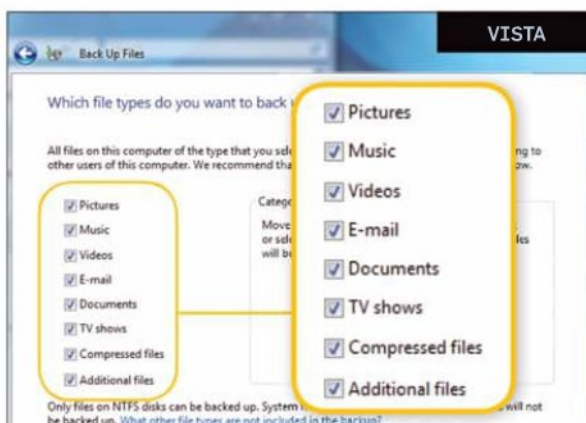
## Security: UAC Gets Tolerable

Speaking of annoying Windows features, let's talk about User Account Control—the Windows Vista security element that was a poster child for everything that rankled people about that OS. UAC aimed to prevent rogue software from tampering with your PC by endlessly prompting you to approve running applications or changing settings. The experience was so grating that many users preferred to turn UAC off and take their chances with Internet attackers. Those who left it active risked slipping into the habit of incautiously clicking through every prompt, defeating whatever value the feature might have had.

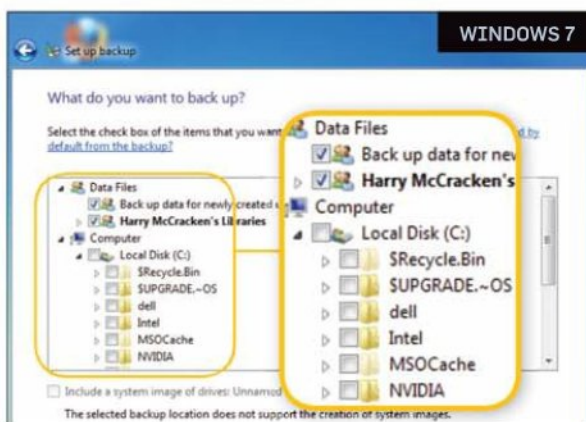
Windows 7 gives you control over UAC, in the form of a slider containing four security settings. As before, you can accept the full-blown UAC or elect to disable it. But you can also tell UAC to notify you only when software chang- ➤

## Windows 7 vs. Vista

Windows 7's **Backup and Restore Center** improves on Vista's, which didn't let you choose folders and files. But only 7's pricier editions permit backup to a network drive.



**Vista's** backup permits you to select only general types of documents for backing up.



**Windows 7** gives you file-by-file control.

peculiar that you can't specify a password you'll remember during setup—you can do that only after the fact, in a different part of the OS. More annoying and limiting: HomeGroups won't work unless all of the PCs in question



es Windows settings, not when you're tweaking them yourself. And you can instruct it not to perform the abrupt screen-dimming effect that Vista's version uses to grab your attention.

If Microsoft had its druthers, all Windows 7 users would use UAC in full-tilt mode: The slider that you use to ratchet back its severity advises you not to do so if you routinely install new software or visit unfamiliar sites, and it warns that disabling the dimming effect is "Not recommended." Speak for yourself, Redmond: I have every intention of recommending the intermediate settings to most people who ask me for advice, since those settings retain most of UAC's theoretical value without driving users bonkers.

Other than salvaging UAC, Microsoft has made relatively few significant changes to Windows 7's security system. One meaningful improvement: BitLocker, the drive-encryption tool included only in Windows 7 Ultimate and the corporate-oriented Windows 7 Enterprise, lets you encrypt USB drives and hard disks, courtesy of a feature called BitLocker to Go. It's one of the few good reasons to prefer Win 7 Ultimate to Home Premium or Professional.

Internet Explorer 8, Windows 7's default browser, includes many security-related enhancements, including a new SmartScreen Filter (which blocks dangerous Web sites) and InPrivate Browsing (which permits you to use IE without leaving traces of where you've been or what you've done). Of course, IE 8 is equally at home in XP and Vista—and it's free—so it doesn't constitute a reason to upgrade to Windows 7.

## Applications: The Fewer the Merrier

Here's a startling indication of how different an upgrade Windows 7 is: Rather than larding it up with new applications, Microsoft eliminated three non-essential programs: Windows Mail (née Outlook Express), Windows Movie Maker (which premiered in Windows Me), and Windows Photo Gallery.

Still present—and nicely spruced up—are the operating system's two applications for consuming audio and video, Windows Media Player and Windows Media Center. Windows Media Player 12 has a revised interface that divides operations into a Library view for media management and a Now Playing view for listening and watching stuff. Minimize the player into the Taskbar, and you get miniplayer controls and a Jump

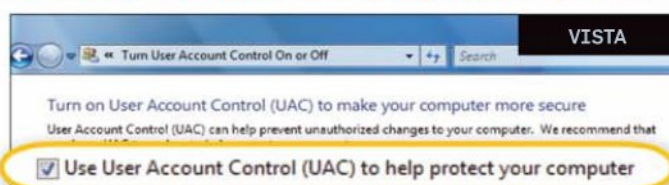
List, both of which let you control background music without having to leave the app you're in. Microsoft has added support for several media types that Media Player 11 didn't support, including AAC audio and H.264 video—the formats it needs to play unprotected music and movies from Apple's iTunes Store.

Media Center—not part of the bargain-basement Windows 7 Starter Edition—remains most useful if you have a PC configured with a TV tuner card and you use your computer to record TV shows à la TiVo. Among its enhancements are a better program guide and support for more tuners.

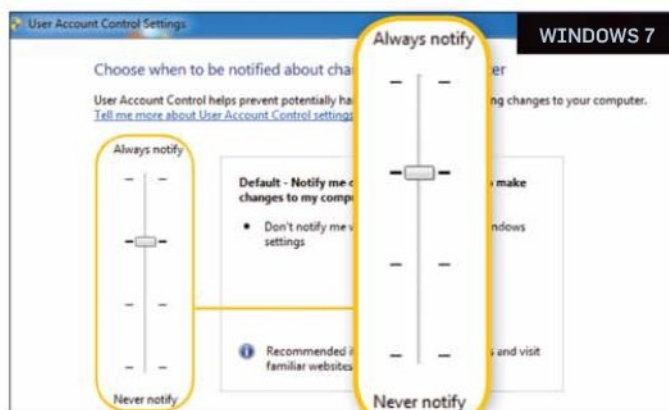
Windows Vista's oddly underpowered Backup and Restore Center let users specify particular types of files to back up (such as 'Music' and 'Documents') but not specific files or folders. Though Microsoft corrects that deficiency in Windows 7, it deprives Windows 7 Starter Edition and Home Premium of the ability to back up to a network drive. That feels chintzy, like a car company cutting back on an economy sedan's airbags. It also continues the company's long streak of issuing versions of Windows that lack a truly satisfying backup utility.

## Windows 7 vs. Vista

**User Account Control**, new in Vista, was supposed to keep users safe from malware, but its constant prompts and screen dimming angered many users.



Vista's UAC feature has two settings: on and off.



Windows 7's UAC has two intermediate settings to keep its security value but reduce its intrusiveness.

Users who don't want to give them up can find all three at [live.windows.com](http://live.windows.com) as free Windows Live Essentials downloads. They may even come with your new PC, courtesy of deals Microsoft is striking with PC manufacturers. But since they are no longer tied to the leisurely release schedules of Windows, they are far less likely than most bundled Windows apps to remain mired indefinitely in an underachieving state.



The new version of Paint has Office 2007's Ribbon toolbar and adds various prefabricated geometric shapes and a few natural-media tools, such as a water-color brush. But my regimen for preparing a new Windows PC for use will still include installing the impressive free image editor Paint.Net.

The nearest thing Windows 7 has to a major new application has the intriguing moniker Windows XP Mode. It's not a way to make Windows 7 look like XP—you can do that with the Windows Classic theme—but rather a way to let it run XP programs that are otherwise incompatible with Win 7. Unfortunately, only Windows 7 Professional, Enterprise, and Ultimate offer it, and even then it comes as an optional 350MB download that requires you to have Microsoft's free Virtual PC software installed and that only works on PCs with Intel or AMD virtualization technology enabled in the BIOS.

Once active, XP Mode lets Windows 7 run apps that supposedly aren't compatible by launching them in separate windows that contain a virtualized version of XP. Microsoft clearly means for the mode to serve as a security blanket for business types who rely on ancient, often proprietary programs that may never be rewritten for current OSs.

## Device Management: Setting the Stage

Windows 7 offers you numerous ways to connect your PC to everything from tiny flash drives to hulking networked laser printers—USB, Wi-Fi, ethernet, slots, and more. Devices and Printers, a new section of the Control Panel, represents connected gadgets with the largest icons I've ever seen in an operating system. (When possible, they're 3D renderings of the device; the one for Sansa's Clip MP3 player is almost life-size.)

More important, the OS introduces Device Stages—hardware-wrangling dashboards tailored to specific items of hardware, and designed by their manufacturers in collaboration with Micro- >>

## Ten Things That Still Need Fixing

Flawless? Windows 7? Of course not. Think of these ten areas as constituting a working to-do list for Windows 8.

**1. OVERALL CONSISTENCY:** For a Microsoft product, Windows 7 is quite refined. But it still suffers from needless inconsistency. Why do most of its tools place menus on the left, while Internet Explorer 8 and the help system shove them over to the opposite end? Does the new media-sharing feature (HomeGroup) have zero, one, or two capital letters? Why does Office 2007's Ribbon interface show up only in Paint and WordPad?

**2. THE NAMES OF THINGS:** Too often, Microsoft's naming decisions confuse rather than clarify. 'User Account Control' has nothing to do with the feature it supposedly describes; 'Action Center' sounds like Ron Burgundy's local TV newscast. And an OS that already has a feature called Device Manager shouldn't call a new feature 'Devices and Printers'.

**3. WINDOWS UPDATE:** The operating system's built-in patching capability is essential. But Windows Update is also the OS's most irritating carryover feature. Tell it to download and install everything without your further intervention (as Microsoft recommends), and it may still insist on rebooting when you are in the middle of important work—or deny you access to your computer altogether while it installs updates.

**4. SEARCH:** Windows 7's Federated Search lets you add external sources like Flickr and YouTube to Windows Explorer searches. But the OS doesn't help you find those sources and doesn't mention Federated Search in its help system.

**5. HELP:** Help...needs help. Some sections target nerdy command-line aficionados; others address clueless newbies. Few sections focus on intelligent-but-busy users of intermediate experience.

**6. FLIP3D:** Press Windows-Tab, and you get Vista's fancy 3D task switcher, which pointlessly requires you to cycle

through tasks one by one. This duplicates the functionality of Alt-Tab instead of enabling you to get to any task in a couple of clicks, as Apple's similar Exposé does.

**7. BACKUP:** Win 7's Backup and Restore Center no longer requires you to devote an external hard drive to a full system backup. But it still isn't as easy to use as Apple's Time Machine. And Microsoft's decision to put network backup only in Windows 7's priciest editions is just silly.

**8. VERSIONITIS:** Having multiple versions of Windows is fine in theory. But in reality, their minor, subtle, and arbitrary differences invite confusion. Misleading names like Windows 7 Home Premium—the only Windows 7 Home version available in the United States—don't help.

**9. INTERNET EXPLORER 8:** Windows 7's bundled browser is perfectly adequate. But it's playing catch-up with innovative competitors such as Firefox and Google's Chrome, not setting new standards.

**10. DOCUMENT VIEWING:** Like Vista, Windows 7 lets you create application-independent documents that use Microsoft's PDF-like XPS format to retain their original formatting. But PDF is pervasive and XPS hasn't caught on, so wouldn't it be infinitely more convenient if Windows 7 supported PDF out of the box?





soft. A Device Stage for a digital camera, for instance, may include a battery gauge, a shortcut to Windows' image-downloading tools, and links to online resources such as manuals, support sites, and the manufacturer's accessory store.

You don't need to rummage through the Control Panel or through Devices and Printers to use a Device Stage—that feature's functionality is integrated into Windows 7's new Taskbar. Plug in a device, and it will show up as a Taskbar icon; right-click that icon, and the Device Stage's content will at once appear as a Jump List–like menu.

