

# PCWorld

FEBRUARY 2008 • WWW.PCWORLD.COM

## TODAY'S 25 MOST INNOVATIVE PRODUCTS

**Test Report: Top  
Wide-Screen LCD  
Monitors** p.117



**The Best Sites and  
Stores for Buying  
Tech Products** p.102



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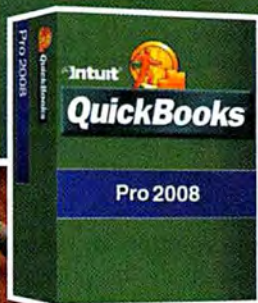
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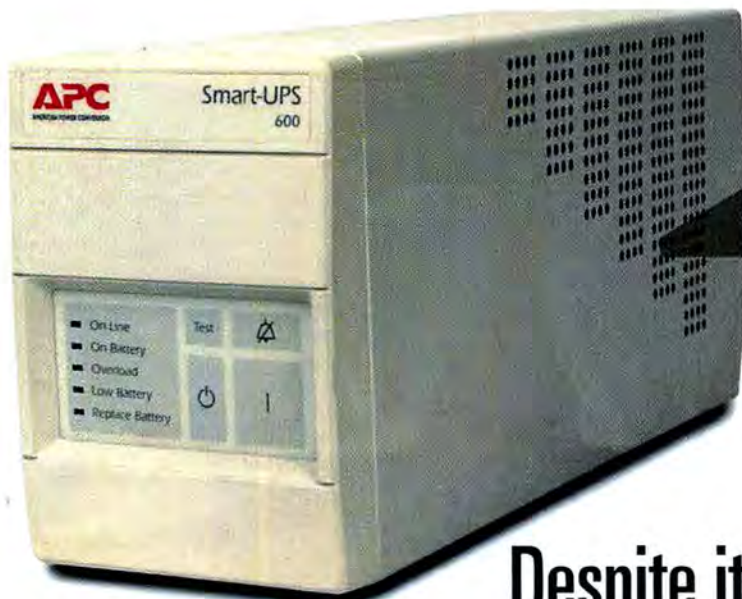
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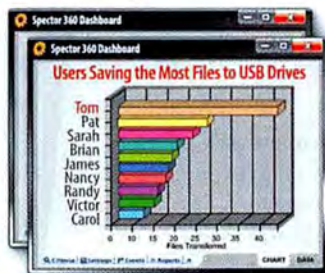
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TOP 5

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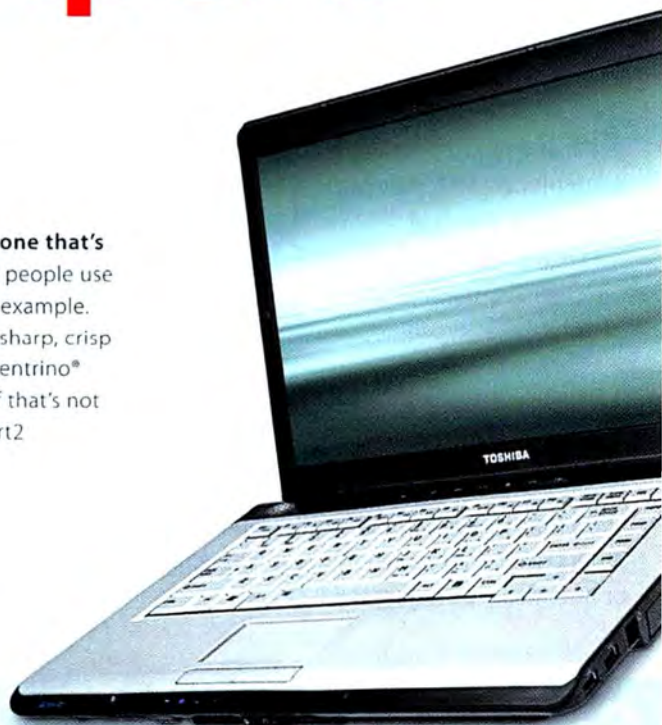


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## How far will we go to reinvent safety technology?



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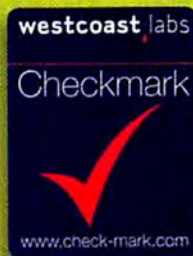


The experiments begin after new MythBusters at 9pm<sup>e/p</sup>.

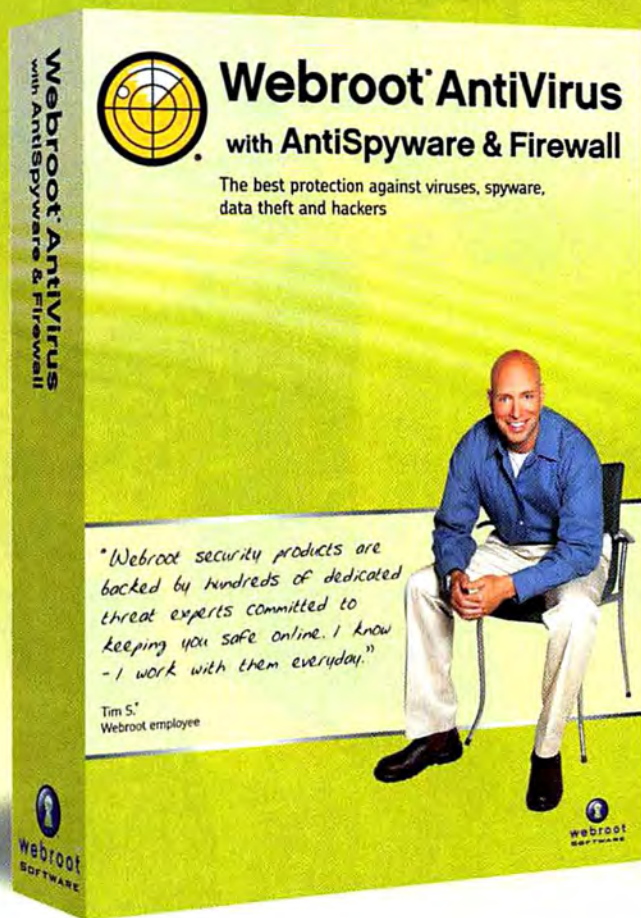
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## The Three Immutable Laws of Online Privacy

I LIKE TO think of myself as a private person—but one whose online life is ruled by common sense, not paranoia. On one hand, I'd rather enter my credit card information every time I visit an online merchant than let the seller store it on some server permanently. Why risk getting it swiped if I don't have to? But there are also plenty of times when I'll cheerfully let a site mine my personal information if I get something in return. (Exhibit A: The excellent e-mail client known as Gmail, which scans my messages in order to display relevant text ads.)

I've been managing my Internet privacy so long that I'd seen everything. Or so I thought, until a mini-firestorm erupted over Facebook's new Beacon advertising platform last November. As Juan Carlos Perez explains in "Can You Trust Your Social Network?" (page 22), Beacon was designed to serve as a viral-marketing pipeline between the wildly popular social network and the sites of more than 30 commerce-related companies, including Blockbuster, eBay, Coca-Cola, Overstock.com, and Sony

Facebook's ad fiasco wasn't your ordinary data leak. But the social network made some mistakes that were all too typical.

Online Entertainment. If you rented a movie online, for instance, Beacon enabled Blockbuster to transmit that fact to Facebook, which could then relay the happy news to all your friends.

Trouble was, you might or might not want your Facebook pals to know you planned to kick back with *Satan's Cannibal Holocaust*. Even worse, Beacon might spoil the surprise of a present for a friend or loved one by alerting them that you'd just bought it online. And privacy sticklers might prefer that the companies they do business with not disclose transactional information to Facebook at all, whether or not their buddies ever heard about it.

True, you could instruct Beacon not to share a particular transaction, but the option to let you do that was easy to miss. And there was no way to opt out of Beacon's "social ads" altogether or to prevent companies from handing over information about you to Facebook.

After a flurry of member complaints,

petition signing, and stinging criticism from bloggers—not to mention multiple instances of nervous marketers backing out of the program—Facebook rethought Beacon. Now the service no longer spreads the word about any dealings you have at a partner site, unless you explicitly give the go-ahead, and you can shut it off altogether.

As weird as the Beacon dust-up was, in some ways it was completely typical of online privacy glitches. Facebook erred by ignoring some basic principles of Web privacy—namely, these three:

**Above all, be clear.** Beacon's original incarnation was just plain confusing. If reasonably smart people can't understand what's happening with their info, something is fundamentally amiss.

**Err on the side of discretion.** It's a big deal when you trust a Web site with your personal data—even something as mundane as your taste in DVDs. Who *wouldn't* want sites to treat such data gingerly until instructed otherwise?

**Remember that more control is always better than less control.** One of the things I like most about Facebook—and yes, I'm addicted—is the rich control you exercise over who gets to see what facts about you. Its dozens of options give you the power to be anything from an exhibitionist to a recluse. At first, Beacon was an exception. Now it's closer to being...well, pleasingly Facebookian.

Got any other laws of privacy that are immutable, or at least should be? Drop me a line at [harry\\_mccracken@pcworld.com](mailto:harry_mccracken@pcworld.com) with your thoughts. And hey, if I find them interesting enough to share, I'll ask first—that's a promise.

Read Editor in Chief Harry McCracken's blog at [blogs.pcworld.com/techlog](http://blogs.pcworld.com/techlog). ●

### PICK OF THE MONTH

IT'S BECOME A tradition for our February issue to spotlight the brightest new ideas in hardware, software, and the Web. This year's roundup, "Today's Most Innovative Products" (page 92), is bursting with geeky wonders. But one of the most impressive isn't aimed at gadget freaks at all: It's One Laptop Per Child's XO laptop, the \$200 system designed for children in developing countries. The XO isn't just cheap—it sports a clever

screen that doesn't need backlighting when used outdoors, employs wireless mesh networking to connect directly to other XOs, has a lithium ferro-phosphate battery good for up to 24 hours of life, and packs an inventive open-source software suite. Even if you tote a \$2000 notebook, you might be left wondering, "Why can't my machine do that?" Small wonder two of us here at PCW took advantage of OLPC's "Give One Get One" offer before the holidays to get XOs of our very own.



PHOTOGRAPH: MARC SIMON

Fujitsu recommends  
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Business.



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# PCW Forum



Many readers responded to our December article about life without desktop software. Some have already gone online-only and are happy, while others say they've encountered too many bugs and reliability issues. Share your opinions and your experiences with Web apps at [find.pcworld.com/59432](http://find.pcworld.com/59432).

## Using Online-Based Software

I read Scott Spanbauer's "Life Without Software" [December] with interest, because I have abandoned my Outlook e-mail for Gmail as a POP client, and I love it for the same reasons he does. But he fails to mention one important reason (to me, at least) to keep running the Outlook Address Book, Calendar, and Notes apps: the ability to sync with a smart phone. If Google could come up with a way to sync my phone (a Nokia E62) with the Google equivalents from any browser, that would be a killer app!

*Emery DeWitt, Lancaster, Pennsylvania*

No thanks. There are, unfortunately, too many bugs with Web-based apps.

*yearight3, from the PC World forums*

I use Google Docs because I have Gmail and it was there. It has some hassles, but for a quick and dirty way to work on a document, it's not bad.

*luzduchozny, from the PC World forums*

I have been using online apps for a couple of years now, and haven't been happier. I switched because I needed a cross-platform solution for document editing and storage.

*trevor97007, from the PC World forums*

I'll consider trusting Web-based services for important daily computing when: The Net becomes as reliable as a common analog telephone; ISPs become more responsible for their services and support; and our government makes these two conditions possible by requiring ISPs to obey our laws.

*rowfus, from the PC World forums*

## GPS Devices vs. Software

Re: Dennis O'Reilly's review "Mapping Software Can't Keep Pace With GPS" [December]. I generally agree with O'Reilly's comments on GPS units.

However, for once I must defend Microsoft! I own a Garmin GPS V, a Garmin Nuvi 350, and Microsoft Streets & Trips. The Garmin Nuvi is hard to beat. But Streets & Trips lets you see what is over the horizon due to the much larger screen size a laptop offers, as well as geographic details that smaller GPS units can't display. During trips in Canada and Florida, we could look at our laptop and "see" where the beach was, identify the beautiful lake off to

Video game mods should not count toward a game's rating.  
*Yert, from the PC World forums*

the left, what's over the mountain to the right, etc. The passenger/navigator/spouse can run the laptop, and you can easily hold the GPS antenna to the dash with Velcro—thus negating two of O'Reilly's objections to Streets & Trips.

*Gary Keck, Spokane, Washington*

**Author's response:** Having a full-time navigator addresses my concern about the difficulty of seeing info on the screen; Velcro may keep the GPS transceiver in place, but you shouldn't need such a workaround; and the price of the software remains high compared with low-end GPS devices, which are much simpler to use and are usually more accurate as well.

—Dennis O'Reilly

Regarding the story on robots ["A Robot Bride by 2050?" [find.pcworld.com/59467](http://find.pcworld.com/59467)]: How are we going to be allowed to marry machines when many humans can't even marry each other?

*etruss, from the PC World forums*

## Web, TV Tech: U.S. Lags

I read with interest Harry McCracken's column in the December issue on how the United States fares in matters relating to the Internet [*Techlog*, December].

The United States seems to lag behind in television technology as well. Analog television broadcasts ended last August in Finland. If you watch a foreign film on TV, you hear the sound track in the original language, and you can choose Finnish or Swedish subtitles (or you can switch the subtitles off if you know the language).

*Lassi Vakkilainen, Helsinki, Finland*

## Quibbles With Leopard

[See [find.pcworld.com/59431](http://find.pcworld.com/59431) for more on the new Mac OS.] I don't think Stacks was intended for large folders. If you want to browse your applications >>

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## PCW Forum

folder, the Finder is undoubtedly going to be faster. Stacks is ideally suited for common tasks involving small groups.

*RastaMon, from the PC World forums*

If you want two real losers in 10.5, it's that the sidebar in iCal has been removed and that tabbing between mailboxes and arrow navigation has been removed from Mail.

*TomWolsky, from the PC World forums*

The one gripe that I have with Leopard is the new interface when using the remote. If I am listening to iTunes and switch to the menu interface using my remote, iTunes stops playing. In Tiger (the earlier OS), it kept playing, which made for a seamless switch.

*MFreitag, from the PC World forums*

My current complaints center around Safari 3.0. Yes, it now autosizes pictures in the window, and there is a right-click menu option for 'Save as', but why do we need to right-click to change information about a bookmark?

*blackcross, from the PC World forums*

Who cares about the logo on the front? I'd buy a Dell PC in a heartbeat if it could do everything my Mac can do and was less expensive. I'm not loyal to Apple, but at the moment they do have a better computer.

*Amerist, from the PC World forums*

### Hacker Pleads Guilty to Spreading Botnets

It's time that these creeps [[find.pcworld.com/59469](http://find.pcworld.com/59469)] pay for their crimes whenever they can be caught.

Remember, every single one of us is a victim of computer crime, even if our passwords have never been taken; we are all victims because of the added costs in money, time, and energy that we and businesses spend to avoid viruses and other malware.

*billcclck, from the PC World forums*

Give them the maximum times 150,000 for each of the 150,000 computers that were infected with his malware. It is

the same as breaking and entering all of those houses to commit burglary and destruction of property. Anyone who commits computer crimes should get fined and serve time.

*HUEY, from the PC World forums*

I want the list of IP addresses he compromised. If my son's PC was one of them, I'll take him to small claims court for \$100 (150,000 times \$100 should make an impression).