Unfortunately, Device Stages were the one major part of Windows 7 that didn't work during my hands-on time with the final version of the OS. Earlier prerelease versions of Win 7 contained a handful of Device Stages, but Micro-

soft disabled them so that hardware manufacturers could finish up final ones before the OS hit store shelves in October. The feature will be a welcome improvement if device manufacturers hop on the bandwagon—and a major disappointment if they don't.

Even if Device Stages take off, most of their benefit may come as you invest in new gizmos—Microsoft says that it's encouraging manufacturers to create Device Stages for upcoming products, not existing ones. At least some older products should get Device Stages, though: Canon, for instance, told me that it's planning to build them for most of its printers. And Microsoft says that when no full-fledged Device Stage is available for a particular item, Windows 7 will still try to give you a more generic and basic one.

## Input: Reach Out and Touch Windows 7

The biggest user interface trend since Windows Vista shipped in January 2007 is touchscreen input; Windows 7 is the first version of the OS to offer built-in multitouch support (see "Windows 7: All About Touch," on page 72).

Windows 7's new touch features are subtle on a touch-capable PC and invisible otherwise. Swipe your finger up or down to scroll through document files and Web pages; sweep two fingers back and forth to zoom in and out. Dragging up on icons in the Taskbar reveals Win 7's new Jump Lists. The Taskbar button that reveals the Windows desktop is a bit bigger on touch PCs for easier use.

I installed the final version of Windows 7 and beta touchscreen drivers on an HP

## Feature Face-Off: Windows 7 Meets Snow Leopard

Neither Windows 7 nor Snow Leopard is a game changer in the eternal struggle of Apple vs. Microsoft, but here's a quick run-down of how the two latest combat units in the OS wars match up.

**FILE MANAGEMENT:** Both Snow Leopard's Finder and Windows 7's Explorer have quick-search fields in the upper-right corner, path bars, and sidebars for easy access to common locations on your computer.

taining all the photos from two other folders. On the other hand, you can't combine Windows 7 libraries with saved search results.

**QUICK ACCESS VIA DOCK OR TASKBAR:** Mac OS X's Dock has had features similar

pinning feature. Instead, Mac owners can use stacks in the Dock to provide quick access to folders and files (drag any folder to the Dock to create a stack).

**BOLSTERED OS X INLINE PREVIEWS:** To augment Leopard's preview features, Apple added an enhanced inline preview to the Finder's icon view in Snow Leopard. When you view a folder that uses icons of 64 by 64 pixels or larger, mousing over your files will display preview/playback controls. Windows 7 has an optional preview pane in Explorer, but its previews are basic.

**EXPOSÉ VS. AERO PEEK:** Part of Mac OS X since 2003, Exposé lets you view thumbnails of all open windows, or of open windows for one app, with a keystroke or mouse click. Windows 7 will show you thumbnails of open windows for individual apps when you click an app's taskbar icon; when you mouse over a window's thumbnail, the Aero Peek feature will hide all other windows. But in Win 7 you can't see thumbnails of all open windows side-by-side, as in Exposé.

—Nick Mediati



Windows 7 and Snow Leopard have a lot more features in common than spacey splash screens and an affinity for ridiculously large icons.

**SMART FOLDERS VS. LIBRARIES:** Nothing in Snow Leopard corresponds to Windows' libraries. OS X offers saved searches (as does Windows 7); but a saved search gathers files based on search criteria, not location, so you can't create a smart folder con-

to Windows 7's jump lists for years. Some OS X apps use the Dock's pop-up menus to display app-specific information and to offer easy access to frequently used commands.

**THE DOCK AND STACKS:** Snow Leopard has no feature exactly like the jump list's



TouchSmart all-in-one PC. The touch features worked as advertised. But applications written with touch as the primary interface will determine whether touch becomes useful and ubiquitous. Until they arrive, Windows will continue to feel like an OS built chiefly for use with a keyboard and mouse—which it is.

You might have expected Microsoft to reinvent familiar tools such as Paint and Media Player for touch input. But the closest it comes to that is with the Windows 7 Touch Pack, a set of six touch-based programs, including a version of Virtual Earth that you can explore with your finger, and an app that lets you assemble photo collages. The Touch Pack isn't part of Windows 7, but it will ship with some Win 7 PCs, and it's a blast to play with.

Still, ultimately, the Pack is just a sexy demo of the interface's potential, not an argument for buying a touch computer today. Third-party software developers won't start writing touch-centric apps in force until a critical mass of PCs can run them. That should happen in the months following Windows 7's release, as finger-ready machines from Asus, Lenovo, Sony, and other manufacturers join those from HP and Dell. And even then, touch input may not become commonplace on Windows 7 PCs. But if a killer touch app is out there waiting to be written, we may know soon enough.

## Bottom Line: Is Windows 7 Worth It?

Reading about a new operating system can tell you only so much about it: After all, Windows Vista had far more features than XP, yet fell far short of it in the eyes of many users. To judge an OS accurately, you have to live with it.

Over the past ten months, I've spent a substantial percentage of my computing life in Windows 7, starting with a preliminary version and culminating in recent weeks with the final Release to Manufacturing edition. I've run it on systems ranging from an underpowered Asus EeePC 1000HE netbook to a potent HP TouchSmart all-in-one. And I've used it to do real work, not lab routines.

The PC World Test Center's speed benchmarks on five test PCs showed Windows 7 to be faster than Vista, but only by a little; I've found it to be reasonably quick on every computer I've used it on—even the Asus netbook, once I upgraded it to 2GB of RAM. (Our lab tried Win 7 on a Lenovo S10 netbook with 1GB of RAM and found it to be a shade slower than XP; for details see

"Much Slimmer and Slightly Faster" on page 75.)

Here's a rule of thumb that errs on the side of caution: If your PC's specs qualify it to run Vista, get Windows 7; if they aren't, avoid it. Microsoft's official hardware configuration requirements for Windows 7 are nearly identical to those it recommends for Windows Vista: a 1-GHz CPU, 1GB of RAM, 16GB of free disk space, and a DirectX 9-compatible graphics device with a WDDM 1.0 or higher driver. That's for the 32-bit version of Windows 7; the 64-bit version of the OS requires a 64-bit CPU, 2GB of RAM, and 20GB of disk space.

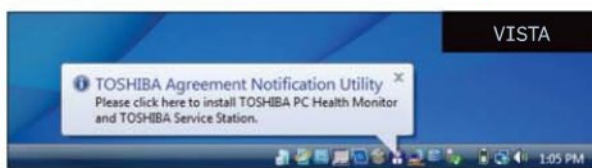
Fear of incompatible hardware and software is another understandable reason to be wary of Windows 7. One unfortunate law of operating-system upgrades—which applies equally to Macs and to Windows PCs—is that they will break some systems

and applications, especially at first.

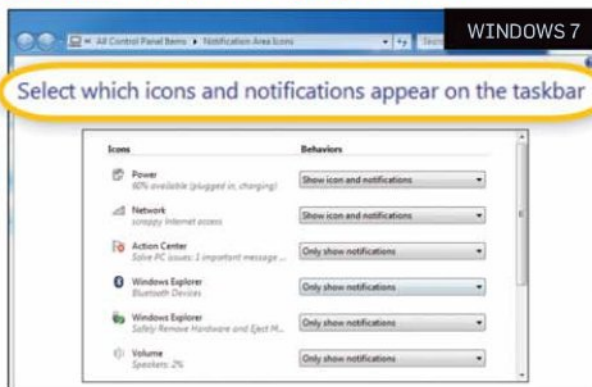
Under the hood, Windows 7 isn't radically different from Vista. That's a plus, since it should greatly reduce the volume of difficulties relating to drivers and apps compared to Vista's bumpy rollout. I have performed a half-dozen Windows 7 upgrades, and most of them went off without a hitch. The gnarliest problem arose when I had to track down a graphics driver for Dell's XPS M1330 laptop on my own—Windows 7 installed a generic VGA driver that »

## Windows 7 vs. Vista

Windows' **System Tray** had devolved into an ugly hangout where unwanted applets told you unnecessary things. Windows 7 finally fixes it.



Vista's System Tray rapidly fills up with icons and continually interrupts your work.



Windows 7 lets you block icons from settling in the Tray and allows you to hide their alerts.

Usually, I've run the OS in multiboot configurations with Windows Vista and/or XP, so I've had a choice each time I turned the computer on: Should I opt for Windows 7 or an older version of the OS? The call has been easy to make, because Win 7 is so pleasant to use.

So why wouldn't you want to run this operating system? Concern over its performance is one logical reason, especially since early versions of Windows Vista managed to turn PCs that ran XP with ease into lethargic underperform-



couldn't run the Aero user interface, and as a result failed to support new Windows 7 features such as thumbnail views in the Taskbar.

Microsoft's Collage tool shows off the power of touch-based input to good effect.

The best way to reduce your odds of running into a showstopping problem with Windows 7 is to bide your time. When the new operating system arrives on October 22, sit back and let the earliest adopters discover the worst snafus. Within a few weeks, Microsoft and other software and hardware companies will have fixed most of them, and your chances of a happy migration to Win 7 will be much higher. If you want to be really conservative, hold off on



moving to Win 7 until you're ready to buy a PC that's designed to run it well.

Waiting a bit before making the leap makes sense; waiting forever does not. Microsoft took far too long to come up with a satisfactory replacement for Windows XP. But whether you choose to install Windows 7 on your current

systems or get it on the next new PC you buy, you'll find that it's the unassuming, thoroughly practical upgrade you've been waiting for—flaws and all. ●

Former PC World editor-in-chief Harry McCracken now blogs at his own site, *Technologizer* ([www.technologizer.com](http://www.technologizer.com)).

## Windows 7: Getting in Touch With Touch

The new OS's support for touchscreens should encourage a flurry of third-party applications.

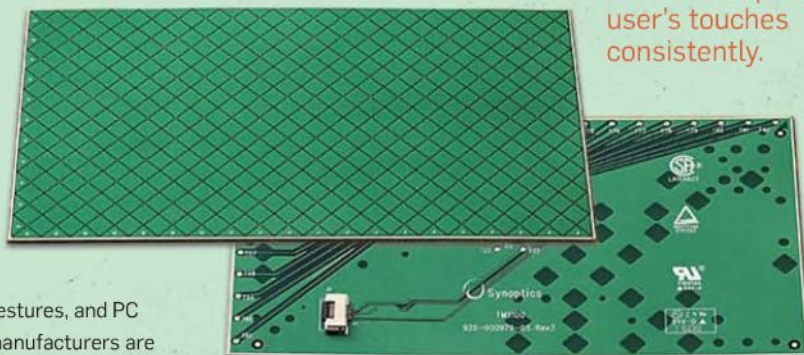
BEFORE WINDOWS 7, touchscreen support wasn't part of the Windows operating system itself. Instead, all-in-one PC vendors used stopgaps ranging from HP's elegant TouchSmart suite of software to kludgy touchscreen apps from MSI and Asus.

But Microsoft's new OS supports touch

pad maker Synaptics to standardize on common gestures between touchpad and screen.

"The experience on the screen should be the same on the touchpad," explains Ted

Touchpads that use Synaptics Gesture Suite software enable PCs to interpret user's touches consistently.



gestures, and PC manufacturers are likely to take advantage of the growing popularity of touchscreen interfaces. By the time Microsoft releases Windows 7, we should see quite a few announcements for multitouch all-in-one PCs and laptops, with more due in 2010.

The evolution of touch on Windows 7 owes a lot to Microsoft's collaboration with touch-

Theocheung, a general manager at Synaptics. "We talked with Microsoft to eliminate this Wild West of gestures."

Since 2008 his company's Synaptics Gesture Suite software has supported gestures on touchpads. Apple introduced gesture-based navigation on its notebooks in 2008.

According to Theocheung, the basic gestures used for navigation will be a limited, shared set. "It's all about helping with basic navigation—pinch for zoom in and out, a gesture to rotate objects and images, and scrolling gestures with two fingers to move the screen up and down, or left and right."

Due out this fall, Synaptics' Gesture Suite 9.4 will introduce gestures that you can use on both the touchpad and the touchscreen. The final features of Synaptics' latest multitouch-capable Gesture Suite software were not available at press time, but you can expect Gesture Suite 9.4 to support a series of three- and four-finger gestures (Apple's newer laptops support four-finger gestures that relate to system commands).

Windows 7 will support scrolling and reverse-scrolling by touch, so you can move two fingers down the screen to scroll downward, or move them up the screen to scroll upward. Software developers can map gesture commands from the touchscreen to the touchpad. (Today, the rotation maps to a keystroke command.)

—Melissa J. Perenson



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- ◆ Intel Internal Graphics Media Accelerator 950
- ◆ Intel High Definition Audio
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- ◆ 2.4GHz wireless Keyboard (Track ball included), 1-mon Wireless Remote Controller
- ◆ Marvell88E8056 Gigabit Ethernet Controller
- ◆ 8-Channel High Definition Audio
- ◆ Multimedia Card Reader
- ◆ 7 USB 2.0 ports (1 Front, 6 Rear)
- ◆ 2 FireWire (IEEE 1394) port (1 Front, 1 Rear)
- ◆ Front 1/4" headphone / mic port
- ◆ ATI Digital Cable TV Tuner Internal (Optional)
- ◆ Dimensions 17" (W) x 18 1/2" (D) x 6 3/4" (H), Aluminum



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# Windows 7 Much Slimmer, Slightly Faster

**PCW Test  
Center**

Windows 7 is efficient enough to run even on netbooks with puny processors, but it's only marginally faster than Vista, according to PC World Test Center tests.

BY NICK MEDIATI

ILLUSTRATION BY KEITH NEGLEY





WINDOWS VISTA NEVER was particularly speedy in most people's eyes. Whether it deserved the reputation or not, the word on the street was that Vista was both slow and bloated.

Given that, it's no wonder that improving performance was one of Microsoft's design goals with Windows 7. Many reviewers have said that the new operating system feels faster than Vista. In our extensive PC World Test Center evaluations comparing the two, we found an increase in speed, though the overall improvement wasn't dramatic.

We installed Windows 7 on five computers (two desktop systems, two laptop PCs, and a netbook), and put the systems through our WorldBench 6 benchmark suite, which consists of a number of tests that assess a machine's performance in popular, real-world applications. We also ran timed tests to measure how the two OSs affected boot-up and shutdown times, laptop battery life, and launch times for several common apps. (For more information, see "How We Test" on page 77.)

The verdict? Windows 7 makes some performance strides over Vista, though in some cases we saw no clear-cut winner, and in one area Windows 7 lagged considerably behind its predecessor.

## WorldBench 6 Test Results

Overall, Windows 7's performance improvement over Windows Vista is slight—but the important thing is that there is an improvement at all. For a breakdown of some of the performance scores, see the chart below.

On our E&C Black Mamba desktop (with a 2.66GHz Intel Core i7 processor, overclocked to 3.8GHz), Windows 7 Ultimate 64-bit earned a WorldBench 6 mark of 144, edging out Windows Vista Ultimate 64-bit, which scored 139. Here Windows 7 was roughly 3.6 percent faster than Windows Vista.

When comparing the two versions of Windows on the HP Pavilion a6710t desktop (with a 2.6GHz Pentium Dual Core E5300 CPU), we tested both the 32-bit and 64-bit editions of Windows Vista Ultimate and Windows 7 Ultimate. Running the 32-bit versions of Vista and Windows 7, the a6710t saw its WorldBench 6 score increase only a little, from 104 on the former to 106 on the latter. But on our WorldBench 6 tests comparing the 64-bit versions, it enjoyed a somewhat larger boost with Windows 7, going from a score of 96 on Vista to a mark of 103.

We saw similar incremental performance improvements on our portable test PCs as well. With the 32-bit versions of Vista Home Premium and Windows 7 Home Premium, our Gateway T-6815 notebook went from a WorldBench 6 score of 58 on the older OS to a result of 64 on the newer one. Our Lenovo IdeaPad Y530 laptop's WorldBench 6 score improved by only one point with Windows 7 in our comparison of 32-bit Ultimate editions (going from 83 to 84); when we tested the 64-bit editions of the two OSs, we again saw a modest boost, with the

## Windows 7 vs. Vista: Speed Test Results

The PC World Test Center put both Windows 7 and Windows Vista through extensive performance testing and found that the new operating system makes incremental improvements over its predecessor overall. Below are select results from the WorldBench 6 suite.

| TEST SYSTEM                  | WorldBench 6 (overall)    |               | DirectX 3D rendering  |               | Firefox   |               | Nero      |               | WinZip    |               |
|------------------------------|---------------------------|---------------|---|---------------|-----------|---------------|-----------|---------------|-----------|---------------|
|                              | Higher scores are better. |               | Lower times indicate better performance; all times are reported in seconds. |               |           |               |           |               |           |               |
|                              | Windows 7                 | Windows Vista | Windows 7   | Windows Vista | Windows 7 | Windows Vista | Windows 7 | Windows Vista | Windows 7 | Windows Vista |
| E&C Black Mamba (64-bit)     | 144                       | 139           | 244   | 263           | 169       | 171           | 203       | 218           | 147       | 153           |
| HP Pavilion a6710t (32-bit)  | 106                       | 104           | 375   | 378           | 262       | 256           | 313       | 365           | 203       | 222           |
| HP Pavilion a6710t (64-bit)  | 103                       | 96            | 399   | 404           | 264       | 271           | 314       | 688           | 208       | 219           |
| Gateway T-6815 (32-bit)      | 64                        | 58            | 719   | 1093          | 443       | 431           | 667       | 1648          | 449       | 495           |
| Lenovo IdeaPad Y530 (32-bit) | 84                        | 83            | 563   | 515           | 371       | 305           | 517       | 703           | 252       | 313           |
| Lenovo IdeaPad Y530 (64-bit) | 83                        | 79            | 572   | 532           | 373       | 320           | 530       | 1127          | 253       | 291           |

CHART NOTES: Bold text indicates better performance. All tests performed by the PC World Test Center in August 2009, using the final release version of Windows 7 and Windows Vista Service Pack 2. We tested the HP Pavilion a6710t and the Lenovo IdeaPad Y530 first with the 32-bit Windows Vista Ultimate and Windows 7 Ultimate, and then again with the 64-bit versions of both OSs.



Y530's score increasing from 79 to 83.

Windows 7 makes big gains in disk performance, however. For example, in our hard-disk-intensive WorldBench 6 Nero test—in which we create a series

## Windows 7 vs. Vista

**In our WorldBench 6 Nero tests, Windows 7 showed big improvements. Performance nearly doubled on average over Vista, which indicates that the new OS enhances hard-disk performance.**



\*Average of results from six test PCs.  
Lower time equals better performance.

of images of an optical disc and then save them—every PC we tested showed an improvement. In our comparison of the 64-bit versions of Vista and Windows 7, the IdeaPad Y530 performed the test twice as quickly with the newer OS. Meanwhile, our Gateway T-6815 was almost two and a half times faster, going from a time of 1648 seconds to complete the test on Windows Vista to a time of 667 seconds on Windows 7. We had noticed a similar speedup on disk-intensive tests in our earlier evaluation of the Windows 7 release candidate; such gains may be due to updated hard-disk drivers under Windows 7.

One particular result worth noting: In our testing, the 64-bit versions of Vista produced poorer disk performance than the 32-bit Vista editions did. With Windows 7, however, Microsoft brought

## How We Test

Testing Windows performance isn't rocket science. Here's how the PC World Test Center compared Windows 7 and Vista.

**WORLD BENCH TESTING:** For this article, we ran our WorldBench 6 test suite on a set of five different PCs: two desktop systems (the high-end E&C Black Mamba PC and the mainstream HP Pavilion a6710t), two laptop systems (the budget Gateway T-6815 and the mainstream Lenovo IdeaPad Y530), and one netbook (the Lenovo IdeaPad S10-2). On the two desktops and two laptops, we compared Windows 7 against Windows Vista.

Unlike many benchmark tools, our WorldBench 6 test suite is a real-world benchmark. We test systems by running actual, commonly used applications, not synthetic, arbitrary benchmarks, to give you a better idea of how well a machine will perform in daily, regular use. For more details about WorldBench 6, point your browser to [find.pcworld.com/63704](http://find.pcworld.com/63704).

**BATTERY LIFE:** To test laptop battery life, we alternate between 15 minutes of typing and 15 minutes of full-screen video playback. We repeat the process until the battery dies. We run the test twice and then average the scores. If the scores differ by more than 10 percent, we run the test a third time and take the closest two scores for the average.

**SPEED:** For boot-up and shutdown times, a member of the PC World Test Center hand-times our speed tests. To ensure consistent results in these tests, we repeat each test ten times and then calculate the average for each. We mea-

sure startup times from when we press the computer's power button until the Windows desktop loads (defined for these purposes as when the mouse pointer and the desktop background appear). We measure shutdown times from when we click the Start menu's

Shut Down button until the PC completely powers down and the power lights (if present) go dark.

**APPLICATION LAUNCH TIMES:** To test application launch times for this article, we used Microsoft Word 2007 and Excel 2007, plus Adobe Photoshop CS4. Photoshop CS4 opened in 32-bit mode on 32-bit systems, and in 64-bit mode on 64-bit PCs. For Word, we

launched the program and then opened a two-page document. We used a similar process for Excel and Photoshop, except that we opened a 10-page document in Excel and we opened both a PDF file and a JPEG image in Photoshop CS4. We ran these tests three times per application to ensure consistent results.

When measuring app launch times, we began timing from when we clicked the app or document's icon to when the program was fully loaded and usable.

**NETBOOK:** On the Lenovo netbook, we compared Windows 7 with Windows XP, since XP is the operating system that most netbook models ship with today. For more on the performance results we achieved with those two OSs, see "Windows 7 on Netbooks" on page 79.

### PCW Test Center

WorldBench 6 is a real-world test suite that includes actual, commonly used applications, not arbitrary benchmarks.

## Boot-Up, Shutdown

Microsoft says that in Windows 7 it changed the way the operating system handles starting up processes when you boot your computer. For some »

the 64-bit versions' disk performance more in line with that of the 32-bit versions. That explains the larger WorldBench 6 score advantages over Vista that we saw from 64-bit Windows 7 compared with 32-bit Windows 7.



processes and services, Microsoft employs a scheme called *trigger-start services*. These are system services and processes that under Vista would have started up when you booted your PC, but now kick in only as needed. One example Microsoft gives is Windows 7's handling of Bluetooth: Instead of launching at system boot, Bluetooth now starts up when you use a Bluetooth device with your PC. Reducing the number of services that start at boot is supposed to reduce boot-up time.

In our boot-up tests using one desktop and one laptop, though, we saw mixed results. On our Gateway T-6815 laptop, Windows Vista Home Premium (32-bit) had the advantage, booting up in 39.6 seconds on average. Windows 7 Home Premium (also the 32-bit edition) took slightly longer, averaging 43.6 seconds. On our HP Pavilion a6710t test desktop, the outcome was reversed. The 64-bit edition of Windows Vista Ultimate Edition booted in 55.2 seconds, whereas Windows 7 Ultimate Edition 64-bit came out slightly ahead, booting in 48.3 seconds.

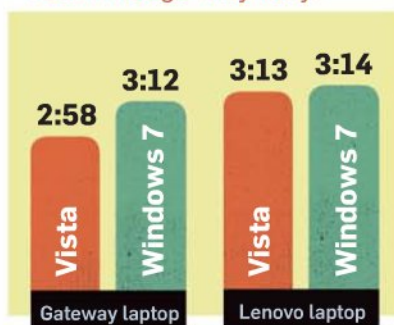
At first, we couldn't explain why the 64-bit edition of Windows 7 improved the boot-up time over Vista (on the HP desktop) while the 32-bit edition of the new OS lagged behind its predecessor (on the Gateway laptop). In subsequent testing, however, we discovered that the 32-bit version of Windows 7 exhibited a similar speedup on our HP desktop, going from an average of 54.5 seconds on Vista 32-bit to 47.7 seconds on Windows 7 32-bit. The upshot: Whether Windows 7 will start faster than Vista for you will likely depend on your particular computer's setup.