*ajaxman, from the PC World forums*

He's a thief—but a white collar one who's most likely going to get the minimum fine with a vacation in some federal prison. He infected 150,000 accounts, and at \$10 from each account, his take is substantial. He gets only a \$1.75 million fine, which his accomplices will gather up and pay.

*ykyrys, from the PC World forums*

### IE Drops ActiveX Warning

[[find.pcworld.com/59470](http://find.pcworld.com/59470)] What if I don't want to allow a Web page's ActiveX application to run? It seems to me that this will make IE even less safe than it already is.

*gossyn, from the PC World forums*

I'm glad to see it go. I hate clicking on the 'yellow bar' for a response on something I have allowed to install by clicking on it to begin with.

*irish14500, from the PC World forums*

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PC Connection



Insight

# Forward

## First Tests: AMD's Phenom CPU Won't Scare Intel

BY JON L. JACOBI

AMD'S NEW PHENOM processors and Spider platform for desktop systems incorporate some impressive steps forward for the chip maker. The chips, which are made using a 65-nanometer manufacturing process, feature both a native quad-core design and enhanced power-management technology. But when we ran a Phenom and Spider-based computer through our lab, the results revealed that AMD still has a lot of work to do.

### Problems Already?

AMD sent unlocked versions of its 2.6-GHz Phenom 9900 chip to reviewers, but that model likely won't be available on the market until well into the first quarter of 2008, at an expected cost below \$350. Until then, the fastest Phenom chips that you'll be able to find are the 2.2-GHz Phenom 9500 (\$251 to OEMs) and the 2.3-GHz Phenom 9600 (\$283).

A sub-\$300 2.4-GHz 9700 chip is scheduled to ship in the first quarter as well, and an unlocked, overlockable Black Edition 2.3-GHz Phenom should be available by the time you read this.

AMD's new CPU has impressive technology but turns in disappointing performance. Can AMD remain competitive if its high-end processor isn't much faster than a year-old Intel CPU?



CYBERPOWER'S GAMER ULTRA CF 3870 features AMD's 2.3-GHz Phenom 9600 CPU and an ATI Radeon HD 3870 graphics board.

Though both the 9500 and the 9600 appear to be widely available now, AMD recently owned up to a bug in the first generation of its Phenom and Barcelona chips that can cause systems to lock up when running certain rare software workloads

at clock speeds greater than 2.4 GHz. A BIOS upgrade is available as a workaround, but according to enthusiast Web site The Tech Report, the workaround slows performance by up to 10 percent. The faster Phenom processors that the company

is preparing for release in the first quarter of 2008 should have this error corrected.

### Discouraging Results

Now that we have a Phenom CPU in our labs, we can make better comparisons with test systems built around Intel-based processors (see the chart "Penryn vs. Phenom: Two Different Worlds" on page 20). Our Phenom test setup used the same supporting components—an nVidia GeForce 8800GTS-based graphics board with 320MB of RAM, two Western Digital WD2500AAJS hard drives in a striped RAID array, and 2GB of DDR2-800 RAM—as our earlier Penryn tests did. We tested our unlocked Phenom at both 2.6 GHz and 2.3 GHz on an Asus M3A32-MVP Deluxe motherboard with an AMD 790FX chip set.

When running the Phenom 9900 at 2.6 GHz, our test system posted a score of 107 on WorldBench 6 Beta 2, not all that faster than the average mark of 96 turned in by the systems we've seen based on the last-generation Intel Core 2 Duo E6600 CPU. The E6600, an older chip, goes for \$230 from stores such as Newegg.com,

compared with the projected \$350 price for the 9900.

Of course, the fastest Phenom chip out now is a 2.3-GHz model, and at that speed our test PC's score dropped to 99—not much of an advantage at all for a CPU that costs about \$50 more than its aging competition. And there's no comparison to the ultra-high-end Penryn chip we evaluated on the same test bed: That \$1000 CPU clocked in at a World-Bench 6 Beta 2 score of 127. By the time AMD's faster Phenom processors are ready to ship, Intel will likely have mainstream Penryn chips ready to compete.

The first Phenom-based PC we could test—a \$999 CyberPower Gamer Ultra CF 3870, featuring a 2.3-GHz Phenom 9600 and an ATI Radeon HD 3870 graphics card—didn't fare much better with its score of 95.

AMD currently has no answer to Intel's SSE4 instructions for accelerating specific multimedia operations, which may widen the performance gap further in selected applications. On the other hand, unlike Intel's quad-core models, which are basically two dual-core CPUs using a shared bus interface, Phenom has four distinct cores, which should offer benefits. The performance comparison may evolve as more applications begin taking advantage of multimedia instructions such as SSE and leveraging more than two CPU cores, but given the size of Intel's head start, it's unlikely that AMD will be able to truly close the gap.

At AMD's Phenom launch



**AMD'S OVERDRIVE UTILITY** has an impressive array of options, letting you change multiplier and voltage settings on a per-core basis.

event in November, we also tested a 2.6-GHz Phenom 9900—based system featuring two of ATI's recently released Radeon HD 3850 graphics cards, an MSI motherboard using AMD's 790FX chip set, and 2GB of DDR2-1066 RAM. On World-Bench 6 Beta 2, AMD's test system received a score of 105, significantly faster than the 93 posted by a Polywell 580CF-2900 with AMD's last-generation 3-GHz Athlon 64 X2 6000+, though not nearly the 32 percent gain that AMD touts. While representing an impressive boost over AMD's previous CPUs, it's nowhere near enough to make Intel sweat.

### Tough Times

All things considered, 2007 probably hasn't been AMD's favorite year. In fact, things haven't been sunshine and roses for the company since the middle of 2006, when Intel introduced its Core 2 Duo CPUs. After three years as the performance champ, AMD was suddenly getting its clock cleaned, so to speak: When running at the same clock speed, Core 2 Duo chips were anywhere from 10 to nearly 20 percent

faster than comparable Athlon 64 X2 processors.

Not only that, but almost immediately after AMD's \$5.4 billion acquisition of GPU and chip set vendor

ATI, that company slid well back in its own performance race with nVidia. The acquisition gave AMD expertise in GPUs and chip sets, plus independence from nVidia—a longtime ally that had started supporting Intel the year before—but it added to the perception of AMD as firmly occupying second place. Losing money for several straight quarters hasn't helped, either.

In 2007 AMD also fell increasingly behind in the competition for better process technology. Intel manufactures its Penryn chips using a 45-nanometer

## PLUGGED IN ERIC DAHL



**VERIZON OPENS UP:** I'll be able to use any phone I want on your network? Awesome. Now can I get one of those helicopter guys to follow me around in real life?



**MICROSOFT TWEAKS WGA:** Calling it an "advantage" is still an insult, but this feature you never wanted on your PC is now somewhat less terrible.



**1.5 MILLION BOOKS:** That's how many Carnegie Mellon's Universal Digital Library has scanned. They're 1 percent done. Must be the world's longest progress bar.



**CELL PHONE AS BOARDING PASS:** Soon enough, you'll be able to do absolutely everything with your cell phone—except actually use the thing on a plane.



**WSJ SITE GOES FREE:** And so passes one of the last bastions of subscription-based Web content. If we could just liberate ESPN Insider, I'd be all set.



**WHITHER AMD?** Wait, no! Stop withering! Seriously, the industry needs the competition, and it's been a long time since we all were Athlon fanboys.



process, which allows the company to pack in more transistors per square millimeter than in the 65nm process AMD is introducing with its Phenom chips. That can translate to more chips per slab of silicon for cheaper production, giving Intel yet another advantage.

AMD's latest 65nm Opterons, with their parsimonious power usage, are competing well in the server market, but that does nothing for mainstream users.

## Platform News

With no way to regain the CPU performance crown, AMD has tried to focus the media's attention on its graphics board and chip set

technologies. This isn't all misdirection, though, since performance in games often relies more heavily on a system's GPU than its CPU.

The new Spider 790FX

**With no way to regain the CPU performance crown, AMD has tried to focus attention on GPUs and chip sets. This isn't all misdirection—game performance often relies more on GPUs.**

chip set plays right into that with support for AMD's HyperTransport 3.0 I/O bus, which has 20 percent more bandwidth than its predecessor. The 790FX can also combine four ATI 3800 PCIe 2.0 graphics cards on one motherboard—a technology that AMD calls CrossFireX. Preliminary tests on such

sites as Anandtech indicate that these 3800-series graphics cards match up well with all but nVidia's fastest models in performance, and that they have very good power-

consumption numbers.

Speaking of power consumption, AMD is offering users the ability to tweak consumption (as well as the speed of Phenom chips) to a startling degree, using a new utility called OverDrive.

No mere overclocking utility, OverDrive lets users adjust voltage settings and

clock multipliers on a per-core basis. For example, if you have a game that takes advantage of only two CPU cores, you can build an OverDrive profile that overclocks two of the Phenom's four cores and ratchets down the speed on the other two, conserving power and lowering heat to create more headroom for the two cores that you'll be using heavily.

If you would prefer not to tweak every bit of your hardware manually, OverDrive includes a one-click performance tuning option that benchmarks your system and ratchets up speeds to a safe level automatically.

If AMD's 65nm manufacturing process manages to produce Phenoms with overclocking headroom, gamers could find value in the unlocked, 2.3-GHz Black Edition Phenom chip.

According to AMD, motherboards based on its 790FX chip set should be inexpensive in comparison with the latest motherboards built for Intel's Penryn processors. Consequently Spider-based systems could present an interesting choice for mainstream gamers—that is, you could well spend less on the CPU, motherboard, and memory, yet combine them with up to four fast but reasonably priced 3800-series graphics boards. Although the CPU will not be able to compete with similarly priced offerings from Intel—especially with the mainstream Penryn processors expected to launch early in the year—a quad-CrossFire system could be an affordable gaming powerhouse. ●

## Penryn vs. Phenom: Two Different Worlds

### PCW Test Center

AMD'S PHENOM CPU is worlds ahead of the company's Athlon processors, but it can't hold a candle to Intel's fastest chips. Of course, Intel's first Penryn CPUs are aimed at the high end: They go for \$1000 a piece. Still, the first Phenom systems we've tested compare best to PCs based on Intel's Core 2 Duo E6600 CPU—a chip that's more than a year old.

TESTED SYSTEM	CPU	World-Bench 6 Beta 2	Time in seconds			
			Adobe Photoshop CS2 test	Autodesk 3DS Max 8 SP3	Multitasking test	Ahead Nero 7 Ultra
AMD CPU						
AMD Phenom 9900 (reference system)	2.6-GHz Phenom 9900	107	457	378	258	312
AMD Phenom 9600 (reference system)	2.3-GHz Phenom 9600	99	508	423	287	309
CyberPower Gamer Ultra CF 3870	2.3-GHz Phenom 9600	95	535	427	291	420
INTEL "PENRYN" CPU						
Intel Core 2 Extreme "Penryn" (reference system)	3-GHz-Core 2 Extreme QX9650	127	307	318	213	336
OLDER CPU						
Average of four Core 2 Duo E6600 systems	2.6-GHz Core 2 Duo E6600	96	427	597	314	538
Polywell Poly 580CF-2900	3-GHz Athlon 64 X2 6000+	93	588	623	306	476

CHART NOTES: We tested all reference systems with 2GB of DDR2-800 memory, a pair of 320GB Seagate ST3320620AS hard drives in a striped array, and an EVGA GeForce 8800GTS graphics card. We tested Phenom-based systems using an Asus M3A32-MVP Deluxe motherboard with AMD's 790 FX chip set. The Penryn system used an Asus Maximus Formula motherboard with Intel's X38 chip set. Tests conducted by the PC World Test Center. For details on how we test, go to [find.pcworld.com/52482](http://find.pcworld.com/52482). All rights reserved.



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## Can You Trust Your Social Network?

FACEBOOK AND MySpace know a lot about you, such as where you live, where you work, who your friends are, and what music and movies you like. But would you want your social network—and your friends on it—to know what you're doing at other sites, such as those of Blockbuster, Coca-Cola, and the NBA? Maybe not—and that's why Facebook caused such a furor when it turned on its Beacon ad service in November with little notice to its members.

The Beacon debacle is just the beginning. The same deep connections that make online social networks a valuable tool for connecting with friends and colleagues also make them great targets for advertisers. As the networks open themselves up to new, highly targeted ad campaigns, members will need to look carefully at the services' privacy policies.

### A Bad Example

The privacy controversy over Facebook's Beacon exemplifies both the opportunities and the pitfalls of social networking ads. Beacon tracks certain user actions on some partner sites, such as Blockbuster and Fandango, and reports those actions back to the user's Facebook friends. Facebook considers these "social ads" an innovative and ultimately more effective form of advertising because it leverages the connections between its users.

Many users of Facebook

*The privacy concerns raised by Facebook's Beacon service are just the beginning: Broader tracking is coming to social networks.*

have a very different opinion of the new generation of social ads. The complaints started soon after Beacon's launch, as critics charged that the program was diffi-

Beacon twice, making its workings more explicit and giving people more control over it, including the ability to opt out of participating in it entirely. At press time,



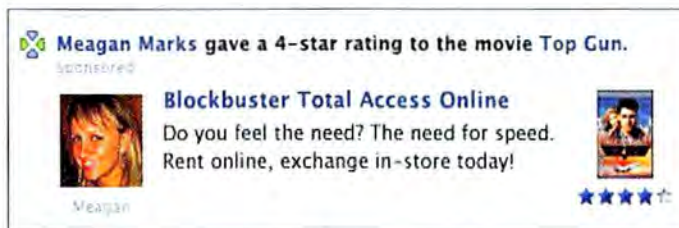
**MAKE A TRANSACTION on a partner site, and that site will inform Facebook about your purchase or other interest in a product.**

cult to understand and opt out of. One user discovered that his contacts had been notified that he had bought an engagement ring before he had even proposed.

Programs like Beacon do offer better ways to target potential customers. For example, if someone has been looking for Toyota cars online, and in their social net-

however, privacy concerns remained. Independent research by Computer Associates shows that Beacon tracks all users on partner sites, not just Facebook members who are logged in.

Facebook apparently has no plans to narrow Beacon's broad user tracking, saying that it deletes the data it receives about the actions of



**USING ITS BEACON ad system, Facebook can report your activity on various partner sites to your contacts on the social network.**

working profile they have indicated where they live, the site could deliver an ad informing the person about the nearest Toyota dealership and the most current deals.

Facebook has tweaked

logged-off Facebook users, former Facebook members, and nonmembers.

"With Beacon, Facebook has given a case study as to how not to do" advertising in social networks, asserts

IDC analyst Karsten Weide.

Whatever ends up happening with Beacon, experts agree that advertisers will certainly want to use Beacon-like systems to harness word-of-mouth marketing opportunities on social networks. The public is likely to see many similar programs in the coming years.

### Financial Failures

Despite their deeply engaged audiences, broad reach, and heavy traffic, Facebook, MySpace, and other social networks

have not come close to fulfilling their potential as advertising vehicles. Currently, many ads on social networks are merely irrelevant or annoying, but this could change if the ads are more targeted and useful.

"Consumers hate advertising because there's a lot of it out there and most of it doesn't relate to our needs to begin with," Weide says. "Leveraging social relations is a very elegant way to do online advertising...as long as you give users the ability to control what other people see about their actions."

People should expect social networking sites to use what they know about their members and their online actions, including demographic data and browsing history, in ad programs. As such programs develop, users will need to look out for ways to decline to participate, or to limit the data they're giving away.