As for shutdown times, in our tests we observed no significant difference between Windows 7 and Windows Vista. On our Gateway T-6815 laptop, the 32-bit version of Windows Vista Home Premium shut down in 11.72 seconds on average. The 32-bit Windows 7 Home Premium took 11.57 seconds to shut down—an improvement of a mere 0.15

second. The results were just as tight on our HP a6710t desktop. The 64-bit Vista Ultimate shut down in 9.1 seconds on average, while the 64-bit Windows 7 Ultimate took 9.0 seconds—a negligible difference of just 0.1 second.

## Windows 7 vs. Vista

**Battery-life tests** were a wash. While one of our PCs gained 15 minutes of run time with Windows 7, the other improved by 1 minute. Your mileage may vary.



\*Times are in hours:minutes.  
Longer times indicate better performance.

To say that such results are too close to call would be an understatement: The difference between the two is so minor that you likely wouldn't notice it even if you had the OSs running side-by-side on identical hardware.

Granted, boot-up and shutdown times aren't as important today as they once were, now that many people use their computer's sleep or hibernate mode instead ([find.pcworld.com/63670](http://find.pcworld.com/63670)), but in either case you'll probably find only slight differences, if any.

## Battery Life

Another key aspect of performance for Windows 7 is energy efficiency. With the new OS, Microsoft is introducing technology aimed at reducing energy consumption and boosting battery life.

For instance, in a procedure that the company calls *timer coalescing*, Windows 7 will simultaneously perform certain routine tasks that require the processor, which in turn allows the computer to spend more time in lower-power mode.

In our tests, the Gateway T-6815 laptop gained an additional 15 minutes of battery life on average with Windows 7. Running under Windows Vista, the Gateway lasted 2 hours, 58 minutes on a single battery charge; under Windows 7 the notebook ran for 3 hours, 12 minutes. Our Lenovo Y530, in contrast, eked out an insignificant 1-minute improvement with Windows 7.

Of course, your individual system-performance gain will depend to a large extent on your setup, but our results were still encouraging. At best, your laptop will gain a few extra minutes of run time; at worst, the battery life will be about the same as it was under Windows Vista.

## Odd One Out: App Launch Times

As our tests demonstrate, Windows 7 makes many modest performance strides beyond its predecessor. Our evaluations of the two OSs also uncovered one notable exception, however: Windows 7 is consistently slower than Vista at launching applications.

In every timed application-launch test we performed, Windows 7 took anywhere from a trivial 0.7 second to nearly 7 seconds longer than Vista to open a program. The biggest difference involved the launching of Adobe Photoshop CS4 on our HP Pavilion a6710t desktop running the 64-bit versions of Vista and of Windows 7. Under Windows Vista Ultimate, Photoshop CS4 took 2.7 seconds to open, on average. Under Windows 7 Ultimate, Photoshop launched in 9.6 seconds.

In the other application-launching tests, the difference was no greater than 3.7 seconds on average—all in Windows Vista's favor. Keep in mind,



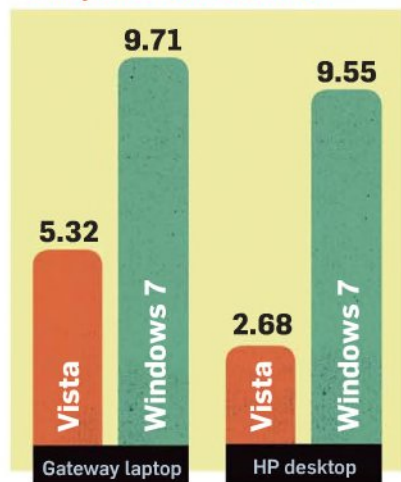
though, that while the percentage difference is sizable, the actual difference is only a few seconds. You may notice the slowdown, but it isn't as big a deal as the numbers might suggest.

## A Faster OS

Though Windows 7's performance improvements may not blow anyone away, Microsoft's new operating system proved speedier overall with every computer we tested it on. Of course, our tests were limited to five machines

## Windows 7 vs. Vista

**Launching Photoshop** took two to three times longer on the new OS, but that isn't a big deal—the difference was still just a few seconds.



\*Times are in seconds.  
Shorter times indicate better performance.

out of thousands of possible configurations available on the market, so your day-to-day results may vary.

Even so, the most important part of our conclusion stands: Windows 7 is faster than Windows Vista. In a world where upgrades are often performance downgrades, this may be the biggest Windows 7 feature of all. ●

## Windows 7 on Netbooks

Thinking of upgrading your tiny portable to Windows 7? Microsoft promises that the new OS will run smoothly on netbooks. But is it really worth taking the plunge?

MOST NETBOOKS available as of this writing ship with Windows XP. The few models that offer Windows Vista have performed sluggishly in our tests.

Microsoft, however, stresses that Windows 7 will run perfectly fine on netbooks. In fact, Microsoft now gears Windows 7 Starter Edition toward netbooks (Windows Vista Starter was available in only "emerging" markets). Though Windows 7 Starter Edition isn't quite as crippled as its Vista counterpart was—hooray, no more pesky three-application limit!—it still arbitrarily disables certain features. (No ability to change the desktop background? Lame!) If you own a netbook, you might want to consider purchasing a less-hamstrung (translation: more expensive) edition of Windows 7 instead.

On the other hand, you may want to stand pat with Windows XP. For this article, we tested Windows XP Home Edition and three editions of Windows 7 (Starter, Home Basic, and Home Premium) on a Lenovo IdeaPad S10-2

netbook with a 1.6GHz Intel Atom processor, and we discovered that Windows 7 ran slightly slower than XP did. Windows 7 Starter, intended for use on netbooks (or as Microsoft puts it, "low-cost small notebook PCs"), managed to reach a score of 31 in our WorldBench 6 test suite, while the other two Windows 7 editions topped out at a mark of 30. By comparison, Windows XP on the Lenovo earned a score of 33.

A three-point decline in WorldBench 6 score on a normal laptop isn't much of a drop, but on a netbook it represents a difference of roughly 10 percent. So while it looks as though Windows 7 will run on a netbook, you may want to take the OS for a spin on a demo netbook at a store before you decide to upgrade.

**In our tests using a Lenovo IdeaPad S10-2, we looked at how the performance of three different Windows 7 editions compared with that of Windows XP.**





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**Intel® Core™ 2 Duo Processor** (800MHz FSB)  
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# Windows 7

## The Smartest Way to Upgrade

Whether you're moving from Vista or from XP, we'll help you get up and running on Windows 7 without headaches.

BY LINCOLN SPECTOR  
ILLUSTRATIONS BY KEITH NEGLEY





**Upgrading your operating system** is always fraught with problems and anxiety, and quite often with disaster. But by taking the right precautions, gathering the needed materials, and hoping for the best while preparing for the worst, you can upgrade your PC without losing functionality or gaining gray hairs. I'm here to tell you how.

Since you're reading this, I'll assume that you have already made the decision to upgrade, have verified that your hardware is compatible, and have purchased your copy of the new OS. If you haven't yet checked your hardware, download and run the Windows 7 Upgrade Advisor ([find.pcworld.com/63569](http://find.pcworld.com/63569)).

**Note:** As a general rule, if you are running Vista, you probably already have Windows 7-capable hardware.

**You have one other early decision to make:**

Do you want to upgrade your current Windows installation, or go for a clean, fresh install? The upgrade is certainly easier—your applications, your settings, and your data travel with you, and there's little you have to do after the install itself is complete. After a clean or fresh or (Microsoft's word) *custom* install, you'll

have been made for you. For XP users, a custom install is the only option.

The following instructions will apply to both kinds of installations. I'll let you know when certain instructions are for only one group or the other.

## Prepare Your PC

You have a few chores to do before you insert the Windows 7 DVD.

First, consider the driver issue. If you're upgrading from Vista, chances are you'll have no driver problems. If you're currently on XP, you almost certainly will.

Make sure you can get Windows 7 or Vista drivers for your display, audio, and networking adapters.

**The free Upgrade Advisor utility checks your PC's hardware and software to ensure that they will still work with Windows 7.**



have to set up your users and network, reinstall your drivers and programs, and move your data back into place.

A custom install is cleaner than an upgrade. Windows accumulates garbage as you use it, and flushing it out every so often makes sense. So does starting a new version of the OS with a clean slate.

If you're currently using XP, the choice

If you use a wireless keyboard or mouse, you'll need to check the drivers for those, as well. If you are not sure how to identify them, consult Device Manager: In XP, select *Start*, right-click *My Computer*, select *Properties*, choose the *Hardware* tab, and click the *Device Manager* button. In Vista, click *Start*, type **device manager**, and press <Enter>. Don't

forget to check for such peripherals as printers and scanners, as well.

Once you know the devices, how do you find the drivers? Check the Windows 7 Compatibility Center at [find.pcworld.com/63672](http://find.pcworld.com/63672). At press time, that site—a holding page—was still “coming soon,” but in the meantime the Vista equivalent currently linked there is a good substitute, especially for people who are upgrading from XP to Windows 7. You can also check the Web sites of your device manufacturers.

Now would be a good time to update your firmware, as well, especially if you are not in the habit of doing so regularly. Go to your PC manufacturer's site for system firmware updates. Read “Firmware and You: A Comprehensive Guide to Updating Your Hardware” at [find.pcworld.com/63673](http://find.pcworld.com/63673) for more info.

No matter how good your precautions are, operating-system upgrades can still go horribly wrong. Some im-

portant program or device won't work in the new environment. Windows 7 won't boot. Or maybe you just don't like the new in-

terface. Whatever the reason, you will need to be prepared with a way to go back and restore your old setup.

An image backup of your hard drive offers an easy, dependable way to do just that, since it restores everything on the hard drive: Windows, applications, data, and even the Master Boot Record. To create one, you'll need an external hard drive and an image-backup program. I recommend the free version of Macrium Reflect ([find.pcworld.com/63521](http://find.pcworld.com/63521)) for image backup, although other utilities will do. Plug in the external hard drive before you create the image, and select that drive as the backup destination. In addition, be sure to create the bootable Rescue CD (this option is on Macrium Reflect's Other Tasks menu) before you start the upgrade.

An image backup of a really big hard





## Upgrade Checklist

Do you want to ensure a smooth transition to Windows 7? Confirm that you have all of the following at hand before you start the upgrade.

✓ **A COMPATIBLE PC:** Chances are that if your machine is running Vista, it will be able to run Windows 7. But to make sure, or if your system is currently running XP, download and run the Windows 7 Upgrade Advisor ([find.pcworld.com/63569](http://find.pcworld.com/63569)).

✓ **UPGRADE DISC AND PRODUCT ID:** Sorry, but you'll have to buy the upgrade in order to get the upgrade.

✓ **IMAGE-BACKUP SOFTWARE:** If the installation goes horribly wrong, an image backup can take you back where you came from. I recommend using the free version of Macrium Reflect ([find.pcworld.com/63521](http://find.pcworld.com/63521)).

✓ **AN EXTERNAL HARD DRIVE:** You will need something on which to put that

image backup. Look for an external drive that has at least

as much storage capacity as your computer's internal hard drive does.

✓ **PENCIL AND PAPER:** You will have to jot a few things down as you go along.

✓ **YOUR PROGRAMS IN INSTALLABLE FORM:** You can skip this one if you're doing an upgrade install, but if you want to start Windows 7 off with a clean slate, you'll need to reinstall every program currently on your PC that you want to keep.

✓ **TIME:** If you're lucky, you could have Windows 7 up and running in a couple of hours. But it could take all day—and that will be a day you'll be near your computer while having little or no access to it. Make sure you can afford that block of time.

✓ **A GOOD BOOK:** You'll be spending a lot of that time waiting.

drive can take hours. Run the backup overnight, with plans to do the upgrade itself the following morning.

Good morning. If you're performing a simple upgrade, you're done with the prep work and can skip to the next section, "Run the Upgrade." For a clean (aka custom) install, however, you have more preparation to do.

You need to gather up installable versions of all the programs on your hard drive that you want to keep. If you purchased a program as a physical package, you'll need the disc. If you downloaded

the program, you'll have to either find its installation file or download the latest version (really your best option). I suggest you make a stack of physical programs, and put the downloaded files into a folder in My Documents.