—Juan Carlos Perez

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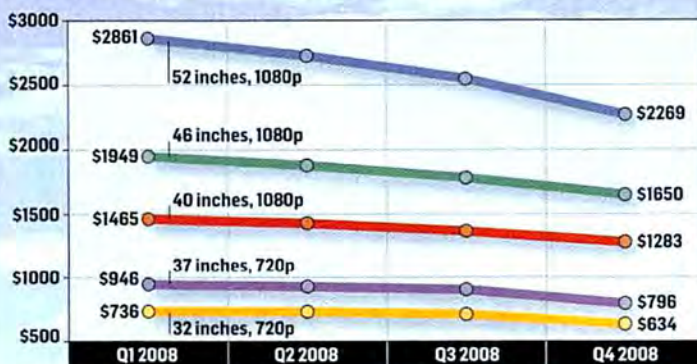
## HDTV Prices Will Drop Most Quickly in Late 2008

HIGH-DEFINITION TV TOOK some giant steps forward last year. New technologies debuted, 1080p went mainstream, and 40-inch LCD TVs became the new sweet spot.

What will 2008 bring? Continued price cuts, mostly toward the second half of the year. And according to DisplaySearch's Paul Gagnon, you can expect to pay a 10 percent premium for sets featuring a 120-Hz refresh rate, which helps improve the picture during fast-moving sports programs and movies. Models with LED backlighting may command a 20 percent price premium.

—Eric Dahl

## U.S. LCD TV Street Price Forecast



Source: DisplaySearch Q4'07 TV Cost and Price Forecast Report

## BETA WATCH EDWARD N. ALBRO

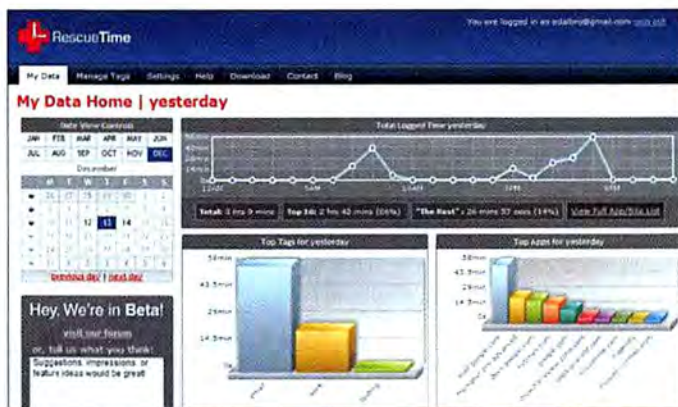


### Spokeo: Providing the 411 on Your Friends

With the explosion of social networks, fracturing is inevitable: Some of your friends are on MySpace, other buddies use LinkedIn, and still others are addicted to Twitter. Spokeo helps you keep track of everybody from one spot. The free service scans your address book, and finds your friends' accounts on any of 30 networks and services, including old-school Friendster, photo spot Flickr, and even Amazon's Wish List. When your friends post new musings or pictures, Spokeo lets you know. Spokeo has one big hole—it doesn't monitor Facebook—but otherwise, it's scarily complete. The site displays only information you're authorized to view, but I still find it a little creepy that I am now fully informed about what kind of sheets a casual business acquaintance wants for his birthday. [spokeo.com](http://spokeo.com)

### RescueTime: Charting What You Do

Ever get to quitting time and wonder where your workday went? If you spent much of your day on your computer, RescueTime will tell you exactly what you were doing. After you download RescueTime's free monitoring software, the program keeps track of how long you worked in a specific application or browsed at a particular Web site. The software is smart about recognizing when you're actively working and when you've merely left the system on during your lunch break. Afterward you log in to your account on the service's site to see detailed graphs illustrating what you've been up to. The site combines data from any PC you use that has the monitoring software running. In addition, you can apply such tags as 'work' or 'gaming' to applications, to categorize how you spend your time. You may find the answer disturbing. [rescuetime.com](http://rescuetime.com)



**RESCUETIME KEEPS TRACK** of exactly how long you spend working in various applications and visiting specific Web sites.

### Zoho Show 2: Improved Online Presentations

The second generation of Zoho's free, Web-based PowerPoint replacement gets closer to Microsoft's program, with some cool collaborative features. This version of Show brings new themes, the ability to add shapes and clip art, and more options for formatting text and arranging images. Show is certainly more capable than Google's bare-bones equivalent. The developers promise an improved import function, but I still encountered problems when I pulled a PowerPoint presentation into a prerelease version of the application; graphic elements on the pages displayed improperly. You can deliver your presentation remotely from within Zoho Show, and you can chat with participants and even allow them to take over the presentation. [find.pcworld.com/59501](http://find.pcworld.com/59501)



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## Is Your ISP Making Video Downloading Harder?

WEB SURFERS' growing appetite for multimedia content and a glut of music and videos to download are taxing ISP networks—and some providers are now responding by putting the kibosh on the free-flowing download party. Comcast is among the major ISPs that have begun targeting peer-to-peer file sharing applications such as BitTorrent by limiting the amount of bandwidth accessible to those applications.

Comcast says that it had to take action to ensure that a handful of customers couldn't gobble up more than their fair share of network resources, slowing other users' connections. BitTorrent is an easy target for ISPs because of its widespread use for pirating software and multimedia content.

But BitTorrent and other, similar services are unhappy about being singled out, and they're reacting by introducing new technologies of their own.

BitTorrent's protocol efficiently breaks files into many hundreds of pieces. When file swappers download a file, they're actually downloading bits of it from multiple sources. This method best ensures the file's availability and reduces the amount of bandwidth necessary to upload a single file. Nevertheless, someone who uses BitTorrent to download lots of movies will continue to use a lot of bandwidth.

BitTorrent estimates that 150 million people use its

As peer-to-peer apps such as BitTorrent create more and more traffic, ISPs are taking steps to slow them down. But file sharing services are fighting back.

file sharing technology—and they're not all pirates. The company has deals with Hollywood studios to distribute television shows and movies. "ISPs like Comcast want to

says Gilles BianRosa, CEO of Vuze, which claims to have 12 million users of its Azureus Vuze software.

### Part of the Problem

Use of BitTorrent raises issues that are symptomatic of a larger challenge to ISPs, according to industry analysts. ISPs are stingier with their bandwidth to compensate for aging network infrastructure that can't keep up with consumer demand, says Rob

bandwidth in areas where they face less competition, according to the former network administrator.

"Cable executives are very concerned about consumer criticism," he says.

### P-to-P Will Evolve

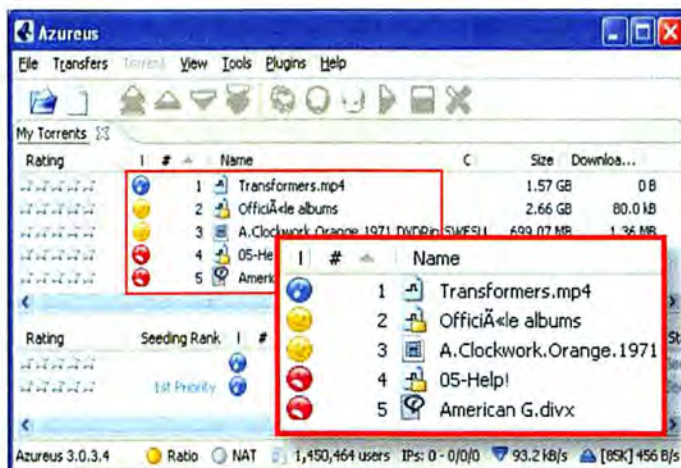
The divide splitting users of BitTorrent—with companies that want to distribute licensed, copyright-free content on one side and people interested in illegal file swapping on the other—will soon widen, says Justin Bunnell of TorrentSpy, a leading Web site for helping users find (not always savory) content available from BitTorrent users.

Bunnell says that BitTorrent, the company, is trying to distance itself further from illegal file sharing by making improvements to the BitTorrent protocol that it refuses to share with the open-source community.

In response, a faction of users is planning to create a new protocol to replace BitTorrent, allowing them to be less dependent on the corporate technology.

This new protocol, called .P2P, could be released in early 2008 by The Pirate Bay, a leading Swedish P-to-P Web site that promotes the trading of pirated content. This revision of the BitTorrent protocol is aimed at making it technologically harder for ISPs to block traffic and more difficult for antipiracy organizations to catch copyright violators.

—Tom Spring



**VUZE SAYS 12 million people use its software to download media files, but the company complains that some ISPs are getting in the way.**

throw the baby out with the bathwater," complains Ashwin Navin, president and co-founder of BitTorrent.

Another company, Vuze, is similarly rattled and is petitioning the Federal Communications Commission to prevent ISPs from interfering with P-to-P traffic. Vuze also distributes licensed content to consumers via the BitTorrent protocol.

"It's unclear whether ISPs are blocking BitTorrent traffic to combat piracy or because of network issues,"

Enderle, principal analyst with the Enderle Group.

To conserve bandwidth, a former network administrator for a major U.S. ISP told us, ISPs not only are blocking P-to-P traffic but also are using "traffic shaping"—a technique that delays some packets to even out the demand on a network.

The former network manager, who asked not to be identified, says that ISPs have been shaping traffic to varying degrees for years. ISPs are more likely to limit



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**TOSHIBA WILL BEGIN manufacturing larger SSDs this year.**

## Solid-State Drives Grow to 128GB

IF YOU'RE LOOKING for a fast, quiet, solid-state drive for your laptop, you will soon have several more options. In early 2008, Toshiba will begin manufacturing flash-based solid-state drives, which the company promises will offer faster boot times and lower power consumption than current hard-disk models do.

Initially the drives be available in capacities of 32GB, 64GB, and 128GB.

High prices for flash memory have limited adoption of solid-state drives so far, but industry observers expect Toshiba and other storage manufacturers (such as Samsung) to ramp up production, which may lower prices and spur wider use. Supposedly, solid-state drives are more durable than hard disks, too.

Production of 1.8- and 2.5-inch SATA drives will begin in May. Toshiba is quoting a 100-megabytes-per-second maximum read speed and a 40-MBps maximum write speed, figures that are right in line with the speeds of most desktop hard drives.

—Jeremy Kirk

## GEEKTECH TOM MAINELLI



## Save Money by Watching the Watts

WE USE A lot of electricity at my house, a drawback to being technology obsessed. In the interest of going at least a little bit greener, I set out to measure (and to reduce, I hoped) the power usage of my various home-office computers and peripherals during a typical workday. What I discovered was, uh, shocking.

To begin my testing, I picked up the Kill A Watt from P3 International ([find.pcworld.com/59399](http://find.pcworld.com/59399)), a \$21 product that lets you measure the amount of power a given device uses. Then I perused my \$75 electricity bill and discovered that the power company charges me roughly 11 cents per kilowatt-hour (kWh) for the first 333 kWh we use per month. (I also learned that the price per kWh goes up slightly for the next 100 kWh we use, and then it rises dramatically once we pass the 433-kWh mark—which we commonly do.) Armed with my new gadget and a little pricing knowledge, I headed for the power strips under my desk.

### The Good, the Bad, the Insatiable

My company-provided Dell notebook sips responsibly from the power trough, consuming an average of 29 watts while in use and 20 watts with a dark screen (now set to occur after 5 minutes of inactivity). Standby pulls a mere 1 watt, and powered off it's a perfect 0. When I work at home, I use the notebook to monitor my e-mail, and the screen is dark half the time. I then shut it down after a 9-hour workday. In the end, I'm happy to pay roughly 2 cents a day to run this notebook.

My home-built desktop shows less restraint, drawing an average of 145 watts during typical use (though heavy video-card use can cause that number to spike up to 100 watts higher). In standby the unit pulls 6 watts; turned off, it

still draws 3 watts. In the past I rarely powered it down, so I paid about 38 cents per day (\$140 per year). Now I set the PC to enter standby mode after 25 minutes, and I shut it down at

night, which should cut my cost by roughly half. My savings fall short of those from the Energy Star 4.0-rated "Green PCs" that the PC World Test Center saw recently

([find.pcworld.com/59401](http://find.pcworld.com/59401)), but they're a start.

I run two 22-inch flat-panels. One is an Acer that draws 37 watts while in use and 0 watts in standby and off; the other, a Westinghouse, pulls 43 watts while in use, and 1 watt in standby and off. For a 9-hour day with no standby, the cost is 8 cents. By setting the monitors to go dark after 10 minutes of inactivity and by turning off any power-wasting screen savers, I expect to keep my cost here at under \$30 per year.

My other two must-run devices are my Scientific Atlanta cable modem (6 watts) and my Netgear router (4 watts). With various devices accessing these 24/7, I'm willing to pay roughly 3 cents per day to run them continuously.

I'm less inclined, however, to feed my Klipsch speakers and HP all-in-one printer continuously. Idle, the printer pulls 12 watts, and even in power-saving mode (or off) it sucks down 6 watts. Worse, the speaker rig draws 16 watts when silent, goes up slightly at moderate volumes, and rises a bit more at concert-level decibels. But the power switch is virtually inaccessible, and I never turn them off.

So I attached a power strip to the underside of my desk—where I can easily access the power switch—and plugged in the printer and speakers. Now both pull 0 watts until I decide to use them.

No change proved particularly difficult—we'll talk about my power-guzzling, always-on home server another time—but every little bit helps. It feels good to be a bit more green, and to save a little green on the power bill.



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## Pleo Robot: Sophisticated—And Prehistoric

THE ROBOTIC DINOSAUR brainchild of a startup called Ugobe, Pleo was supposed to arrive in time for Christmas 2006, at \$200. When he finally shipped in time for this past holiday season—available direct from Ugobe as well as online from Amazon, Best Buy, The Sharper Image, and Target—the critter's price had risen to \$349.

Despite the delay, Pleo remains kind of amazing. Other toy robot dinosaurs have come and gone, but Pleo is nothing like them—or like any other robotic toy, period. Aside from the decidedly mechanical noises the cyber-reptile makes while doing his thing, he's the least robotic robotic toy I've ever seen.

Ugobe calls him a "life form," and he is indeed remarkably lifelike for a robot. Rather than being cast in a hard plastic shell, he has scaly skin, not to mention eyes with eyelids. He ambles around, with a surprisingly loose-limbed gait. He likes to play tug-of-war with

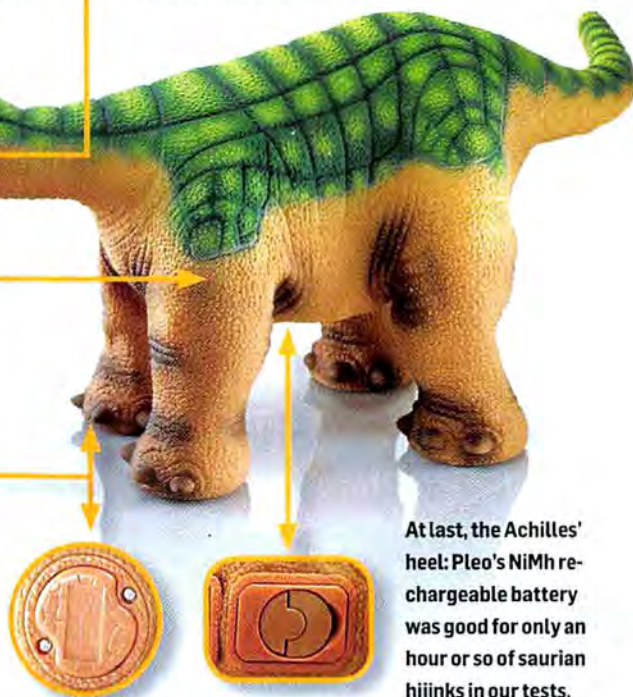
Pleo's nose contains an infrared receiver and transmitter as well as a color camera, so the little guy can "see" what's around him.

Microphones in the dinosaur's ears let him learn the sounds of his environment.