You also need the license or product ID numbers that prove you purchased each program. In the case of a physical package, this number is probably on the disc sleeve or somewhere on the box. If you purchased and downloaded the app online, it's probably in an old e-mail (let's hope you didn't delete it).

What if you can't find the license? Open the program and select *Help>About*. Your license or product ID will likely be there. Jot it down and triple-check it for accuracy. Or contact the vendor and see if they have it.

A utility called Product Key Explorer 2.2.1 ([find.pcworld.com/63674](http://find.pcworld.com/63674)) might also help, although in my experience it doesn't always. The free, demo version can't print or save what it finds, so you must either write the numbers down by hand (be sure to double-check them) or pay the \$30 registration fee.

## Run the Upgrade

Are you ready? It's finally time to take a deep breath, bite your lip, and bravely step forward into the next generation of Windows computing.

You can start the installation in one of two ways: Boot your PC from the Windows 7 Upgrade DVD, or insert the DVD while in your current version of Windows and start from there. If you're doing an upgrade installation, you'll have to take the latter path, starting from inside your current Windows. For a clean install, either way is fine.

Exactly what pages the installation wizard displays, and in what order, will depend on how you started the installation, what's already on your machine, and what choices you make. But here are some of the major options that you will see along the way.

**1.** Early on, the wizard will ask whether you want to check for compatibility online or to go ahead and install. The first option simply brings you to the Web page for the Windows 7 Upgrade Advisor. You should have run that by now, so just click *Install Now*.

**2.** After agreeing to the 5545-word End-User Licensing Agreement (no, I haven't read it either, but as someone who's paid by the word, I'm envious), you now have to make the big decision: an Upgrade or a Custom (clean) install. I've explained the reasons for picking one or the other back on page 82.

**3.** The wizard might ask you to »



pick a partition. Unless you're planning on a multiboot system, select the one with your current version of Windows.

**4.** If you're doing an upgrade install, you'll receive a compatibility report. It will warn you about certain issues (for instance, if you use Windows Mail, it will say that program is no longer included). The report may also tell you to cancel the upgrade and uninstall a particular, problematic app or driver. It's best to do what the report says.

**5.** If you're doing a clean install, a warning box will state that you are about to lose your existing version of Windows. You're not—you have your image backup. The warning will also declare that you won't lose your files; they will move to a new folder called C:/Windows.old. Be glad they are.

When the Installing Windows box appears with its list of automated tasks (Copying Windows files, Expanding Windows files, and so on), get up, jog, read a book, or take a nap. It could easily be an hour—maybe significantly more—before you'll be needed.

The wizard will eventually come back, this time running in Windows 7 on your hard drive. The new set of questions will be pretty self-explanatory, but a couple are worth noting.

**6.** You don't have to enter the Product Key when asked, although you will have to enter it eventually. If you click *Next* with the field blank, and then click *No*, the installation will continue. You can always enter the key and activate the new Windows once it's running and you're sure you like it. (See "Final Reminders" on page 86.)

**7.** One page, titled 'Help protect your computer and improve Windows automatically', offers options for how Windows will update itself. I recommend choosing the middle option, 'Install important updates only'.

When the wizard is done, your PC

will reboot and then return with the full, interactive version of Windows 7.

If you did an upgrade install, you're almost finished. But if you did a clean install, you still have a ways to go.

## Some More Steps and Tweaks

With Windows 7 up, lean back and admire the new look. It's lovely.

Unless, of course, the resolution is too low and all the objects on your screen are too big. If that's the case, right-click the desktop and select *Screen resolution* to fix the problem. You may have to do this again after reinstalling your video drivers, but you might not, and it's easy enough to do twice.

Check the lower-right corner (where the system tray

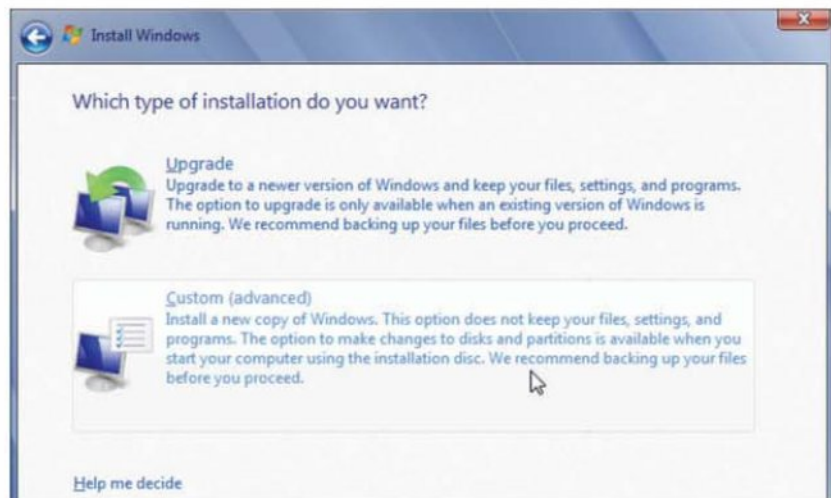
discover that everything is fine. If you did a clean upgrade from Vista, any problems you encounter should be easy to fix. But if you started with XP, expect some major challenges.

However you upgraded, select *Start*, type **device manager**, and press <Enter>. Do the following for any item accompanied by a yellow exclamation point: Double-click the item, and then click the *Update Driver* button. Select *Search automatically for updated driver software* and wait for the results. That should take care of any driver problems.

If it doesn't, and you performed a clean install from Vista, click the *Update Driver* button again. This time, click *Browse my computer for driver software*. For the path, enter **C:\Windows.old\Windows**, make sure that *Include subfolders* is checked, and then click *Next*. Chances are, these steps will work.

Why? Because along with your data, the installation program moved all of

From Vista, you can choose between upgrading your existing installation, or wiping it out and performing a clean (custom) install of Windows 7.



used to be) for a flag icon. If you see it, click it for a problem report. It will probably just tell you that you need antivirus software (which you know) and that Windows Defender has yet to scan your computer. But it might give some actual, useful advice.

With that taken care of, it's time to deal with your drivers. If you did an upgrade install from Vista (the only version you can do that from), you'll probably just check Device Manager and

your Windows files to the location C:\Windows.old—including all, or at least most, of your old drivers. But the installation program doesn't know to look for drivers where it put them.

However, these steps won't work if you upgraded from XP, even though the old drivers are in subfolders of C:\Windows.old, because Windows XP drivers aren't compatible with Vista.

So what can you do about drivers if you upgraded from XP? Before you go



any further, install and update your security software—antivirus, firewall, and so on. You're about to do some heavy Web surfing, and you will need up-to-date protection.

Go back to the Windows 7 Upgrade Advisor and look up the device there. If that doesn't help, do a Web search on the device name and 'Windows 7 driver', or even the name and 'Vista driver'.

If you did an upgrade installation, you're pretty much set—but jump to "Final Reminders" on page 86 for additional advice. Folks who performed a clean install have more work to do.

Your first job is to reinstall all of your programs. I told you to gather them up before the upgrade; now it's time to dig into that pile. The downloaded files, which I told you to store in a subfolder of My Documents, are now in a subfolder of C:\Windows.old\Documents and Settings\yourlogon\My Documents.

Start with your security software, if you haven't installed it already. Do the other applications in any order. Make sure you have the licenses and product IDs handy. And as soon as a program is installed, check for updates.

You created a log-on for yourself near the end of the installation process, but if other people use your PC and have had their own log-ons in the past, you'll need to re-create them. If you can't remember all the user names, use the folders inside c:\windows.old\users (or c:\windows.old\documents and settings, if you upgraded from XP) as a reference. To create additional user log-ons, select **Start•Control Panel** and then click **Add or remove user accounts**.

You don't have to create a Public or shared account. It's already there.

Now you're ready to restore your data. Luckily, thanks to the C:\Windows.old folder, this is actually pretty easy. Select **Start**, type **C:\users**, and press **<Enter>**. If you don't already have the c:\windows.old\users (or c:\windows.old\documents and settings) folder open, be sure to open it now.

At this point, you have two Explorer windows open. The windows.old »

## The XP-to-7 Upgrade Challenge

You had good reason to stick with XP and skip the Vista experience entirely. But now that the folks at Microsoft have created a new OS that's worth moving to, they haven't made the upgrade easy.

**HARDWARE:** Your hardware may not be up to the task of running Windows 7—and even if it is, your drivers won't work. Unfortunately, a simple upgrade install is out of the question, too; Microsoft requires that you XP users do a clean install.

It's a good idea for anyone contemplating

But XP Mode may not work on your PC. It requires a CPU with virtualization capabilities. Browse to the Microsoft page at [find.pcworld.com/63675](http://find.pcworld.com/63675) for instructions on how to find out whether your CPU has this feature and, if it does, how to turn it on.

XP Mode doesn't ship with Windows 7,



ing the upgrade to run the Windows 7 Upgrade Advisor first (see page 82); for XP users, this step is absolutely vital.

Upgrading your motherboard's firmware also becomes more important; check your system manufacturer's Web site to see if an upgrade is available.

**WINDOWS 7 CAN'T USE XP DRIVERS:** Check the Windows 7 Compatibility Center, which was still in its "coming soon" phase at the time of this writing (again, see page 82). The Vista version of the Compatibility Center can help, since Vista drivers work in XP, but the fit isn't perfect. Some Vista drivers download as .exe files that run exclusively in Vista.

Not all XP applications work in Vista, or in Windows 7, either. Again, the Compatibility Centers can tell you what works, what doesn't, and where you can download the necessary patches.

**WINDOWS XP MODE:** Windows 7's XP Mode could be the solution to your application compatibility problems. This mode runs XP in a virtual machine inside 7, although the user interface is more integrated than in most virtual machines. For instance, XP and 7 applications appear together on the same desktop.

**Moving from XP to Windows 7 gives you only one option, which is to perform a clean installation of the OS.**

but it's available as a free download (at [find.pcworld.com/63676](http://find.pcworld.com/63676)). It also comes with a full version of XP.

**ONE XP-TO-7 ISSUE IS JUST SOMETHING TO BE AWARE OF:** These two versions of Windows store your data files in different locations. The XP folder C:\Documents and Settings is now C:\Users. Application Data is now the abbreviated AppData. Local Settings\Application Data is now AppData\Local. And your Music, Pictures, and Videos folders now sit beside My Documents rather than inside it.

The Windows 7 installation program moves all of your old folders to a folder called C:\Windows.old. You may need to remember, as you try to get your new program installations together with your old data, that the Outlook.pst file that is now in C:\Windows.old\Documents and Settings\yourlogon\Local Settings\Application Data\Microsoft\Outlook belongs in the new location C:\Users\yourlogon\AppData\Local\Microsoft\Outlook.



one, which I'll refer to as the source, contains your data. The C:\users window, which I'll call the target, is where your data should end up. Do the following steps for each folder named for a person who uses your PC.

**1.** Open the respective folders in each Explorer window (so that the source window is open to C:\Windows.old\Users\yourname and the target win-

dow is open to C:\Users\yourname).

**2.** Make sure that hidden folders are truly hidden. If you see an AppData folder in the target, select *Organize • Folder and search options*. Click the *View* tab. Select *Don't show hidden files, folders, or drives*, and click *OK*. (You can change it back later, if you want.)

**3.** Drag all the folders—but not individual files—from the source to the target.

**4.** You'll get a lot of questions as the files move. When Windows tells you that you need administrator permission, make sure that *Do this for all current items* is checked and click *Continue*. If told that 'The destination already contains a folder named...', check *Do this for all current items* and click *Yes*. And if told that there's already a file with the same name, check *Do this for the next nn conflicts* and click *Move and Replace*.

Windows XP keeps pictures, music, and videos inside folders within My Documents, while Vista and 7 store them separately. You would expect that change to cause problems, but Windows 7 is smart enough to put everything in the right place.

When you're done with the user folders, repeat the steps one more time for the Public folders. If you upgraded from XP, your source won't have a Public folder, but it will have a shared folder, and you should move the folders from that shared folder to the target's Public folder.

At this point, Windows 7 is ready to use. But keep the Windows.old folder around for a few months. Something important may still be lurking inside—especially in the hidden AppData or Applications Data folder.

## A Few Suggested Tweaks

As an environment to work and play in, Windows 7 beats Vista, hands down. But it isn't perfect, and you may find yourself missing a few features that have disappeared. Here's how to get them back.

**RECOVER MISSING PROGRAMS:** Windows 7 lacks the bundled-with-Vista applications Windows Mail, Movie Maker, and Photo Gallery. Microsoft offers newer and supposedly better versions of these programs free at its Windows Live Essentials download site ([find.pcworld.com/63677](http://find.pcworld.com/63677)). As I write this, the Live version of Movie Maker is still in beta.

**BRING FAVORITE PROGRAMS BACK TO THE START MENU:** The Vista Start menu's left pane contained a list of favorite programs on top of one for recent programs, but Windows 7 lists only the recent ones. To restore the favorite-program list, click *All Programs*, then drag a favorite program to the *Back* link at the bottom of the panel, hold it there until the recent list reappears, and drop it at the top of the list. (You can pin a program to the taskbar that way, too.)

**PICK YOUR FAVORITE FOLDERS (AND REMOVE MICROSOFT'S):** If you're viewing a folder you frequently visit, right-click

*Favorites* in the left pane and select *Add current location to Favorites*. If the Favorites list is too long, right-click an item you don't visit often and select *Remove*. Don't worry; it won't delete the folder, just remove it from this list.

**ONE THING YOU DON'T HAVE TO DO:**

Fortunately, you don't need to turn off the Sidebar as you did in Vista. Microsoft wisely removed that pointless resource hog.

Once the upgrade has finished, move your old files back to their original locations by dragging them from the external disk to the appropriate folders on your hard drive.



## Final Reminders

If you didn't enter your product ID and activate Windows 7 during the installation, now would be the time to do it. Select *Start*, type *activate*, and press *<Enter>*. Click *Activate Windows online now* and follow the prompts.

At this point, all you former Vista users should check out "A Few Suggested Tweaks" at left for recommendations on retrieving some Vista features that you might actually miss.

**One last suggestion:** Once you set up Windows 7 the way you like it, create another image backup, and keep this one as long as you have the PC. That way, should you ever need to reinstall Windows, you can simply restore the image and skip several steps. ●



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# Here's How

## Seven Ways to Upgrade Your Netbook

Netbook hacks range from the absurdly simple to the electronically complex. Here's how to turn your netbook into a powerful portable PC.

BY DAVID MURPHY

MANY PEOPLE admire netbooks for their portability, but no two models are exactly alike, and each reflects different trade-offs. A system with a great battery may have a horrible keyboard arrangement; a model with a solid-state drive might be out of your price range; or a unit with killer specs might be missing 802.11n connectivity. All of these are common problems, but they don't have common solutions.

Due to their diversity, netbooks don't share a standard upgrade path as typical desktop PCs do. Each model is unique in what you can do to it, and the procedures are as varied as the netbooks themselves. If you plan to upgrade your machine, you'll need to hunt down the instruction manual or—in the case of trickier upgrades—a community of users to walk you through the process.

That said, possible netbook hacks range from 5-minute routines to soldering-gun-

based surgeries. Following are seven hacks for a Dell Mini 9—one of the more tweakable netbooks we've come across. The first three hacks are easy, and the other four are intermediate. While your mileage (and procedures) will depend on your own netbook model, this guide should give you a good idea of the kinds of upgrades that are available (and suitable) for your machine and your skill level.

### 1. Insert a Better Battery

In our testing ([find.pcworld.com/63590](http://find.pcworld.com/63590)) the Dell Mini 9's battery survived for about 3 hours, 34 minutes. That's

not too shabby for a four-cell battery, but you can do better. Though you may find a few guides online that describe how to create a laptop battery by using a number of aftermarket batteries wired together, that method is a recipe for disaster.

Instead, try eBay: There you can find a 77-watt-hour, eight-cell battery that's entirely compatible with the existing connections (and size) of your Dell Mini 9. You'll double the longevity of your netbook—provided that you aren't bothered by

the inelegant mass sticking out from underneath it. To replace the battery, just flip your netbook upside-down, move the two switches from the locked icon to the unlocked icon, and then push up on the battery tray.

### 2. Upgrade the OS

If you want to install a new operating system onto your netbook, you certainly can: You simply pop the CD into any external USB optical drive and install away.

Want to dual-boot your netbook? Grab the GParted utility, by downloading the .iso file for its LiveCD at [find.pcworld.com/63584](http://find.pcworld.com/63584) and then burning the file onto a disc. Insert that disc into the external optical drive, restart the netbook, and enter the BIOS to change the boot settings for your machine. Boot off of the optical drive first, and GParted will load. Right-click on the primary



**TRACKING DOWN THE** appropriate high-capacity battery for your netbook can be tricky, but installing it couldn't be easier.



partition and select *Resize/Move*. Microsoft recommends that you have at least 16GB of space for Windows 7; if you were hoping to use that OS but your netbook has too little room, your experiment ends here. For any OS, if your netbook does have space for it, enter a new partition size of your choosing. Click *Resize*, and you'll see the newly unallocated space sitting to the right of your primary partition in GParted's graphic. Right-click on this area and select *New*. Enter zeros for 'Free Space Proceeding' and 'Following', select *Primary Partition* under 'Create as', and click the *add* button.

If you prefer not to use an external optical drive, you can follow the same steps for using GParted and installing the new OS with a simple USB thumb drive.

### 3. Rearrange the Keyboard

Does your netbook keyboard's default layout conflict with the muscle memory you've built for desktop keyboard layouts? You can pop an offending key off of your netbook by wedging a tiny screwdriver under the key and gently applying upward pressure. As long as the keys you are swapping are the same size, you can interchange them as you please.

Once you've made the physical transformations, use the Sharp Keys utility ([find.pcworld.com/63585](http://find.pcworld.com/63585)) to reassign your OS's interpretations of the keystrokes to the appropriate keys. Alternatively, if you don't mind a bit of visual confusion, you



**DO YOU ACCIDENTALLY bump the keys near your touchpad? Pop them out and remap the keyboard to suit your typing style.**

can leave the physical keys exactly where they are and use this helpful application to redefine their purpose.

### 4. Replace the Hard Drive

What's worse: the underwhelming capacity of a typical solid-state drive inside a brand-new netbook, or the price difference you'd have to pay to get a larger drive in your preconfigured netbook build? Here's a way around both of those nightmares. First, when you're building your netbook on the maker's Web site, select the lowest-capacity drive available (or if you have no configuration options, buy the netbook as is). Next, consult user

forums (see "More Resources" on page 90) to get a clearer sense of which aftermarket solid-state or magnetic hard drives are compatible with your unit.

Finally, grab a screwdriver.

For the Dell Mini 9, flip the netbook over and remove the two screws that secure the large back panel into place (since it's in the center, it's hard to miss). Pry off the panel with your finger or with the tip of a screwdriver. With the Dell Mini 9's battery facing north, you'll notice a set of four electronic pieces inside the machine; those are the hard drive, the memory, the net-



**ON A DELL Mini 9 netbook, the solid-state drive is easy to find near the other components. It's a small card held in place by two screws.**

work card, and a blank space for a nonexistent 3G card. You should see a pair of screws securing the tiny flash-memory circuit board into place in the upper-left quadrant. Unscrew them, and the SSD should lift up. Pull it out, insert its replacement, and tighten the screws.

### 5. Upgrade the RAM

Memory is one of the main areas of a netbook where system manufacturers can increase their profit margin. Don't let a netbook maker empty your wallet by selling you RAM that you can find elsewhere for a lot less. In the case of the Dell Mini 9, we bought the bare minimum of RAM that we needed to complete the configuration: 512MB. To upgrade RAM, first open the netbook's back and look for the existing memory. On the Mini 9, it's in the upper-right (with the battery facing north).

On the RAM module you should see its specifications. You can either purchase the same type of RAM in a larger size (in our case, a 2GB stick of DDR-2 SODIMM running at 533MHz) or check the manufacturer specs for your netbook to discover its maximum supported speed. The difference between DDR2-4200 and DDR2-5300 memory is almost unnoticeable, but there's no sense in maxing out with DDR2-6400 memory if your netbook can't support its full speed.

To replace the memory, push outward on the two clips holding the RAM in place near the notched groove on each side. The RAM will pop up toward »



# Here's How

you for removal. Insert the new memory and push it into place. When you start up the machine, quickly press the appropriate key to access the system BIOS (for the Dell Mini 9, it's the 2 key). Head to the main tab and confirm that the system recognizes the new memory.

## 6. Upgrade the Wi-Fi

Upgrading the internal Wi-Fi capabilities of a netbook from 802.11g to 802.11n sounds as though it should be easy. In theory, you'd simply buy a miniature wireless card, pop off the back of the netbook, shuffle its components, and start enjoying the increased functionality and speed of the new card.

Alas, in reality it isn't that simple. Just because a Wi-Fi card looks as if it will fit in your netbook, that doesn't mean the card is compatible with the netbook's OS/motherboard combination. But even before that, you have to deal with the issue of size. When purchasing a new Wi-Fi card, you need to know whether your netbook can support a full-height or half-height card. Remove the back of the netbook and look for the existing Wi-Fi card. A full-height card is long and rectangular, similar in shape to an SD Card for a camera. A half-height card is stubbier and resembles the shape of a CompactFlash card.

As for the particular brand of card, there is no hard-and-fast rule for determining what will be compatible with your netbook model. A card that looks perfect on



**LIKE ORDINARY LAPTOP RAM, netbook RAM is easy to replace once you remove the main cover plate on the bottom of the machine.**

paper may not work with your unit's configuration. Instead of using trial and error, search the Internet for stories of other people's successful Wi-Fi upgrades of the same netbook model. It's the best way of improving the odds that the card you pick will actually work.

Once you've cleared that hurdle, installing the card is easy. On the Dell Mini 9, for example, remove the netbook's rear cover. The Wi-Fi card is in the center-right of the system; it's the card with white and black wires (the antenna) running into it. Gently disconnect those wires, undo the screws, and remove the card from the slot. Insert the new card, reinsert the screws to tighten the card into position, and reconnect the two antenna wires—note, however,



**TO UPGRADE YOUR netbook's Wi-Fi card, begin by disconnecting the two antenna cables from the card.**

that the specific card you buy will dictate whether you should reverse the wires as compared with their positions on the original card. Depending on the size of the card and the configuration of the motherboard, you might have to remove a motherboard standoff to permit a solid fit.

If the operating system can't find the new card on the next boot, install the drivers for the particular Wi-Fi card you bought. You should be able to find the drivers on the company's Web site; if not, you might have to install drivers from a third-party netbook manufacturer whose product uses the same network card.

## 7. Overclock the CPU

Overclocking represents the pinnacle of system upgrades that an average user can perform without physically deconstructing the netbook. It's also among the more dangerous upgrades for netbooks, given that these miniature systems don't come with the best cooling systems. In the case of the Dell Mini 9, the passive cooler protecting the processor from thermal overload is no match for

frequency tweaking, and it's probably for the best that we couldn't find a way to overclock this tiny PC.

Other netbooks are a bit more flexible in this regard. Owners of Dell Mini 10 netbooks can rev up their CPU through the SetFSB utility. Users of earlier Asus Eee PC models can pick up the Eeectl utility, which permits them to alter the frontside bus within Windows and, consequently, up the speed of the processor. If you have an MSI Wind and you want to update its BIOS, you'll discover that MSI officially supports your overclocking habit. Still, these waters demand careful navigation (or strict avoidance) lest you wreck your netbook and condemn it to an inglorious end.

## MORE RESOURCES

LOOKING FOR online communities to help guide you in your netbook hacking? Jump-start your journey through the many available modifications by making use of information that other netbook owners discuss daily. Here's a listing of the top places to find hacking details for some of the most popular netbook brands on the market, as well as advice for putting Apple's OS on a netbook.

**Acer:** [www.aspireoneuser.com/forum/](http://www.aspireoneuser.com/forum/)

**Asus:** [find.pcworld.com/63586](http://find.pcworld.com/63586)

**Dell:** [www.mydellmini.com/forum/](http://www.mydellmini.com/forum/)

**HP:** [www.hp2133guide.com/forums/](http://www.hp2133guide.com/forums/)

**MSI:** [forums.msiwind.net](http://forums.msiwind.net)

**Samsung:** [find.pcworld.com/63588](http://find.pcworld.com/63588)

**Mac OS X Compatibility Chart:** [find.pcworld.com/63589](http://find.pcworld.com/63589)



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# Presenting **App Gems** **Macworld**

From the editors of

Don't get overwhelmed by the 70,000+ apps at the iTunes store, buy the one app that sorts them all for you.