Touch sensors all over Pleo's body help the robot figure out if he's being petted or picked up by his tail.

Ground sensors embedded in each of Pleo's feet help the creature walk around.

things you put in his mouth, but when he gets tucked out, he sleeps and snores. He greatly enjoys being petted and hates being picked up by his tail. Most striking of all, he appears to think—and Ugobe says that he learns from his experiences and grows smarter over time.



At last, the Achilles' heel: Pleo's NiMH rechargeable battery was good for only an hour or so of saurian hijinks in our tests.

In short, Ugobe has created something akin to a three-dimensional cartoon character that you can interact with, or maybe a Disneyland Audio-Animatronic figure

that you can take home. The company accomplished this feat by packing Pleo full of technology. Here's a quick look at Pleo's components.

—Harry McCracken

### PLEO'S HERITAGE

UGOBE'S PLEO IS the latest in a long line of household robots, from sometimes-annoying toys to useful gadgets.



#### 1998: Furby

Ugobe cofounder Caleb Chung designed this popular toy, which was banned from the CIA due to its built-in recording device.



#### 1999: Sony AIBO ERS-110

Sony's expensive robot dog found a following among coders who taught it to play soccer. Seriously. But Sony put it to sleep in 2006.



#### 2002: iRobot Roomba

It's not as cute as AIBO or Pleo, but iRobot's vacuum has proved to be the slightest bit more useful. It now has floor-cleaning cousins.



#### 2004: Wowwee Robosapien

You can program this relatively inexpensive humanoid robot toy with the included PDA-style remote.



#### 2005: Wowwee Roboraptor

Now that Pleo's here, Roboraptor finally has some company in the semiautonomous robot dinosaur category.



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## Mobile Linux Platform to Take On Google's Android

GOOGLE'S LINUX-BASED mobile phone platform, Android, isn't the only game in town. The Linux Phone Standards Forum (LiPS) has finished the first version of its mobile specification.

The specification now includes APIs (application programming interfaces) for telephony, messaging, calendar, and instant messaging functions, as well as new user-interface components.

The various mobile Linux groups are trying to accomplish the same thing, according to Bill Weinberg, general manager for LiPS. "[We] are all attempting to unify...a fragmented market, but we're going about it in different fashions," he says.

LiPS isn't meant to be a complete phone offering, says Weinberg, but it should provide some features that competing platforms don't. The telephony API is a particularly important component, because it will allow developers to create various voice-telephony applications; as a result, an online phone book could offer, for instance, one-click dialing—a capability that developers don't anticipate having access to on Apple's iPhone.

Weinberg expects to see commercial phones using the standard soon.

—Nancy Gohring

## GADGET FREAK DAN TYNAN



### Bringing Broken Gadgets Back From the Dead

MY IPOD MINI was dead. It had shuffled off this mortal coil and joined the choir invisible.

Well, the screen still worked. But the battery wouldn't hold a charge. And when I popped in the headphones, it produced an ear-piercing screech not unlike a Ted Nugent guitar solo.

Once again I was facing the fix-it-or-forget-it conundrum. This time, instead of littering the landscape with another dead gadget, I went the fix-it route.

I was facing the age-old problem: Fix my dying gadget to squeeze another year out of it, or bite the bullet and pay full freight for a new one.

#### CPR or DNR?

First I tried FixYa.com, an online support community. I could have posted my problem for free, but instead I paid \$10 for instant advice from the site's "Elite Experts." Within minutes I received e-mail instructions to open the case and solder any loose connections I might find.

It was probably good advice, but it seemed a little too do-it-yourself for me, so I went with Plan B. I shipped the Mini off to Rapid Repair ([www.rapidrepair.com](http://www.rapidrepair.com)) along with a \$10 check to cover return shipping. The company promised to give me a quote within 48 hours of receiving my gadget. Two days later, a technician named Mike told me the bad news. The Mini's battery had swollen, busting connectors on the main board; the 4GB hard drive had 25 bad sectors, too. Total cost of repair: \$140.

That was a bit more than my iPod was worth. According to Buymytrronics.com, which buys broken gadgets and recycles or sells the parts, a Mini in this sad state would fetch precisely \$8.04. (A brand-new, factory-sealed model was worth only \$36.40.) On the other hand, I could buy a groovy new iPod Nano, with the ability to play videos as well as tunes, for about \$150. That seemed like a no-brainer to me.

I asked Mike: Wouldn't it make more sense for me to toss the Mini and buy a Nano? Yes, he

reluctantly agreed, as he watched \$140 fly out the door. Then he offered to recycle my Mini for me and refund my \$10, an offer I accepted.

Surprisingly, only about 5 percent of gadgets the company receives aren't worth fixing, says Aaron Vronko, cofounder of Rapid Repair, which

handles 500 broken iPods a week, as well as Microsoft Zunes and game consoles. Most fixes are relatively easy and cheap, like replacing bad batteries or screens. Vronko's rule of thumb: If the repairs cost less than 60 percent of replacement, fixing makes more sense.

"You'll get another year out of it, and by then there will be new devices that offer more storage and features for less money than you'd pay today," Vronko says.

#### Fixed Costs

Technology has become so embedded in our homes that friendly geek repair techs like the ones at Rapid Repair may soon become a regular part of our lives, says Stephen Baker, VP of industry analysis for the NPD Group.

Right now, most gadgets are expensive to fix and support, says Baker. But as more gizmos connect to the Internet, technicians will be able to diagnose problems and correct them remotely, making repairs cheaper. That development will inspire bigger players to step in and dominate the multibillion-dollar at-home repair market now served by companies such as Best Buy's Geek Squad and Circuit City's Firedog.

"In the next few years, we'll likely see a major PC maker, electronics manufacturer, cable company, or phone company wrap all this stuff together and say, 'For X dollars per year, we'll keep everything running,'" Baker says. "Just as you pay someone to come fix your sink when it leaks, you'll have to pay someone to help you manage your electronics."



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# Consumer Watch

## One Year Later, Vista Still Plagued by Incompatibilities

BY TOM SPRING

IF YOU'RE RUNNING Vista and you need a multifunction printer, Brother's MFC-5860CN might seem a great choice. After all, it's proudly sold as "Certified for Windows Vista."

But don't try using the optical character recognition software that comes with the printer: PaperPort 9 from Nuance isn't Vista compatible. (Brother recommends using Microsoft Office's Document Imaging feature instead.) The MFC-5860CN's Internet fax option also works only with XP, not Vista.

Almost a year after Vista's commercial release, this kind of support—or nonsupport—is not uncommon, according to Jim McGregor, research director at market research firm In-Stat. Analyst Chris Swenson of the NPD Group notes that, while major software and hardware vendors have developed new Vista-compatible offerings, they have been slow to provide Vista support for their legacy products, which frequently become crippled or inoperative under the new OS, to the consternation of these products' owners.

### Photoshop Users Upset

Adobe Photoshop CS2, to take just one example, still isn't fully compatible with Microsoft's latest operating system.

"If you want Vista and you use Adobe CS, you are going to have to buy the new CS3 version," Swenson says. CS3 costs \$649 for new users, and \$200 as an upgrade from CS2.

Adobe is developing free Windows Vista patches for some products, but says more than a dozen of its programs don't

support Vista (because all or part of the program won't install, or it installs but doesn't work properly) or don't "officially" support Vista (meaning that the program has known issues).

Incompatibility issues always accompany a new release of Windows. When XP shipped six years ago, however, such problems were significantly less frequent, Swenson says. This time around, "vendors wish they could just forget about [supporting XP-era products]," he says.

Hardware and software vendors have been slow—or unwilling—to make sure their older products work with Vista.



### Industry Overload

But it's nearly impossible for companies to patch all their products for Vista, says In-Stat's McGregor. Shrinking release cycles mean many products need Vista drivers or patches, and creating them gets expensive.

Intuit, for one, certifies only the 2007 and 2008 editions of its QuickBooks Premier accounting software for Vista—so firms that bought QuickBooks 2006 for \$400 must pay \$375 to receive a Vista-compatible edition.

Intuit does not supply a Vista compatibility patch or upgrade for older versions of QuickBooks Premier—though for a limited time, when the OS first launched, the company offered special discounts for Vista-compatible versions of its software.

### When 'Certified' Isn't

Sometimes, as with Brother's multifunction printer, even products described as compatible with Vista just aren't. Corel's Ulead VideoStudio 10 video editing software, for instance, appears on Microsoft's "Certified for Windows Vista" list of hardware and software products that have been tested and are 100 percent compatible—yet Corel's sup- ➤

Microsoft has been sued over another Vista logo campaign, in which vendors labeled PCs sold before the OS's release as 'Vista Capable' or 'Vista Premium Ready' (see [find.pcworld.com/59415](http://find.pcworld.com/59415)).

port page for the product lists some advanced features that work only with XP, and the product also appears on Microsoft's "Works with Windows Vista" list. The "Works with..." logo means that an app meets baseline performance standards when run on Vista.

## Don't Blame Microsoft?

Ben Reed, product marketing manager for the Windows Vista Logo Program, says Microsoft has worked more extensively with its hardware and software partners on ensuring Vista compatibility than it did with Windows XP. He says that over 7000 products have been certified to work with Windows Vista or given the "Works with..." logo. Last May, he points out, the NPD Group stated that 48 out of the top 50 consumer applications work with Vista.

Nevertheless, the Vista compatibility problems are apparently making people reluctant to upgrade to the new OS. PCWorld.com community forum user stealth694, for example, wrote: "Compatibility is the main problem [with Vista]. Just how compatible is Vista with Windows XP and Windows 2000 programs? Personally I am sticking with XP for at least another year to two years [to] see what happens. Vista has an aroma like [Windows] Me, and I am not interested in getting sick again."

But many software experts say consumers shouldn't be angry with Microsoft. "Microsoft did its best under incredibly difficult circumstances with Vista," says Stephen Baker, another analyst with the NPD Group. "If you're going to spread blame for Vista headaches, there is enough to spread around the entire computer industry."

If you're considering upgrading to Vista, carefully investigate the compatibility of your existing hardware and software. Study the support pages, including forums or community sites, of the products you depend on; do a Web search for the names of these products and "Vista compatibility." Otherwise, your upgrade may end up feeling more like a downgrade.

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### The HDTV Deliveryman Cometh...

I BUY LOTS of stuff online, but until recently I never gave much thought to how my purchases got to me.

After all, there wasn't much to say about FedEx, UPS, or the U.S. Postal Service.

Things changed when I bought a big flat-screen TV. As I surfed from e-tailer to e-tailer, I learned that delivery services varied widely, and that failure to check out these services could result in unpleasant surprises when the set arrives. Here's what you need to know.

First of all, most larger sets are delivered by specialized services that typically make an appointment to arrive within a window of time—say, 2 hours or so. But what they do when they show up differs considerably.

...but where he leaves the set may vary. It pays to check out your delivery and installation options beforehand.

and hiding the cables in your baseboard.

But you may not have access to all of those options: Manna's customers—the companies that sell flat-screen TVs—decide which services to offer us (their customers) and what to charge for them.

Abe's of Maine, for example, throws in Manna's threshold service free of charge with standard, seven-to-ten-day delivery for the plasma model I chose;

White Glove service, \$249, is the only other option.

I bought my set from Sears.com, which charged \$65 to place the box where I wanted it; unpacking and installation took several hours.



### Doorstep Drop-Off

Robert Masters, senior vice president at Minnesota-based Manna Distribution Services, which specializes in delivering big-screen TVs and furniture, says his firm offers three levels of service.

The first, called threshold delivery, gets the TV set to your front door, but no farther. If you live in an apartment, threshold service will leave the set in the hallway on your floor. You want this service only if you have enough muscle power at your immediate disposal to carry the set indoors and to its intended location.

The next step up is over-the-threshold delivery, which gets the set past the front door—but again, no farther. At least it's now out of the rain, or the hallway.

The deluxe service, called White Glove, means two people will remove the TV set from its packaging and put it exactly where you want it. And if you want setup services, Manna offers them too, also at three levels (basic, deluxe, and premium)—up to installing a wall mount you supply,

### Getting Set

If you do pay for installation, Masters offers a few tips. First, identify a place where the shippers can deposit the big (and possibly dirty) box the set comes in without damaging carpet or flooring.

Don't disconnect entertainment-center components. Installers don't want to sort through a nest of disconnected cables to figure out which ones go where.

Visually inspect the set for obvious problems. Masters says packaging originally designed for bulk delivery to a big-box store isn't always sturdy enough to survive transfers of single sets in a van. Refuse delivery if you find damage.

If you can, hang on to the box in case you need to return the unit. And consider buying new components at the same time as the HDTV instead of later. Manna will deliver up to 50 pounds of extra gear with the set free of charge—so you might be able to get free shipping for a Blu-ray or HD DVD player when it piggybacks on the delivery of your new big-screen TV.


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## ON YOUR SIDE

AMBER BOUMAN



A COMPUTER I purchased last year had a preinstalled copy of Symantec's Norton Internet Security, and I bought a subscription to Symantec's service following a three-month free trial. But my computer crashed ten months later, and when I restored my system, I dropped Norton and started using McAfee Security Suite, which I received for free from my ISP. However, a year after I purchased the Symantec service, Symantec debited my bank account for \$49.99, the cost of a year's renewal. How can it take my money for a service that I'm not using?

*Thermon Payne, North Tazewell, Virginia*

**OYS Responds:** All Symantec customers who purchase services online are enrolled in the Norton Protection program, which automatically renews licenses for the products—in order, Symantec says, to prevent lapses in protection (McAfee's services operate similarly). Symantec says that when Payne first subscribed, he should have received e-mail messages with details on the program, as well as instructions on how to opt out; he also should have received a notice (again with opt-out instructions) 15 days before he was billed for the renewal. Payne says that he did not receive these messages. After we contacted Symantec, the company refunded the charge.

The lessons here: Don't assume that uninstalling a product will end a subscription service. Symantec says Payne could have prevented auto-renewal by accessing his account online and changing the default instructions.

Also, for any software purchase, look over the terms of service for clauses about billing and renewal.

Finally, after you make a purchase online, expect to see messages from the merchant (check your spam filter if need be). Some will contain important information like Symantec's instructions for cancelling automatic renewal.

### Too Much Info?

Reader David Guinn from Rockford, Minnesota, was dismayed when, while placing an order with CyberPower, he was asked for copies of both sides of his credit card and driver's license. He had never been asked for such documentation before and wondered why CyberPower



needed it. A CyberPower representative said the company required the copies because Guinn wanted the system sent to his business address, which was different from his billing address and was not on file with the credit card company.

Guinn ultimately wound up buying from Hewlett-Packard, which did not require the additional documentation.

### Coby Music Player Recall

Coby Electronics has recalled about 12,000 portable DVD/CD/MP3 players following reports that they may overheat and pose a fire hazard. The recall applies to models TF-DVD170 and TF-DVD176 sold between May and October 2007.

The U.S. Consumer Product Safety Commission says Coby has received three reports of units overheating, including one involving minor property damage (but no injuries) from a fire.

Customers should stop using the players immediately and either call Coby at 877/231-9240 or go to [www.cobyusa.com](http://www.cobyusa.com) for information on returns and refunds. You can read the CPSC report online at [find.pcworld.com/59271](http://find.pcworld.com/59271).

## PayPal Offers Virtual Debit Card Plug-In

PAYPAL LETS YOU make secure online payments without exposing your bank account or credit card number—but only for e-commerce sites that accept the service. Now, however, you can use a PayPal account to fund transactions on any site that accepts MasterCard.

Through a partnership with MasterCard, PayPal recently began offering its customers a virtual debit card via a Firefox or Internet Explorer plug-in (get the free download at [find.pcworld.com/59285](http://find.pcworld.com/59285)). The PayPal Plug-In recognizes e-commerce checkout forms, gives you the option of filling out the forms using your PayPal contact information, and also offers to generate a unique MasterCard number to pay for a purchase on a site that doesn't accept PayPal.

That MasterCard number is linked to the user's PayPal account, which is charged for the purchase.

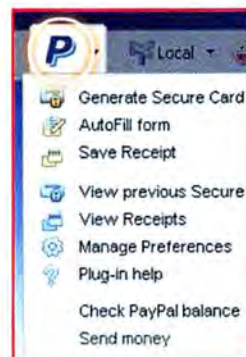
However, because the PayPal Plug-In is a debit card service, if you have insuffi-

cient money in your PayPal account, you must fund the purchase through either a bank account, PayPal Buyer Credit (PayPal's installment-plan program), or a PayPal Plus credit card. You cannot use another credit card.

None of the PayPal account info is stored on the user's PC; rather, the information is on secure PayPal servers.

The plug-in uses the same virtual card technology that many banks already offer to MasterCard customers who prefer not to provide a permanent card number to Web retailers.

—Yardena Arar ●



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*BeAware allows you to view activity by user, department or enterprise.*

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# Business Center

## Videoconferencing for the Budget-Conscious

BY BECKY WARING AND AOIFE MCEVOY

FOR YEARS, videoconferencing applications have been the province of large companies, but price drops and Web app advances have made the technology accessible to smaller businesses. We found three good, free (or inexpensive), easy-to-use videoconferencing options: OoVoo, SightSpeed, and Yugma.

### OoVoo

Packing the most robust video capabilities in this group, OoVoo supports six-way videoconferencing with very good picture quality over our fast (5 megabits per second) DSL connection. The video's size scales down as the number of users goes up, so it won't hog all of your bandwidth. And you can still surf and upload files while conferencing.

Installing the desktop client and setting up an account take just a couple of minutes. Once OoVoo is installed, you will see a contact-list window similar to those in instant messaging programs like AIM or Trillian; indeed, OoVoo works in much the same way as these apps, so it's a snap to learn.

Like most Web audio, OoVoo's audio was fairly good, though we noted some vocal jitter and delay here and there. Users have the option of communicating via text chat (privately or to the whole group), recording 1-minute video messages to send to coworkers,

and transferring files to other contacts.

OoVoo lacks the business collaboration features present in most Web conferencing software, including scheduling, whiteboarding, desktop sharing, and presentation capabilities. But judicious use of the texting and file transfer

Thanks to improving Web applications and faster broadband, videoconferencing is no longer exclusively for big firms.

play up to four talking heads on screen during a call. The service is easy to install and simple to navigate. To begin videoconferencing, your contacts must first install the basic SightSpeed client. You build your contact list by adding names of other SightSpeed users; the app tells you when they're available.

To initiate a call, you select your contact's name, hover your pointer over one of four icons—for video, telephone, video message recorder, or text message—and click the medium of your choice.

You can easily record calls, share files, adjust video controls, and mute the audio.

The well-organized administrative console lets you manage users, view call logs, and buy conferencing time; moving from one task to another is a simple matter as well.

Sightspeed's video quality was somewhat inconsistent. During

one test, a face on the screen was sharp but the background seemed washed out; the next time, the whole video looked a tad fuzzy. Whether we were using VoIP to connect with other PCs or calling out to land-line or cell phones, the audio generally sounded loud and clear, though we detected occasional stuttering. As is the case with all these applications, the amount of available bandwidth directly affects video and audio quality. »



YUGMA SKYPE EDITION adds useful videoconferencing and collaboration tools to Skype's peer-to-peer audio and video services.

tools should handle most meeting needs. OoVoo is free (and ad-free) now, but it may add pay services in the future.

### SightSpeed Business

SightSpeed Business is a business-friendly version of the company's consumer offering, which has received high marks from *PC World* in the past (see [find.pcworld.com/59400](http://find.pcworld.com/59400)). The Business service's main upgrade is that it can dis-

For more news and reviews of Web-based productivity and communication tools for your business, check out the 'Software/Services' section of Business Center online at [find.pcworld.com/59471](http://find.pcworld.com/59471).

## Yugma Skype Edition

If your business uses Skype, adding Yugma tools can boost your videoconferencing productivity at very low cost. Yugma doesn't have the video chops of OoVoo and SightSpeed—its video is limited to two-person conferencing—but it's simple to use, and the basic service is free for up to ten users.

We reviewed the Yugma Skype Extra add-on, which allows Yugma to tap into Skype's proven peer-to-peer voice and video technology. When you send out a meeting invitation via e-mail, attendees receive a number that they can enter along with their user ID to join the conference at an appointed time. Control of a meeting can be passed between participants, and you can set up an always-on project collaboration and conferencing space where people can come and go as needed. However, since Skype video is limited to two-way conferencing, the service switches into audio-only mode when more than two people have joined the conference.

That limitation is counterbalanced to some extent by Yugma Skype's impressive collaboration tools, which include desktop sharing (where other participants can view your desktop and even take control of your mouse and keyboard), document sharing, and session recording—a rare and valuable feature.

**92**  
SUPERIOR

### OoVoo | OoVoo

This free program makes multi-user videoconferencing seem as easy as instant messaging.

[www.oovoo.com](http://www.oovoo.com)

**88**  
VERY GOOD

### SightSpeed Business | SightSpeed

This \$20/month (per seat) videoconferencing tool isn't perfect,

but it's dependable and decidedly cost-effective.

[www.sightspeed.com/business](http://www.sightspeed.com/business)

**85**  
VERY GOOD

### Yugma Skype Edition | Yugma

Yugma uses Skype voice and video well, but it's limited to two-way conferencing. Free for 10 users.

[www.yugma.com/yugmaskype](http://www.yugma.com/yugmaskype)

## NET WORK

RICHARD MOROCHOVE



### Bill.com Helps Control Billing Paperwork

THOUGH small-business accounting apps such as Intuit's popular QuickBooks automate your

business bookkeeping, they don't eliminate the paper shuffling. You still need to route bills manually to authorized employees for payment approval, and then file the documents that support the payment. That's where the Web-based cash management and document workflow tool Bill.com—called Cash-View when I tested it in beta form—can help.

You can enter new bills, invoices, and receipts into Bill.com in any of three ways: by scanning hard copies and uploading the image files from your PC, by e-mailing files to your private Bill.com account, or by faxing the documents to Bill.com for the service to input. The first method requires that you set up a system for scanning and converting documents to a supported format such as PDF or a Microsoft Office 2007 file.

Once documents are in the system, you can view them on the Bill.com Web site,

**This Web-based service lets you create digital images of your paper bills, upload them, and then manage them online.**



add transaction details, and specify who can approve an individual transaction for payment. Then you can instruct Bill.com to pay the bill for you. In response, the company will electronically withdraw funds from your bank account, and prepare and mail a check to the vendor.

The Web-based service is especially useful to businesses that use QuickBooks and must route invoices to multiple people—say, a bookkeeper, a bill approver, and a senior manager—for sign-off and payment. Bill.com passes the transaction data along to QuickBooks 2005 (or later) or to QuickBooks online.

Unfortunately, the service can't read a vendor name from the scanned image of a bill and match it with the same name in your QuickBooks records, so you'll have to enter the name yourself. Bill.com plans to add a data-entry service in the future that will enter vendor and payment

details. If you use an accounting app other than QuickBooks, you can enter a summarized total of the monthly transactions via a journal entry.

Bill.com works fine for paying bills, but its accounts receivable features are somewhat limited. You can enter the total amount of the invoices, then enter payments as you receive them, and Bill.com will keep track of what hasn't yet been paid. But Bill.com can't collect money directly from your customers (the company plans to include that feature in a future release).

Bill.com is unique in its price range (\$15 per month per user for up to 10 transactions per user; \$1.25 per transaction thereafter), making it a fairly priced tool for tracking invoices and eliminating bill-paying delays.

**BILL.COM LETS YOU add details and route invoices to the right person for payment.**



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## GotVoice Visual Voicemail Adds Transcription

SEVERAL VISUAL VOICEMAIL services use speech-to-text technology to transcribe and transform voice messages into e-mail or text messages. Now GotVoice, previously a notification and playback-only service, has jumped on the transcription bandwagon.

While competitors Simulscribe and CallWave make you forward all voicemail to their servers and change the number you dial to listen to voicemail, GotVoice's new Premium service (\$10 per month for up to 40 messages) calls your existing voicemail numbers 12 times a day automatically (you can init-

iate up to 18 more calls a day manually), records your recorded messages, transcribes them, and then e-mails the text and an MP3 file of the message to you.

In our tests, the transcripts were clear. But whereas a message left during business hours arrived promptly, a second message left at 10:20 p.m. didn't show up in our e-mail until after 10 a.m. the following day, because of the timing of GotVoice's check calls. In contrast, Simulscribe, which costs the same and also excels at transcription, gets voicemail immediately—



**GOTVOICE NOW CONVERTS voicemail into text, but because it checks for new messages only periodically, it's not always timely.**

we never experienced such delays (see [find.pcworld.com/59337](http://find.pcworld.com/59337) for our review).

GotVoice is easier to set up, but Simulscribe's timely delivery more than compensates for its attendant setup hassles.

—Mark Sullivan and Yardena Arar



**GotVoice Premium | GotVoice**  
GotVoice's transcripts are fine, but they may not arrive promptly. List: \$10/month for 40 messages

[www.gotvoice.com](http://www.gotvoice.com)

## Sanyo Projector Is a Good Fit for Small Spaces

YOUR CONFERENCE room may be cramped, but that doesn't mean your presentations have to be tiny. Sanyo's \$4999 PLC-XL50 business-class projector can display an 80-inch diagonal image at just 3 inches from a wall or screen, making it ideal for use in close quarters.

Weighing 17 pounds, the PLC-XL50 is not as portable as many of today's lightweight models, but its close-range capabilities make it handy for use in places where conventional projectors may not fit—in a lobby or hallway, for example. You can change its position from horizontal to vertical, and use it to display images on a tabletop, floor, or other flat surface.

Our demonstration unit delivered good image quality, displaying sharp text and well-saturated color graphics. For image adjustment, the projector includes a standard set of fine-tuning controls, all of which worked well. A unique Color Board mode lets you adjust the hue for better color accuracy



**THE PLC-XL50**  
**CAN be mounted**  
**horizontally or**  
**vertically.**

when you're projecting an image on a nonwhite surface (such as a beige wall), while a Blackboard Mode adjusts colors for projection on a green surface.

The PLC-XL50 delivers XGA (1024 by 768) resolution and 2000 ANSI lumens of brightness, a good amount of illumination for most small to midsize rooms with low ambient light. Its short projection distance also allows the PLC-XL50 to work well in settings with considerable ambient light, because the projec-

tor can sit very close to the screen.

This is a big plus when you use the PLC-XL50 for digital signage in places where light is needed, such as in a window display.

The PLC-XL50 includes VGA and standard video (composite, component, S-Video) inputs, but not a digital (DVI) input. It also lacks a USB slot or card reader, an omission that prevents you from using the projector for PC-less presentations. The bundled remote control provides easy access to all of the projector's essential features, but it doesn't support mouse control or have any type of pointer.

The PLC-XL50 carries a hefty price tag. But its ability to display big images in small spaces is unmatched.

—Richard Jantz ●



**PLC-XL50 | Sanyo**

A good fit when space is tight, but the cost isn't so small.

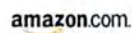
List: \$4999

[find.pcworld.com/59463](http://find.pcworld.com/59463)



"Environmentally friendly" might not be the first thing that comes to mind when you think about high quality PC components. At Antec, we believe strongly in protecting the environment, and that's why many of our new products meet 80 PLUS<sup>®</sup>, the highest independently certified standard in energy efficiency. Like the EarthWatts line of power supply units, which lower your electrical bill while delivering the same quality Antec performance. In addition, many of our cases are now powered by 80 PLUS certified PSUs. No matter what your needs are, Antec enables quieter, cooler, and greener computing. Find out more at [www.antec.com](http://www.antec.com).

**Antec**  
The Power of You



# Energy efficiency translates into tangible dollar savings for IT

**E**nvironmental design practices can pay off for your business. Energy-efficient PCs not only help the environment, they can help an organization increase its bottom line through reduced power consumption and lower monthly energy bills.

To simplify your planning process, we've identified five steps you can use to help you determine when to upgrade or replace your desktop PCs and transform the energy footprint of your business:

**Step 1:** Choose a system configuration with an 80 percent efficient power supply. Eighty percent power supplies reduce energy consumption, provide peak reduction and improve power quality. Typically, power supplies for desktop computers range from approximately 65 to 75 percent efficiency.

**Step 2:** Choose a system that has power management technology. EIST (Enhanced Intel SpeedStep® Technology) and AMD Cool'n'Quiet were created to lessen power consumption when software activity does not require the full capabilities of the processor. All HP business desktop PCs ship with power management technology enabled. Both AMD and Intel offer processor configurations that provide power savings. Look for Intel's Core 2 Duo processors and AMD's 45-Watt processors to yield the best energy efficiency.

**Step 3:** Replace your CRT monitors with LCD technology, which provides 70 percent power savings and offers up to twice the life span of CRT monitors. An office with 100 CRT monitors requires an approximate energy consumption of

9,000 Watts per hour (W/Hr), versus only 1,700 W/Hr when equipped with comparable 15-inch LCD monitors.

**Step 4:** Choose a system that has a BIOS offering a wide range of configurable power management options. The HP business PC BIOS provides five system states that can be configured to provide increased levels of power efficiency, such as the S3 Standby state that provides almost instantaneous recovery time and very low power consumption.

**Step 5:** Choose a system that has power management software. HP preloads the Verdiem SURVEYOR Power Management Software agent on its newest business PCs. Power management software helps to monitor and set policy for the overall IT environment, enabling you to further save on your energy bills.

## ENERGY STAR®

When making a purchase decision, consider systems that are ENERGY STAR qualified. ENERGY STAR-qualified products use less energy and prevent greenhouse gas emissions. A new ENERGY STAR 4.0 PC specification went into effect on July 20, 2007.

ENERGY STAR can include increased system reliability, reduced system maintenance costs, as well as decreased air conditioning costs.

Another helpful guide is EPEAT™ (Electronic Product Environmental Assessment Tool). EPEAT is a system to help purchasers in both the public and private sectors evaluate, compare and select desktop computers, notebooks and monitors based on their environmental attributes.

**HP leads the way with a holistic, top-to-bottom approach to energy efficiency**



## REUSE, RECYCLE, AND REDUCE

From an environmental perspective, computer products outlast their useful operational lives. HP designs products to reduce their impact on the environment by reducing or eliminating materials of concern, using fewer resources, reducing energy consumption and designing for recyclability.

HP design guidelines for PCs, workstations and servers include:

- Marking plastic parts weighing more than 25 grams according to ISO 11469 for easier sorting
- Eliminating glues and adhesives from product construction where feasible
- Using common fasteners
- Including snap-in features

In addition, HP offers several end-of-life services, including trade in, recycling, asset recovery, or donation for computer equipment, printing supplies, rechargeable batteries, and other items. For more information go to [www.hp.com/go/reuse-recycle](http://www.hp.com/go/reuse-recycle).

## ENVIRONMENTAL COMMITMENT

HP is committed to providing customers with inventive, high-quality products and services that are designed with the environment in mind. Paying attention to the system configurations of your IT equipment really pays off, both for the environment and for your bottom line. For additional information go to [www.hp.com/go/energyefficient](http://www.hp.com/go/energyefficient).