## App Gems

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## Take Your Work Into the Cloud With a Web OS

With the help of a Web-based virtual machine, you can work on projects from any device without having to carry files with you.

IF YOUR JOB involves frequent travel, if you use more than one computer for your work, or if you depend on a smartphone for conducting business, you might find it difficult to keep your files in sync and up-to-date. But with the assistance of a Web-based virtual computer, you can ensure that your data remains synced and organized across all of your devices while using a single, consistent interface on every computer you work from. In this article I'll explain what a Web OS is, what its primary benefits are, and how you can put one to work.

### What's a Web OS?

A Web OS, sometimes called a Webtop or a cloud computer, is a virtual machine that lives online—but when you're logged in to one, it can be nearly indistinguishable from a regular desktop operating system. In most cases the menus and icons of a Web OS look similar to those of Windows, complete with a taskbar, a file browser, a desktop with customizable wallpaper, and productivity and communications apps. But because a Web OS doesn't reside on your local PC, you can access the same desktop—along with all your apps, files, and settings—on almost any device that pro-

vides a Web browser.

Prominent examples of Web OSs include G.ho.st ([g.ho.st](http://g.ho.st)), Glide OS ([glideos.com](http://glideos.com)), and Icloud ([icloud.com](http://icloud.com)).

For a comparison of these and other Web OS services, see Ian Paul's "9 Web-Based Office Productivity Suites" at [find.pcworld.com/63606](http://find.pcworld.com/63606). Because G.ho.st is my personal favorite, I'll use it for most of this tutorial. The truth is, however, that no clear leader has arisen in the Webtops arena, and personal taste will be an even greater factor in selecting the best Web OS for you than it is in choosing your favorite desktop OS.

### Why Go With the Web?

For users who have only one computer, or who seldom need to share their files between a work PC and a home system, adding a Web OS

into the mix will likely prove needlessly complicated. But if you move between multiple machines often and you don't want to fret about syncing files all over the place, a Web OS can be even better than a thumb drive for storing everything and providing a consistent experience across platforms.

In the course of writing this article, for instance, I sat in front of at least three different computers running two different operating systems. (And not just to prove a point about Web OSs, either.) But at any time—because I used G.ho.st—I could easily move to a different PC, boot it up, log in to my desktop, and pick up where I had left off. All of my icons were in the same place, and all of the applications and menus were the same, too. And because everything sits on a remote Web server, I didn't have to worry about forgetting my thumb drive when I moved from my home office to my office office.

In addition to its persistent browser-based interface, G.ho.st comes in a mobile version that lets you download your files from a smartphone in a pinch.

One big advantage of a



**THE G.HO.ST WEB OS lives in your browser but mimics a desktop, offering quick links, a taskbar, and other Windows-like features.**



**G.HO.ST COMES COMPLETE with a 'Go' menu that resembles Windows' Start menu and gives you easy access to applications.**



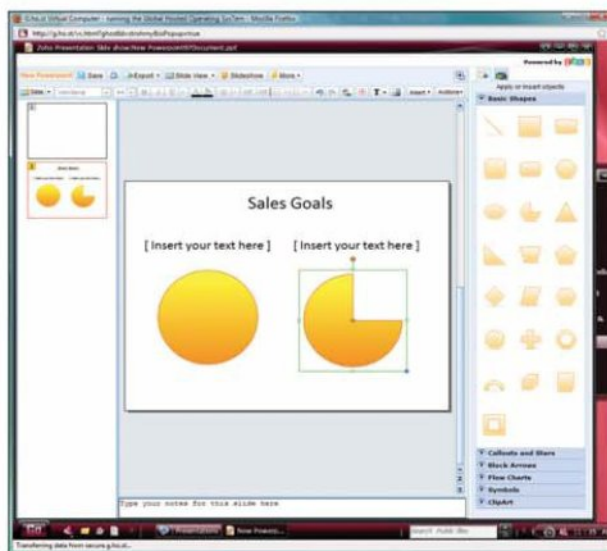
Web OS is that its performance doesn't depend much on the speed of your computer. This makes such a setup great for use on an aging laptop or an under-powered netbook. Web OS performance will, however, depend a great deal on the speed of your Internet connection, especially if you're regularly transferring files back and forth; so be sure that you have a reliable broadband service, or you will experience sluggish response times from your cloud-based applications.

## Get Started

You don't need much to start using a Web OS right now. Once you've chosen a service, just visit its Web site from any Internet-connected desktop or laptop computer, and then sign up for a free account. After completing a quick registration, you'll be staring at your new virtual desktop for the first time.

While the interfaces for different Web OS services vary slightly, they tend to follow the basic desktop layout that Windows popularized. In G.ho.st, the taskbar runs across the bottom of the screen just as it does in Windows, and a Go button is located where the Start button would be. You'll also find a Quick Launch bar just to the right of the Go button, and a system tray to the far right of the taskbar.

The G.ho.st desktop gives you rapid access to a few of the most important features of your virtual machine, including a link to all of your applications, the control panel, your e-mail program,



**TO WORK ON documents within G.ho.st, simply launch a Zoho online app, such as the Zoho presentations program, and dive in.**

and an instant messenger application that supports AIM, Google Talk, ICQ, MSN Messenger, and Yahoo Messenger. Want to get started with a text document or spreadsheet right away? Launch Zoho Writer or Zoho Sheets directly from the desktop and start typing. You might also take

a look at the 'Take the Tour' link on the desktop, which will get you oriented quickly.

## File Management

Assuming that you don't plan on using your new Web OS as your primary computing environment all the time, you'll want to start managing your files intelli-

gently from the moment you log on. While you certainly can just upload files from your local computer to the Web OS one by one, or even in batches, the better approach is to take advantage of the Web OS's built-in synchronization features to manage files on all of your systems automatically.

In G.ho.st, you'll find the appropriately named Sync utility, available in both Windows and Mac versions on the Ghost Services menu. Select the version for the computer you happen to be using, and then download and run the installer. Afterward, enter your log-in info and set the utility's options as you see fit. The best choice is to sync in both directions and set conflict resolution to keep the newest version of each file. You can also choose simply to append '~deleted' to the file names of old versions, which will help you avoid losing important data if something goes wrong.

## Mobile Access

Though not all Webtops provide a mobile version of their services, G.ho.st does. However, not all of the service's features will work in all mobile browsers. Be sure that your phone supports JavaScript and that the feature is enabled; otherwise you won't be able to download your files to the device. To work with the documents once you have downloaded them, you will need an editing program and/or a viewing application installed on your mobile device.

—Robert Strohmeier



**SET UP THE G.ho.st Sync utility on your desktop to keep your files current between your virtual machine and your real machine.**



## Take Good-Looking Photos in Bad Lighting

PHOTOGRAPHERS love to talk about the “magic hour,” when the sun is perfectly positioned for awe-inspiring photos. Frequently, however, you’ll need to contend with harsh midday sunlight or gray, washed-out skies. Here are some strategies for taking great photos when the sun just won’t cooperate.

Try to avoid high noon. When the sun is directly overhead, the dynamic range far exceeds what your camera can capture, so you’ll wind up with regions of totally black shadow, pure-white highlights, or both.

Put yourself between the sun and your subject. It’s easy to forget this when you’re on vacation and you approach an attraction—your first instinct will be to

shoot it as you approach, no matter where the sun is.

What if the shot you want is between you and the sun? Go ahead and take it, but consider an artistic variation: the silhouette. Lock the camera’s exposure not on the subject (which is probably in shadow) but on the bright sky behind the subject. Usually you can do this by pressing the shutter down halfway, and then recomposing and taking the photo (see [find.pcworld.com/63592](http://find.pcworld.com/63592)).

If you’d rather take a more traditional photo, one option is to replace the sky with a better, bluer one in a photo editing program afterward. Open an image with a better sky in the editor, and then add the photo with the poor sky as a layer on top. Select



**TO PRODUCE** A photo with a silhouette, first lock your exposure on a bright area, such as the sky, and then focus on a shadowed object.

the blown-out sky, and delete it. The blue sky will show through from behind.

Finally, if you take a series of photos of the same scene, each with a different exposure, you can combine them on your PC into one image with the full dynamic range (or at least a lot more of the dynamic range than you’d

otherwise get). This is called high dynamic range (HDR) photography. You’ll want to use a tripod and your camera’s exposure bracketing mode or exposure compensation dial; you’ll also need PC software, such as Photomatrix Pro, to blend the images. See [find.pcworld.com/63594](http://find.pcworld.com/63594).

—Dave Johnson

### LINUX LINE

## Add a Desktop Dictionary to Ubuntu for Quick Word Lookups

IF YOU WRITE a lot, a desktop dictionary can be a powerful asset. With it, you can highlight a word inside any program and then click the dictionary icon in your menu bar to open a Web browser window containing the word’s definition.

To add a desktop dictionary to your Ubuntu installation, use the Googlizer applet, which you can install via Synaptic Package Manager. If you don’t find it in Synaptic’s graphical interface, open a terminal window and type `sudo apt-get install googlizer` to automatically locate it and install it. This applet was made to perform instant Google searches, but you can make it do dictionary searches instead.

Once you’ve installed Googlizer in Synaptic, drag its icon from the Applications•Internet menu to a spare spot on the panel bar. Then right-click it and select *Properties*. In the Command field,



**WITH A SIMPLE** change of the URL in the Command field, you can turn the Googlizer search applet into a dictionary tool.

change the line to read `googlizer --url http://www.merriam-webster.com/dictionary/` (make sure that you put two hyphens before `url`).

How does this trick work? The search term you highlight enters the selection buffer automatically, and then it simply joins the end of the URL you quote when you click on the Googlizer button. In the case of the Merriam-Webster Web site, this trick works perfectly, since the site uses that URL for-

mat for each word. For example, `http://www.merriam-webster.com/dictionary/orange` leads you to a definition of the word *orange*.

You might also want to change the icon for Googlizer, as I have, to that of a dictionary. The icon that I use lives at `/usr/share/icons/gnome/scalable/apps/accessories-dictionary.svg`.

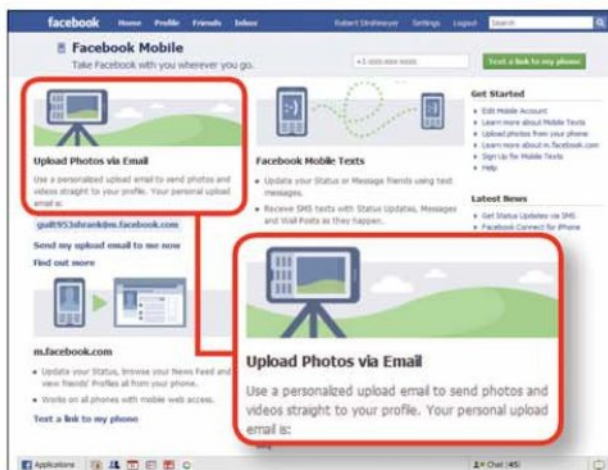
—Keir Thomas



# Add Photos to Your Facebook Profile Via E-Mail

IF YOU'RE A Facebook addict and you're eager to tell your pals about your adventures, you don't have to wait until you get back to your PC—Facebook offers a number of features that cater to mobile users. For starters, you can update your status via text message (see [find.pcworld.com/63598](http://find.pcworld.com/63598)). And if your phone has a camera, you can do even more: Facebook lets you add photos and videos to your profile via e-mail.

You don't have to use a phone to perform this procedure. You can just as well e-mail your content to Facebook from a PC if you find that easier than using Facebook proper (or if you happen to be using a work PC



**IN THE MOBILE page of your Facebook account, you can find your personal address for e-mailing photos and videos to your profile.**

that blocks social networks). Here's how to get going with Facebook via e-mail.

**1.** Head to [www.facebook.com/mobile](http://www.facebook.com/mobile). (You'll need to sign in to your account if

you haven't done so already.)