HP recommends  
Windows Vista® Business.

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**\$699**

Was \$964, you save \$265.<sup>2</sup>  
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# Security Alert

## Malware Evolving Too Fast for Antivirus Apps

BY ERIK LARKIN

IF YOU THINK that the latest security suites afford complete protection against malware attacks, think again. Today's for-profit malware pushers use dedicated test labs and other increasingly professional techniques to improve their chances of infecting your computer. And the techniques they employ to outpace security software makers appear to be working.

Make no mistake—a good security program can go a long way toward keeping you in control of your system. But *PC World's* recent tests of security suites ([find.pcworld.com/59327](http://find.pcworld.com/59327)) found that new malware easily evaded the applications. In our tests of how well security software blocks unknown malicious programs, the best performer detected only one in four new malware samples. In contrast, February 2007 results from similar heuristics testing showed that the best utilities caught about half of new samples.

### Window of Opportunity Open

"In this industry, unlike others, we have an antagonist we have to deal with, someone we're constantly battling back and forth with," says Hiep Dang, director of antimalware research with McAfee's Avert Labs. "The bad guys have the element of surprise."

Even just a 12-hour head start can translate into thousands of infected PCs, and malware authors have long tested their programs against antivirus applications to make sure they get that critical jump on the opposition. VirusTotal.com and similar Web sites, which allow security researchers and consumers to submit a questionable file and have it scanned by more than 30 different antivirus engines, have unfortunately made the testing easier for malware writers: Crooks can continue

to tweak their new malware projects until VirusTotal or one of the other new multilanguage sites shows that the rogue application can slip past the majority of antivirus programs.

### Good vs. Evil?

Bad guys' use of sites such as VirusTotal can have a hidden benefit. After online thugs submit a sample, VirusTotal can sometimes share it with security companies, which can then

update their programs to block the new malware. But the site permits users to opt out of having their samples submitted to antivirus vendors. VirusTotal says it offers the option so that people can scan sensitive files at the site without having them broadcast to companies.

Some well-organized criminal groups go a step farther and "maintain their own antivirus setups, almost like their own VirusTotal," according to Don Jackson, senior security researcher with the security services firm SecureWorks.

### Keep Your Guard Up

Jackson says the opportunities for prerelease testing make for harder-to-catch malware—and underscore why smart PC users should never assume that their machines are immune to attack. For example, almost every day, SecureWorks sees new

variants of the PRG Trojan horse made with a particular kit. And when the new versions first appear, usually only 25 percent of antivirus scanners detect them, he says.

As bad as all of that might seem, don't throw in the towel and resign yourself to the inevitability of infection. For one thing, antivirus programs can do very well once their creators learn about a new sample. When fully updated and pitted against *PC World* partner AV-Test's "zoo" of 675,000 Tro-

Bad guys use sophisticated testing to create malware that can evade even the best security programs.



Should vulnerabilities that could be used to attack your PC be up for bid? A Swiss site says that auctioning info about flaws will actually make you more secure. See [find.pcworld.com/59455](http://find.pcworld.com/59455) for more.

jan horses, keyloggers, and other malware, the best-performing security suites detected 98 percent of them.

And security companies are aware of the challenge they face in keeping pace with nimble online thieves. McAfee and Symantec are focusing on additional layers of security, including firewalls and behavioral scanners, which detect malicious software based on its behavior rather than on a signature match.

## Join the Good Fight

Multilayered security is important, but you are the most important component by far. AV-Test's results (and other security analyses) show that no program can provide complete protection. Some malicious and creative entrepreneur will always discover a way around any particular security program.

Getting around you can be much harder for malware creators, however, if you follow basic precautions. Crooks are quick to pounce on fresh program vulnerabilities, so be sure to keep all of your applications—not just your Web browser and Windows—up-to-date to seal off entire avenues of attack. Also, the best social-engineering tactics often accompany the newest and hardest-to-detect malware. If you assume that every unexpected e-mail attachment is an attack, and ask for confirmation from the sender before opening any attachment, you'll block another huge chunk of potential infections.

Malware authors may obtain a temporary lead over antivirus programs, but if you take sensible precautions in addition to running security tools, they won't get a leg up on you.



VirusTotal is a service that analyzes suspicious files and facilitates the quick detection of viruses, worms, trojans, and all kinds of malware detected by antivirus engines. [More information](#)

**MALWARE AUTHORS CAN exploit sites like VirusTotal to get a jump on antivirus vendors.**

## BUGS & FIXES

STUART J. JOHNSTON



### Plug a Windows XP Copy Protection Hole

MICROSOFT REPORTS "limited" attacks on Windows XP systems via an

unexpected path exploiting a security hole in a copy protection program that comes with XP. (Windows Vista is not at risk.)

The program that attackers are leveraging is Macrovision's SafeDisc, optical-disc copy prevention software for Windows applications and games. The flaw is located in a system driver file called secdrv.sys. Microsoft immediately issued a Security Advisory, which you can find and read at [find.pcworld.com/59416](http://find.pcworld.com/59416).

Macrovision released a patch; you can download it at [find.pcworld.com/59338](http://find.pcworld.com/59338). At press time Microsoft was still testing the patch and was not yet distributing it via its automatic updates.

A successful attack could lead to a complete takeover of your PC, but such a success is harder to pull off than with most garden-variety "critical" bugs. Regardless, grabbing the patch is a good idea: You never know when some unscrupulous hacker will tweak the exploit code to make it far more dangerous.

### Get a Handle on URI Bug

Microsoft finally produced the long-awaited patch for the "URI Handler" bug that I wrote about last month. If you are running Internet Explorer 7 on Windows XP, you're vulnerable and you need the patch. If you are running IE 7 on Windows Vista, though, you're safe.

Attacks "in the wild" based on this flaw have already occurred. This assault, however, requires interaction with third-party programs such as the Mozilla Firefox browser or Adobe Acrobat to work. Luckily, those software makers patched their products quickly, while everyone waited for a more complete fix from Microsoft. If you have automatic

**Plus: Fix Firefox stability problems, and snag Apple's Mac OS X megapatch.**

updates enabled on your Windows XP system, you should have the patch by now. Otherwise, you can get your hands on the patch at [find.pcworld.com/59339](http://find.pcworld.com/59339).

### Keep Up With Firefox Versions

Mozilla has released an update that, for once, doesn't directly involve security bugs. Instead, the patch fixes some stability problems that ironically resulted from the previous security update.

One of the new annoyances caused Windows Vista to prevent Firefox from loading Java applets, for instance. Mozilla's developers quickly issued the second update, which corrected the self-inflicted problems. If you already have Firefox

2.x installed and have updates turned on (the default), you'll receive the revised version, 2.0.0.9, automatically. If not, you can get it manually by selecting *Check for Updates* from the Help menu. If you have a version later than 2.0.0.9 (2.0.0.11 was the latest at press time), you're covered. You can find more information at [find.pcworld.com/59340](http://find.pcworld.com/59340).

### Snag the Mac OS Megapatch

Apple has issued another massive update ([find.pcworld.com/59341](http://find.pcworld.com/59341)) for OS X that any Mac user will want. The update, available for both client and server versions of OS X 10.3.9 and OS X 10.4 through 10.4.10, fixes a total of 41 security vulnerabilities—17 of which I'd classify as critical.



### BUGGED?

**FOUND A HARDWARE or software bug? Send us an e-mail on it to [bugs@pcworld.com](mailto:bugs@pcworld.com).**

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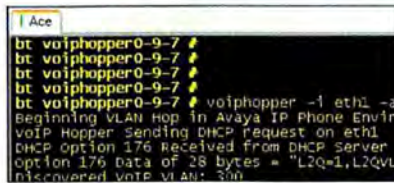
MICRO CENTER  
The Computer Connection

## VoIP Hacks Raise the Specter of Eavesdropping

YOU MIGHT HAVE thought that telephones were safe from the data breaches that plague computers, but two demonstrations prove how easily criminals could eavesdrop on VoIP (Voice over Internet Protocol) phone calls.

VoIP giant Cisco confirmed a hack, using software called VoIP Hopper, that would permit easy eavesdropping on some of its equipment ([find.pcworld.com/59367](http://find.pcworld.com/59367)). And another recent demonstration illustrated how a Trojan horse could be deployed to deliver software to eavesdrop inside a company or at an ISP ([find.pcworld.com/59369](http://find.pcworld.com/59369)).

Through VoIP Hopper, hackers could supplant a VoIP device on a network



**VOIP HOPPER (shown here) and SIPTap demonstrate the need for better VoIP security.**

with a malicious PC, creating an avenue for eavesdropping. With the other hack, SIPTap, a single Trojan horse-infected PC inside a company's network could provide access to that company's phone calls, or even access to all of an ISP's customers' calls. SIPTap can remotely record multiple VoIP calls.

Cisco now provides workarounds to guard against the Hopper hack ([find.pcworld.com/59368](http://find.pcworld.com/59368)), but the two proof-of-concept demonstrations show that VoIP eavesdropping is now well within reach of organized crime.

"Companies using VoIP internally think they are protected," comments SIPTap's creator, Peter Cox. "The threat is that an attacker engineers a Trojan and has it sit there passively [on an internal network], recording calls from anywhere on the Internet."

His advice: "Apply the same vigor when building a VoIP network [as] you would when building a Web site."

—John E. Dunn and Linda Leung

## PRIVACY WATCH ERIK LARKIN



### Keep Tabs on Your Financial Data to Fight Identity Theft



QUICK. WHAT'S THE combined balance for all of your checking, savings, and credit card accounts? Have any of them incurred large or unusual charges recently?

Can't say? Most people can't. But knowing such details and other account information will help you recover more quickly from identity

theft, if you're ever unlucky enough to become a victim.

A recent Javelin Strategy and Research survey found that ID fraud victims who discovered the crime on their own cleared things up on average 65 days after the scam began, compared with 104 days for those notified by their bank or a collection agency.

The lesson: Take control of your accounts. Online account services and a new account aggregator make keeping tabs quite simple.

Usually you can set up your online banking account to e-mail you alerts automatically. For example, I can choose to have Bank of America e-mail me if any cash transaction amounting to more than \$100 posts to my credit card, or if a transaction originates from outside the United States. Washington Mutual can e-mail me a message about a withdrawal over a certain amount.

Such bank alerts are typically quick and easy to set up, but one new service is even better. If you give Mint.com (an Innovation Award winner, page 98) the user name and password for each of your financial accounts—including checking, savings, credit cards,

Online monitoring and alerting services simplify the job of staying in control of your accounts.

and even PayPal—it will monitor them all daily and pull the transactions into its site for you to check. As a result, you can see deposits, charges, fees, and updates for all of your accounts in one place.

You can also have Mint.com send you alerts based on specified thresholds. For instance, you can arrange to receive alerts for any charges or withdrawals of more than \$200, or if spending in any of the automatically totaled categories is unusually large.

The site doesn't allow you to transfer funds or do anything else with your accounts, which is a good thing in terms of security. And while it can check accounts for a wide array of financial institutions, you might be out of luck if you bank with small credit unions.

Still in beta, Mint.com had early problems handling a rush of sign-ups. The problems appear resolved now, but the service managed to lock one of my accounts because of failed log-in attempts. Though I was able to clear the lock quickly, doing so was a minor pain.

Of course, you'll need to trust the service with your account user names and passwords, too. The company says that it encrypts all of its data, carefully controls employee access, and undergoes daily security testing from ScanAlert. I've chosen to extend it my trust, but whether to follow suit is a decision to make for yourself.

Setting account alerts is a smart "hope for the best, plan for the worst" move. And even if the worst never materializes, taking such a step will still help you be more aware of your finances. ●

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# Get Smart, You can't let your guard down for a nanosecond in the SMB Stay Secure

The computer threat environment is a nightmare for SMBs. Virtually every business is increasingly dependent on its computer systems to stay in business—even as threats and malicious attacks on computer systems are growing, both in number and in level of sophistication.

Large corporations have invested millions in sophisticated defenses and specialized IT staff. But SMBs often are reliant on smaller, more generalized staff—if they have any IT staff at all—and a limited budget faced with an ever more bewildering array of choices.

There are approximately 8.3 million SMBs in the United States, drawn from a wide range of industries. According to IDC, only 7% percent of small businesses with 10 or fewer

employees have full-time IT staff, compared to 75% of midsize companies. Just over half of companies with 50

to 99 employees have IT staff. Just under half of all SMBs utilize LANs, and 40% of those employ wireless access points.

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## GIVE ME A BREAK!

The laundry list of potential threats is bewildering: There are outsider threats and insider threats. Root kits and botnets. Drive-by downloads. Buffer overflows and cross-site scripting. Viruses, worms, spyware and Trojans. Spam, phishing and pharming.

Increasingly companies are also concerned about data leakage opportunities created by the growing use of social networks and Web 2.0 sites, since these accept user-generated content that can either contain mali-

cious code for unsuspecting users, or be a repository for inappropriately disclosed company information.

So what's an SMB to do? For most, when their IT systems are down business

pretty much grinds to a halt, so doing nothing is not a realistic option. At the same time, security investments need to be based on a realistic appraisal of the likelihood of a threat, the damage that can be caused, and the time needed to recover if disaster strikes.

## SIMPLIFY

With fewer IT resources, SMBs are more likely to opt for simplified manageability in security products, compared to larger

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This security solution is available for free to home users and businesses. Unlike other free software alternatives, however, Spyware Terminator will also remove all threats for free. It also includes free full real-time protection and automatic upgrades, free antivirus integration, and an offer of free support from Crawler.

Spyware Terminator provides a fast and effective means to scan your computer for known threats and report findings in a manner that is easy to read and interpret. Ten specialized real-time shields constantly guard your system, ensuring that threats are intercepted and disabled. Host Intrusion Prevention System (HIPS) protects your computer from running unknown applications that can infiltrate through security holes.

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# Get Smart, Stay Secure

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enterprises, which seek to integrate security components with other parts of their overall infrastructure.

One option to simplify security deployment for SMBs may be a unified threat management (UTM) appliance that can integrate firewalls, intrusion detection and other features, such as gateway protection for viruses and other malware.

But the options, specifications and integration with existing networks can be overwhelming, and high-performance appliances can be pricey. Some SMBs may also worry about being locked into one single provider for multiple security mechanisms, and they're concerned about whether they're getting best-of-breed applications across the board.

## CORE REQUIREMENTS

Regardless of whether you opt for a UTM appliance or seek to put together a series of best-of-breed applications, there are some core requirements for basic security protection:

- **Operating system patches**—Criminal elements and hackers can jump on operating flaws before most SMBs will even hear about them. Some form of patch management is required, whether it's automatically downloading available patches or assigning someone to regularly and frequently monitor and manage the process.
- **Firewall**—This is the first line of defense against external assaults. With basic firewall protection built into operating systems and even the simplest routers, there's no excuse not to have some protection. Once you've established a security perimeter, you can focus on how to strengthen it.
- **Antivirus/anti-spam/anti-spyware**—As with firewall protection, it's hard not to have some basic capabilities in this area. It's just too easy for malicious software (malware) to hijack functions of your computers to collect information or install botnet agents. Free antivirus and anti-spam products are available for

## UPEK Makes SMB Security Simple

Security threats are a nuisance, but for SMBs, the implementation of security processes and technologies can be costly, time-consuming and user-unfriendly. Passwords are a pain to use and vulnerable to compromise. Users must invent non-intuitive letter-symbol-number combinations, and often write them down on sticky notes or in a spreadsheet.

UPEK's goal is to make security as simple as the swipe of a finger. The company's Eikon Digital Privacy Manager is a USB fingerprint reader that makes the user's fingerprint the authentication component for IT security. IT managers can lower costs associated with password resets, better protect access to customer data, and meet new and growing regulatory compliance requirements.

Unlike a password that can be disclosed to another person, only the registered fingerprint of an authorized user can access a UPEK-secured network, desktop or laptop computer. The company's award-winning fingerprint authentication solutions are used by many of the world's largest brands in PCs, portable storage devices, mobile phones, access control equipment, and more.

UPEK's unique technology allows users to logon to Windows, replay user names and passwords, encrypt files and folders, and launch applications, all with just the swipe of a finger.



evaluation and even commercial use. Most email clients and even Web-based email services offer anti-spam features, but you need to make sure they're turned on. Then start looking at whether your business needs more specialized tools.

- **Authentication**—Your network, file and Web servers hold your crown jewels, so ensuring that only appropriate people can access certain files and network privileges is a must. Servers will generally have authentication and password access management built in, so use it and figure out if you need a more sophisticated add-on.
- **Intrusion detection**—Simple firewalls may be all that you need to protect your business, but how will you know if somebody has penetrated your network? If you're storing sensitive customer information or involved with companies subject to HIPAA or Sarbanes-Oxley regulatory

compliance, it may well make sense to invest in an intrusion detection product or a managed service that can spot suspicious network activity.

- **Policies**—Even the smallest companies should have some form of formal policies regarding appropriate use of computers, data and networks. As the technology you employ becomes more sophisticated, you can embed these policies into network access products to protect your company's assets.

The key to an effective security infrastructure is developing a multilayer defense that protects against the variety of threats that are out there. Just as important is developing the management discipline to routinely evaluate what security tools you've employed, how they are used, and what new threats you may not yet be protected from.

## Create your Account

Account Type: Standard  
Email Address: [input]  
Password: [input]

## Reset your password

User ID: [input]  
Example: someone@example.com  
Picture: 4L2SHT

## Security Questions

Challenge question 1: What's was the name of your first pet?  
Your answer: Fido

Challenge question 2: What's color was your first car?  
Your answer: Rio Red

Challenge question 3: In what city were you born?

## Forgot Username/Password?

Username  
[input]

Password  
[input]

## Sign In Error

The email address or password you provided does not match our records.

Email address: miketay@bush.com

## Look up your User Name

Look up your User Name is quick and easy. To get started:

- Are the **primary** account holder
- Have the account number in your possession

**Invalid ID or password.**  
Please try again.

ID: [input]

Password: [input]

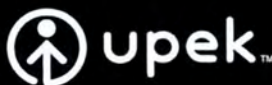
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# Reviews & Rankings

## GPS Devices: Road-Tested and Reviewed

The latest in-car navigators deliver 3D views, street-name pronunciation, and other trip aids for as little as \$300.

IN-CAR GPS devices have more features, are easier to use, and cost less than their predecessors of just a year ago. Using one can help you find the best route to your destination, saving you time and money while traveling.

I tested five recently released GPS devices designed to be used in the car; two of them (from Mio and Pharos) also have pedestrian modes. All were accurate enough to use in unfamiliar locales, but software interfaces and route calculations differed.

### Garmin Nuvi 360

Garmin's Nuvi 360 earned our Best Buy nod. Despite a midrange cost (\$413), it has such high-end features as Bluetooth connectivity (for hands-free phone calls), pronunciation of street names, and plenty of tools and information for travelers.

Though the Nuvi 360 is only about the size and weight of

a deck of cards, it's a capable navigator. Besides offering first-rate maps and an intuitive interface (with 3D maps), it also has a media player for viewing images and listening to audio; language guides from Oxford University Press; and travel information (including restaurants, hotels, and points of interest) from Fodor's North America.

The device's battery lasted for 4 hours, 6 minutes in my test—more than 30 minutes longer than any of the other four competitors.

Unfortunately, the Nuvi 360 lacks a pedestrian mode for obtaining information on pathways that a car can't travel, though you can use it outside a vehicle; the device

does not provide speed warnings or school-zone alerts, either. You can use it to listen to music and audio-book files stored on SD Card or MMC media while navigating, but you can't stream the sound or the voiced navigation instructions through your car's FM radio. You can buy an optional (\$75) SD Card containing a language guide for six languages.

The Nuvi 360's SiRF Star III GPS transceiver latches on to satellite signals quickly, and the routes the device suggested were timely and accurate. The unit's smallish (3.5-inch diagonal) display can't fit in the amount of information shown on devices with 4.3-inch screens; it is easy to read even in bright

**TOP THREE GPS devices (from left): Mio's DigiWalker C720, Pharos's Drive GPS 250, and our Best Buy, Garmin's Nuvi 360.**

sunlight, however, and the touch-screen controls make the tasks of entering street addresses and changing settings quick and simple. The unit's Safe mode (off by default) prevents you from changing certain settings, to help you avoid getting distracted while driving. You can enter a code to prevent unauthorized use, too.

The Garmin Nuvi 360's compactness, accuracy, features, and battery life make it the best value among the five GPS devices I tested.





**78 NOKIA N810 Internet Tablet**



**64 AMAZON Kindle**



**78 SEAGATE & Western Digital Hard Drives**



**84 SAMSUNG ML-1630**

## Mio DigiWalker C720

The DigiWalker C720 doubles as a 2-megapixel digital camera and has handy features such as free (in limited areas) traffic information, voices in 16 languages and three different English accents, and customizable speed alerts. You also get modes for pedestrian, bicycle (a bicycle mount costs extra), taxi; bus, and emergency vehicle travel (the last of which assumes that the user can disregard traffic signals and other rules of the road).

The downside of the C720 is its battery life of 2 hours, 45 minutes—shorter than all but one other device. This result may be due in part to the power consumed by the 4.3-inch touch screen, which gives you a clear view of the map in 3D or 2D, as well as easy access to volume and other controls, and plenty of information about your route (including the estimated arrival time, the speed, and the distance to your destination). It's also easy to see the distance to and the direction of your next turn.

Images shot with the built-in 2-megapixel camera were typical of pictures taken at that resolution, and you can

## PC WORLD TOP 5 GPS DEVICES

MODEL	PCW Rating	Dimensions	Features
1 <b>BEST BUY</b> Garmin Nuvi 360 \$413 <a href="http://find.pcworld.com/59221">find.pcworld.com/59221</a>	<b>84</b> VERY GOOD	<ul style="list-style-type: none"> <li>3.9 by 2.9 by 0.9 inch</li> <li>5.1 ounces</li> <li>3.5-inch screen size</li> <li>320 by 240 resolution</li> </ul>	<ul style="list-style-type: none"> <li>Battery life: 4 hours, 6 minutes</li> <li>Text-to-speech for street names</li> <li>Bluetooth compatibility (cell phones)</li> <li>No pedestrian mode</li> </ul>
BOTTOM LINE: This tiny, affordable GPS model offers high-end features such as travel information from Fodor's North America.			
2 Mio Technology DigiWalker C720 \$470 <a href="http://find.pcworld.com/59223">find.pcworld.com/59223</a>	<b>80</b> VERY GOOD	<ul style="list-style-type: none"> <li>5.0 by 3.2 by 0.8 inch</li> <li>6.7 ounces</li> <li>4.3-inch screen size</li> <li>480 by 272 resolution</li> </ul>	<ul style="list-style-type: none"> <li>Battery life: 2 hours, 45 minutes</li> <li>Text-to-speech for street names<sup>1</sup></li> <li>Bluetooth compatibility (cell phones, headphones)</li> <li>Pedestrian mode</li> </ul>
BOTTOM LINE: Multiple-mode unit has a 2-megapixel digital camera for tagging images with geo-data.			
3 Pharos Drive GPS 250 \$295 <a href="http://find.pcworld.com/59224">find.pcworld.com/59224</a>	<b>79</b> GOOD	<ul style="list-style-type: none"> <li>4.8 by 3.3 by 1.3 inches</li> <li>7.0 ounces</li> <li>4.3-inch screen size</li> <li>480 by 272 resolution</li> </ul>	<ul style="list-style-type: none"> <li>Battery life: 3 hours, 6 minutes</li> <li>Text-to-speech for street names</li> <li>No Bluetooth compatibility</li> <li>Pedestrian mode</li> </ul>
BOTTOM LINE: Relatively inexpensive GPS device lacks extras and doesn't always select the fastest route by default.			
4 Alpine Electronics Blackbird PMD-B200 \$700 <a href="http://find.pcworld.com/59225">find.pcworld.com/59225</a>	<b>77</b> GOOD	<ul style="list-style-type: none"> <li>5.8 by 2.9 by 1.3 inches</li> <li>6.3 ounces</li> <li>3.6-inch screen size</li> <li>320 by 240 resolution</li> </ul>	<ul style="list-style-type: none"> <li>Battery life: 3 hours, 29 minutes</li> <li>No text-to-speech for street names</li> <li>Bluetooth compatibility (cell phones, headphones)</li> <li>No pedestrian mode</li> </ul>
BOTTOM LINE: Expensive GPS product has a media player, Bluetooth connectivity, and easy-to-use controls.			
5 LG Electronics LN790 \$600 <a href="http://find.pcworld.com/59222">find.pcworld.com/59222</a>	<b>72</b> GOOD	<ul style="list-style-type: none"> <li>5.0 by 3.5 by 0.8 inch</li> <li>7.0 ounces</li> <li>4.3-inch screen size</li> <li>480 by 272 resolution</li> </ul>	<ul style="list-style-type: none"> <li>Battery life: 2 hours, 37 minutes</li> <li>Text-to-speech for street names</li> <li>Bluetooth compatibility (cell phones, headphones)</li> <li>No pedestrian mode</li> </ul>
BOTTOM LINE: Maps on this GPS device are easy to use, but directions are sometimes inaccurate and battery life is short.			

CHART NOTES: Prices reflect the average street price of three online retailers as of 12/7/07. The author tested battery life. <sup>1</sup> Off by default.

tag them with GPS coordinates. Mio says that the C720 comes with optical character recognition software that captures address information and then creates a contact record. I didn't have much luck using the camera as a business card "scanner": It photographed my cards but didn't recognize text.

You can display photos

and play video and audio files stored on SD Card or MMC, but you can't simultaneously use the media player and view maps—something every other media-equipped unit I looked at for this roundup lets you do. You can sync the C720 with your Bluetooth headphones so that you can listen to audio files and directions through them, and

you can sync your Bluetooth phone for hands-free calling over the C720's speaker.

## Pharos Drive GPS 250

Though it uses the same maps and GPS transceiver as the LG LN790, the Pharos Drive GPS 250 omits the LG's media player and other non-navigation functions to lower its street price to \$295. >>

In this case, excluding features unrelated to navigation made the device easier to use. It also seems to have improved the navigation performance: When I tested both units simultaneously, the Pharos consistently alerted me to my next turn a second or two faster than the LG did.

The Drive GPS 250 does have a pedestrian mode, but the unit's limited battery life will restrict its participation in your extravehicular excursions to around 3 hours. Although the screen is big (4.3 inches) and easy to read, the size hampers the device's portability and battery life.

Unfortunately, like the LG LN790, the Drive GPS 250 plunges you into the heart of urban traffic rather than finding ways around it. On several occasions, the unit recommended routes that may have been shorter as the crow flies, but that took much longer to travel. One example: Instead of directing me over a slightly longer set of surface streets with higher speed limits of 35 miles an hour, the device suggested a shorter route that relied on side streets with 25-mph speed limits. You can choose between 'Shortest' or 'Quickest' after entering the address and before selecting 'Go' ('Quickest' is the first option), but you can't instruct the device to use one or the other setting for all your routes.

If you're looking for an affordable GPS device that has a very readable screen, the Drive GPS 250 is certainly worth considering, though

slightly costlier devices suggest quicker routes and include a media player and other travel-related features.

### Alpine Electronics Blackbird PMD-B200

The navigation features in this redesigned high-end GPS unit from car-electronics specialist Alpine Electronics are easy to operate, but lower-priced competitors like the Garmin Nuvi 360 offer the same functions and sometimes better accuracy.

Among the most significant options missing from the Blackbird are 3D map views, pronunciation of street names, and the ability to view images that you store on an SD Card. The device's Centrality Atlas II GPS chip was less accurate than the SiRF Star III GPS transceivers used by the other four units I tested. In addition, the Blackbird PMD-B200 was slower to update directions and map views than the other devices were.

You can sync your Bluetooth phone with the Blackbird PMD-B200 for hands-free calling, and its built-in player handles AAC, MP3, and WMA audio files stored on SD Card or MMC media.

This version of the Black-

bird offers directions in English, French, or Spanish.

Alpine places four buttons in a circular controller on the right side of the device's touch screen. Though these buttons are intended to simplify zooming in and out of the map, adjusting the volume, and opening the options screen, they add bulk to the unit. I found it just as convenient to use the switch on the top of the device to adjust the volume, and to use the icons on the screen to reach the options for entering a travel destination.

### LG Electronics LN790

LG Electronics' \$600 LN790 is a newcomer in the high-end GPS market. It offers easy-to-read maps and well-paced directions, but a clunky interface and dubious routes put it a couple of notches below other, cheaper devices. The LN790 has a bright 4.3-inch-diagonal screen and includes a media player for audio, image, and video files.

The 3D and 2D maps included with the device cover all 50 U.S. states and Canada. Tracking your progress as you travel is simple, and your next turn is easy to anticipate because you'll see the street name and turn direc-

tion on the screen.

You'll also hear street names pronounced. Though the LN790 lacks an FM transmitter for listening to audio through your car stereo, it has a headphone jack that outputs to many new car audio systems that have an MP3 player input. You can also choose from ten languages, including English, French, and Spanish.

When I attempted to enter destination addresses, the LN790 offered me the option of entering the street name before the city—but when I tried to do so, the database couldn't locate the street. When I entered the city first and then the street, however, it found the location and was prepared to direct me there. Also, the type-ahead feature works so slowly that I frequently entered the incorrect key, leading the device to present me with the wrong choices, which in turn required me to press the back button and start over.

Like most other GPS devices, the LN790 lets you choose between the shortest route and the fastest one; however, the default routes that the device suggested dumped me into city-center traffic rather than directing me to byways that were longer but considerably faster. Navigators such as the Garmin Nuvi 360 and Mio DigiWalker C720 suggested routes by default that avoided areas of traffic congestion, even with no traffic service enabled. The LN790 lacks a pedestrian mode as well.

—Dennis O'Reilly



**THE LG Electronics LN790 (left) and the Alpine Electronics Blackbird PMD-B200 cost more but don't perform better.**

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## Amazon Kindles Interest in E-Books

AMAZON IS PUSHING e-books back into the limelight with the launch of its \$399 Kindle e-book reader and corresponding service. The device leaves some room for improvement, but it has succeeded in renewing my interest in reading e-books.

The Kindle comes with 180MB of user-accessible memory (which the company says can hold about 200 books) and supports SD Cards up to 2GB. Instead of an LCD, a 6-inch electronic-

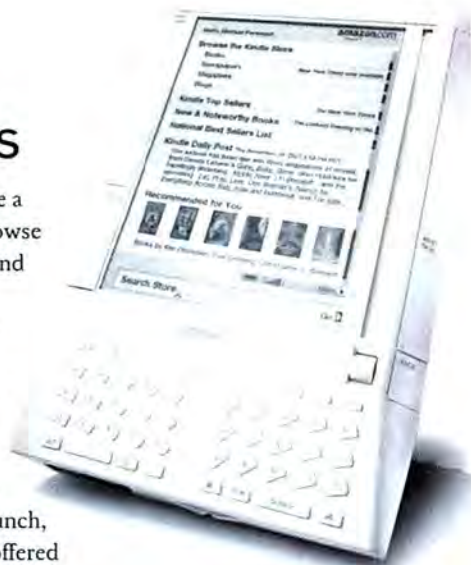
paper display from E Ink occupies the top portion of the reader. The monochrome display—which is designed to save power—supports four levels of grayscale, but no color. The screen was easy to read in most circumstances, except in dim lighting, as it lacks a backlight.