**2.** Look under 'Upload Photos via Email' for your personal e-mail address. (Mine is a bizarre string of random words and numbers.)

**3.** Add that upload address to your contact list, or click *Send my upload email to me now* to have Facebook shoot it to wherever you routinely check your mail. (It's not much of a time-saver, but it might be easier than your typing the address into your phone.)

**4.** Compose a new e-mail message with the photo or video attached. Direct the missive to your Facebook upload address, and use the subject line for the caption you want to show.

Click *Send*, and presto! The photo or video goes straight to your Facebook profile. By default, the site makes such uploads public, so be sure to go to Facebook's settings if you want to change that.

—Rick Broida

## ANSWER LINE

## ASK YOUR QUESTION AT FORUMS.PCWORLD.COM

### Is it possible to put apps such as Word and Excel onto a flash drive?

—Joseph Mott, via e-mail

YOU CAN PUT apps on a flash drive, but only those designed for that use. And Microsoft Office was not made for such portability.

Think about how you put most Windows programs onto your PC: You don't just copy the files, you run an installer. The installer integrates the application into Windows, changing the Registry and altering the operating system. (By the way, this is a major reason why Windows becomes less reliable over time and sometimes requires reinstallation from scratch—too many OS-altering installations.) Clearly, if you simply copied the program folder to a flash drive and tried running it on another PC, you'd be disappointed.

A *portable* application is specifically designed not to require an installation, and is thus able to work from a flash drive. A well-designed portable program will not alter the Registry or leave behind any other trace of itself on a computer.

Lots of portable programs, many of them free, are available. You can find portable browsers, graphics editors, media players, and programming tools. Utilities, too: I keep a flash drive loaded with assorted portable diagnostic tools that come in handy when someone asks me to help them with their computer.



**LOAD THE PORTABLE version of OpenOffice.org onto a flash drive, and you can work on documents on any PC, leaving no traces behind.**

PortableApps.com creates and gives away portable versions of existing free, open-source software. One such offering is an Office alternative, a portable version of OpenOffice.org. It doesn't do everything that Microsoft Office can do, but it does enough things to satisfy most people. Grab it at [find.pcworld.com/63596](http://find.pcworld.com/63596).

For additional flash-drive-friendly applications, check out Makeuseof.com's list of portable software at [find.pcworld.com/63593](http://find.pcworld.com/63593).

—Lincoln Spector





## RICK BROIDA'S HASSLE-FREE PC

### Clever Mouse Tricks for Windows, Office, and Firefox

FOR MOST PEOPLE, controlling a computer doesn't get any easier than clicking on items with a decent three-button mouse. But if you're simply mousing around with the default settings, you're missing out on some very cool tools. This month, I'll show you how to tweak settings in Windows, Microsoft Office, and Firefox to make the simplest way to interact with your PC even simpler.

#### Activate Any Window by Hovering Over It

If you routinely keep a lot of windows open on your desktop, you know that to activate one (so that you can work with it), you have to click in it. A small effort, sure, but add those clicks up, and they qualify as a hassle. Fortunately, if you use Vista or Windows 7, you can adjust a setting so that you can activate any window just by hovering the mouse pointer over it. Here's how.

1. Click **Start**, type **Ease** in the field, and then press **<Enter>** to access Windows' Ease of Access Center. (Don't be alarmed by the computerized voice you hear; robots have not infiltrated your system.)
2. Click *Make the mouse easier to use*.
3. Check the box marked *Activate a window by hovering over it with the mouse*.
4. Click **Save** or **Apply**, and you're done.

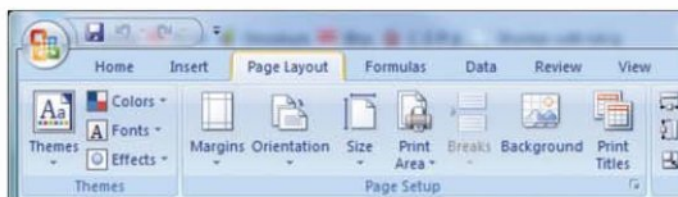
The hovering action does take some getting used to, and I have to admit that I found it more of a distraction than a help—but then again, I usually work with maximized windows, not with smaller ones littered across the desktop.

To be completely honest, I was hoping that this setting would prove to be a software-free alternative to *WizMouse* ([find.pcworld.com/62539](http://find.pcworld.com/62539)), the freebie utility that makes your mouse wheel work in any window without your having to activate the window first; but it isn't quite the same thing. If you find this Windows setting useful, let me know. Me, I'm sticking with *WizMouse*, arguably the greatest utility in the history of Windows.

#### Use the Wheel to Scroll the Office 2007 Ribbon

While we're on the subject of cool things you can do with your mouse, here's a quick shortcut for Office 2007 users.

Of course you know that when you're viewing a document in Word, Excel, or PowerPoint, a flick of the mouse wheel up or down scrolls your document accordingly, just as in a Web page. Move

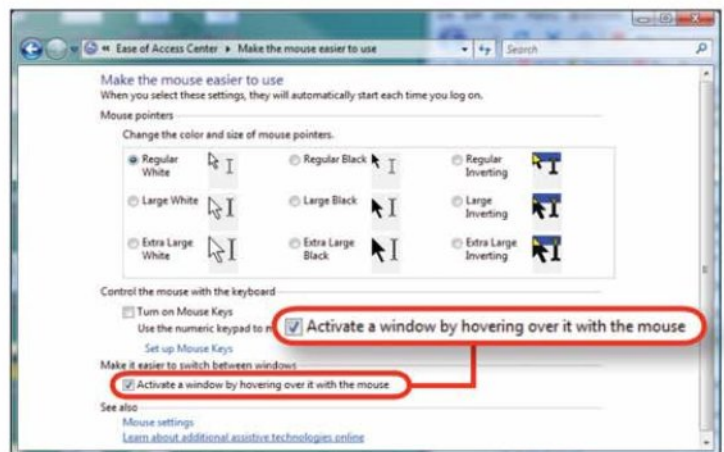


**WHEN YOU'RE WORKING in Office 2007, moving the pointer up to the Ribbon and using the mouse wheel takes you through the available tabs.**

*These simple mouse-wielding secrets will help you get more work done in less time.*

your pointer up to the Ribbon, however, and the mouse wheel suddenly takes on a different function: It scrolls through the tabs.

I'm not saying that this action is any faster or easier than just clicking the tab you want to view, but it does give you an alternative way to navigate. What's more, scrolling helps you cut down on "click accidents," such as when you aim for a tab but end up accidentally clicking a tool icon instead (with disruptive results). Surely I'm not the only Office user who does this. (Please say I'm not.)



**A SETTING in the Ease of Access Center in Windows Vista or 7 lets you hover over windows to activate them, which makes switching windows faster.**

Even if you aren't prone to clicking the wrong graphical object, give this trick a try. You might find that scrolling through tabs is more efficient. Firefox users can do likewise: When you have more browser tabs open than will fit across the screen, just hover over the tabs and spin your mouse's scroll wheel to cycle through them.

#### Middle-Click Links to Open New Tabs in Firefox

One of my all-time favorite Firefox tips is to hold down the **<Ctrl>** key and use the mouse wheel to quickly zoom in or out.

Another favorite: You can open a Web link in a new tab by clicking it with the mouse wheel. It's true—try it right now. Go ahead,

I'll wait. Note that this trick might not work if you have installed your mouse manufacturer's utility software and subsequently programmed the rodent to do something else when you click the wheel. But the default behavior in Firefox (and, for that matter, in Internet Explorer and in Google Chrome) is to open the clicked link in a new tab.

Very convenient, I'm sure you'll agree. Apologies to those of you who have known about this trick for years—but I guarantee you, it's news to plenty of users. ●



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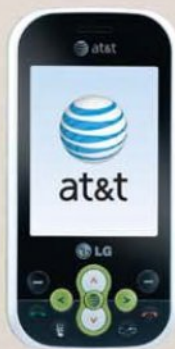
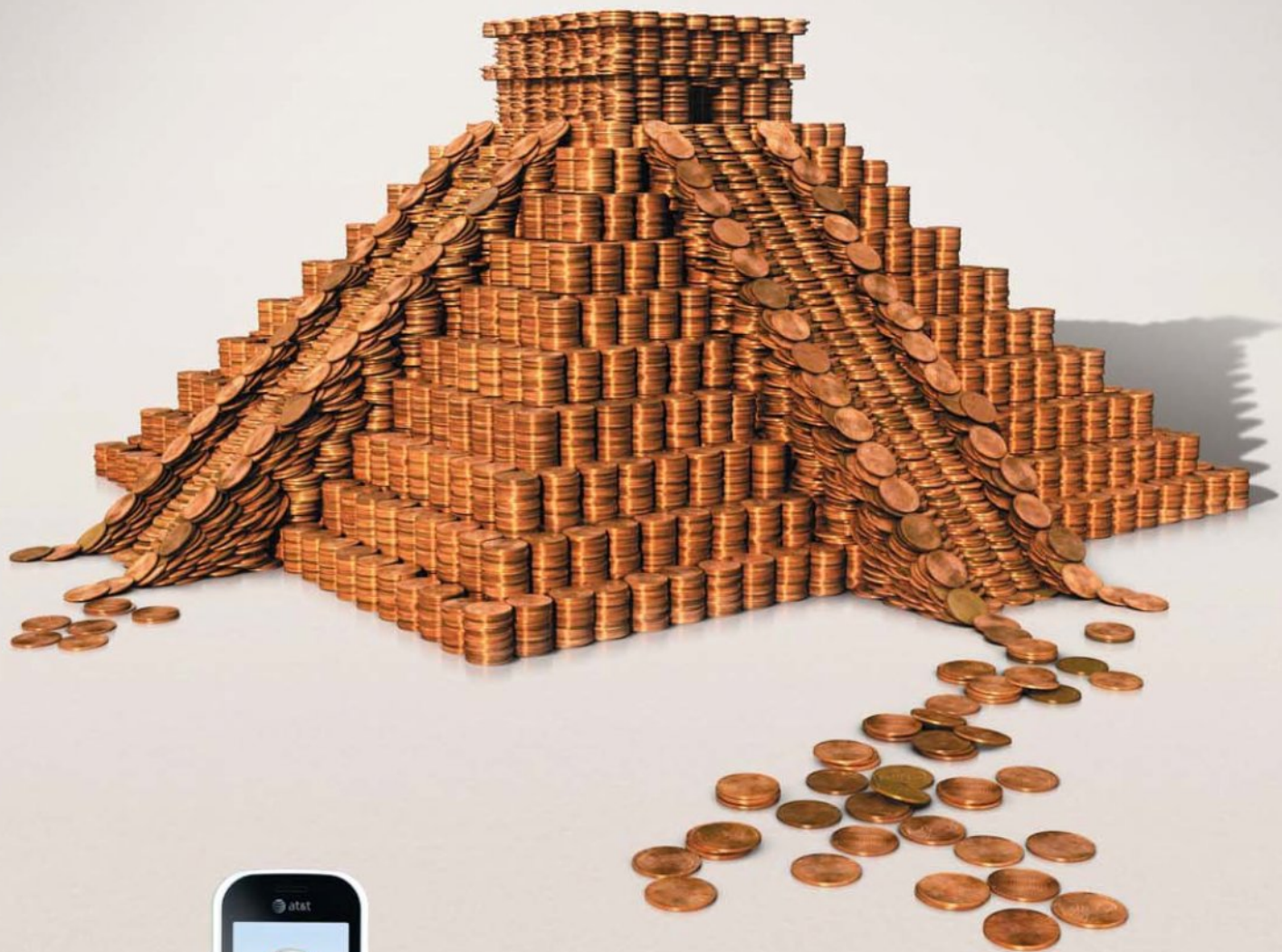
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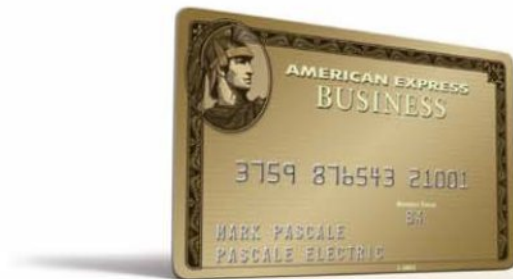


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