I found the Kindle's design finger-friendly. A rubberized surface on the back of the device makes it comfortable to grasp, and the unit's thickness tapers from left to right, so it's easy to hold.

What's especially notable about the Kindle, though, is its integrated 3G cellular radio, which allows the device to connect to Amazon's Whispernet EvDO service for wireless transmission of e-books. You don't

need a PC to make a purchase: Just browse the Kindle store and download your reading material. Books take less than a minute to download, and their prices vary; new releases cost \$10. At launch, the Kindle store offered about 90,000 titles.

The Kindle includes a basic Web browser intended for use with text pages, not graphics-heavy sites. It's handy for quick news, weather, or Wikipedia look-ups. Not as useful is the Kindle's stab at daily relevance with its newspaper and blog delivery, in which Amazon charges you for services available elsewhere for free



**THE KINDLE IS larger than most paperbacks, but not as thick.**

on the Web. You can subscribe to various newspapers, blogs, and magazines.

The Kindle's design won't wow anyone, but its usability touches alone are enough to make me consider buying an e-book reader.

—Melissa J. Perenson



**Kindle | Amazon**

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## Firefox 3 Beta Previews Subtle Upgrade

THE FIRST BETA release of the much-anticipated Firefox 3 browser offers several interesting enhancements over the previous version, such as new tools for storing and accessing bookmarks, but it doesn't look much different from Firefox 2.

Most of the changes in version 3 (slated for final release in early 2008), such as stability and performance enhancements, will be under the hood and were not apparent in this beta.

A few nice, though not earth-shattering, additions



**FIREFOX 3 INCLUDES** new tools for storing bookmarks in folders and categorizing them with tags.

do reveal themselves. A star icon next to the site URL allows you to add new bookmarks quickly. You can also add tags to bookmarks or make easy backups of bookmarks that you can then copy to other computers.

Mozilla is also working on a number of security enhance-

ments, which again were not all available in this beta version. I was able to test a revamp of the saved-password feature, which lets you postpone saving site credentials until after you have successfully logged in. The final release

of the browser will block known malicious sites that attempt to install Trojan horses or other malware (the blacklist of such sites isn't yet in place).

Other updates include a new downloads manager that allows for resuming downloads after the browser

restarts, a full-page zoom, and improvements for handling browser add-ons.

If you're interested in seeing version 3's new features for yourself, keep in mind that this beta release has known bugs. It's not well suited for everyday browsing. Using it, however, makes clear that Firefox 3 will have some attractive extras but won't push the boundaries for browser upgrades.

—Erik Larkin

**Firefox 3 Beta 1 | Mozilla**

Beta version, not rated  
Offers a glimpse of coming attractions, but is not yet suitable for everyday browsing. Free  
[find.pcworld.com/59407](http://find.pcworld.com/59407)

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Acer recommends Windows Vista® Ultimate.



January/February 2008

## Ferrari 1100 Unique Innovation



Ferrari 1100-5457

**\$1,999**

(LX.FR90U.071)

- AMD Turion™ 64 X2 Dual-Core Mobile Technology TL-66
- Genuine Windows Vista® Ultimate
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- Integrated slot-loaded Super-Multi drive (DVD+R, DVD-R, DVD-RAM)
- 5-in-1 card reader
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- ATI Radeon™ Xpress 1270 graphics
- Integrated Acer OrbiCam camera
- Dolby® Home Theater™
- 802.11n WLAN, gigabit LAN, V.92 modem Bluetooth®, Bluetooth® VoIP phone
- Wireless optical mouse
- Fingerprint reader
- One-year limited warranty<sup>2</sup>

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

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## Acer® Aspire® 4520

- AMD Turion™ 64 X2 Dual-Core Mobile Technology TL-52
- Genuine Windows Vista® Home Premium
- 1GB DDR2 667 SDRAM
- 120GB<sup>1</sup> hard drive
- Integrated Super-Multi drive (DVD+R, DVD-R, DVD-RAM)
- 5-in-1 card reader
- 14.1" WXGA (1280 x 800) TFT display, Acer® CrystalBrite Technology
- NVIDIA® GeForce® 7000M graphics
- 802.11b/g WLAN, gigabit LAN, V.92 modem integrated webcam
- One-year limited warranty<sup>2</sup>



Acer Aspire 4520-5582

**\$599**

AMD Turion™ 64 X2 Dual-Core Mobile Technology TL-52  
Genuine Windows Vista® Home Premium  
(LX.AHS0X.170)



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#### Acer AL2616Wd

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- 800:1 contrast ratio
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- 178° horizontal viewing angle
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- VGA, DVI (HDCP) signal connectors
- 500 cd/m<sup>2</sup> brightness
- 5ms gray-to-gray response time
- Internal power adapter
- Silver color

**\$599**

(ET.G16WP.001)



#### Acer AL2416WBsd

- 24" wide-screen TFT LCD
- 1920 x 1200 native resolution
- 1000:1 contrast ratio
- 160° horizontal viewing angle
- 160° vertical viewing angle
- VGA, DVI (HDCP) signal connectors
- 400 cd/m<sup>2</sup> brightness
- 5ms response time
- Internal power adapter
- Silver color

**\$399**

(ET.F16WP.B02)

Acer recommends Windows Vista® Home Premium.



## Acer® Aspire® 7520

- AMD Turion™ 64 X2 Dual-Core Mobile Technology TL-52
- Genuine Windows Vista® Home Premium
- 2GB DDR2 667 SDRAM
- 160GB<sup>1</sup> hard drive
- Integrated Super-Multi drive (DVD+R, DVD-R, DVD-RAM)
- 5-in-1 card reader
- 17.0" WXGA+ (1440 x 900) TFT display, Acer® CrystalBrite Technology
- NVIDIA® GeForce® 7000M graphics
- 802.11b/g WLAN, Bluetooth®, 10/100 LAN, V.92 modem, integrated webcam
- One-year limited warranty<sup>2</sup>



### Acer SignalUp

This technology strategically positions two PIFA antennas on the notebook's top panel to generate an omni-directional signal sphere for superior wireless reception.



### Acer GridVista

Easy-to-use software designed to automatically split the screen in up to four separate windows and make the most of available screen space.



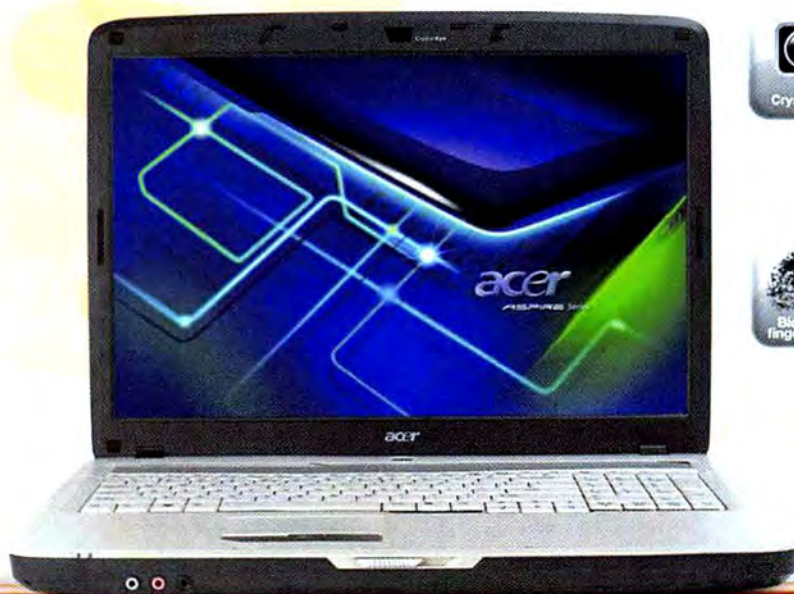
### Acer CrystalEye

Enjoy all the potential of video conferencing with the integrated Acer CrystalEye, simple to use and compatible with internet-based video and voice communication services.



### Acer Bio-Protection

Gain an extra layer of security while eliminating the need to remember passwords and PINs with the Acer Bio-Protection fingerprint reader.



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Acer Aspire 7520-5115

**\$949**

AMD Turion™ 64 X2 Dual-Core Mobile Technology TL-52  
Genuine Windows Vista® Home Premium  
(LX.AN30X.010)



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## Acer® LCDs



### Acer AL2216Wbd

- 22" wide-screen TFT LCD
- 1680 x 1050 native resolution
- 700:1 contrast ratio
- 170° horizontal viewing angle
- 160° vertical viewing angle
- VGA, DVI (HDCP) signal connectors
- 300 cd/m<sup>2</sup> brightness
- 5ms response time
- Internal power adapter
- Black color

**\$239**

(ET.2216B.0D0)



### Acer AL2016WBbd

- 20" wide-screen TFT LCD
- 1680 x 1050 native resolution
- 800:1 contrast ratio
- 160° horizontal viewing angle
- 160° vertical viewing angle
- VGA, DVI signal connectors
- 300 cd/m<sup>2</sup> brightness
- 5ms response time
- Internal power adapter
- Black color

**\$219**

(ET.D16WP.B04)



### Acer AL1917W Abd

- 19" wide-screen TFT LCD
- 1440 x 900 native resolution
- 700:1 contrast ratio
- 150° horizontal viewing angle
- 135° vertical viewing angle
- Two 1.0W integrated speakers
- VGA, DVI signal connectors
- 300 cd/m<sup>2</sup> brightness
- 5ms response time
- Internal power adapter
- Black color

**\$199**

(ET.C17WP.A04)



### Acer AL1917 Cbmd

- 19" TFT LCD
- 1280 x 1024 native resolution
- 700:1 contrast ratio
- 150° horizontal viewing angle
- 135° vertical viewing angle
- Two 1.0W integrated speakers
- VGA, DVI signal connectors
- 300 cd/m<sup>2</sup> brightness
- 5ms response time
- Internal power adapter
- Black color

**\$229**

(ET.1917B.0DC)



### Acer AL1916W Ab

- 19" wide-screen TFT LCD
- 1440 x 900 native resolution
- 700:1 contrast ratio
- 150° horizontal viewing angle
- 135° vertical viewing angle
- VGA signal connector
- 300 cd/m<sup>2</sup> brightness
- 5ms response time
- Internal power adapter
- Black color

**\$195**

(ET.1916B.W08)

### Acer AL1916 Cb

- 19" TFT LCD
- 1280 x 1024 native resolution
- 700:1 contrast ratio
- 150° horizontal viewing angle
- 135° vertical viewing angle
- VGA signal connector
- 300 cd/m<sup>2</sup> brightness
- 5ms response time
- Internal power adapter
- Black color

**\$219**

(ET.1916B.00C)



### Acer AL1717 Fbd

- 17" TFT LCD
- 1280 x 1024 native resolution
- 800:1 contrast ratio
- 160° horizontal viewing angle
- 160° vertical viewing angle
- Two 1.0W integrated speakers
- VGA, DVI signal connectors
- 300 cd/m<sup>2</sup> brightness
- 5ms response time
- Internal power adapter
- Black color

**\$189**

(ET.B17RP.F04)





## Acer® Aspire® 5050

- AMD Turion™ 64 Mobile Technology MK-38
- Genuine Windows Vista® Home Premium
- 1GB DDR2 533 SDRAM
- 120GB<sup>1</sup> hard drive
- Integrated Super-Multi drive (DVD+R, DVD-R, DVD-RAM)
- 5-in-1 card reader
- 14.1" WXGA (1280 x 800) TFT display, Acer CrystalBrite Technology
- Integrated ATI Radeon™ Xpress 1100 graphics
- 802.11b/g WLAN, 10/100 LAN, V.92 modem, integrated webcam
- One-year limited warranty<sup>2</sup>



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### Acer DASP

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### Acer CrystalBrite

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Acer Aspire 5050-4570

**\$599**

AMD Turion™ 64 Mobile Technology MK-38  
Genuine Windows Vista® Home Premium  
(LX.AXD0X.024)

Prices shown are estimated street prices and do not include tax or shipping.  
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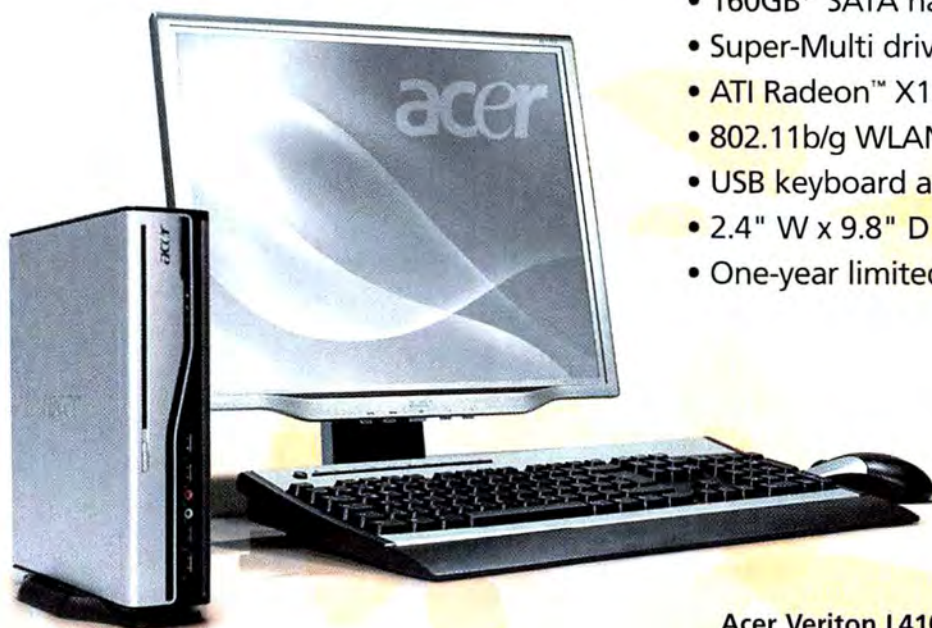


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Display sold separately.



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- One-year limited warranty²

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**\$499**

AMD Athlon™ 64 X2 Dual-Core Processor 4200+  
Genuine Windows Vista® Business  
(VL410-UD4201C) or  
Genuine Windows® XP Professional  
(VL410-UD4201P)

### Acer AL1716 Fb

- 17" TFT LCD
- 1280 x 1024 native resolution
- 800:1 contrast ratio
- 160° horizontal viewing angle
- 160° vertical viewing angle
- VGA signal connector
- 300 cd/m² brightness
- 5ms response time
- Internal power adapter
- Black color

**\$185**

(ET.B16RP.F02)



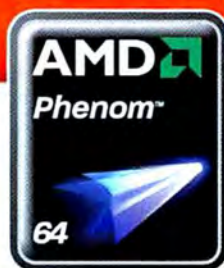
### Acer AL1516 Ab

- 15" TFT LCD
- 1024 x 768 native resolution
- 600:1 contrast ratio
- 130° horizontal viewing angle
- 100° vertical viewing angle
- VGA signal connector
- 250 cd/m² brightness
- 12ms response time
- Internal power adapter
- Black color

**\$169**

(ET.1516B.000)





## Acer® Veriton® M410

- AMD Phenom™ quad-core processor
- Genuine Windows® XP Professional
- DVD-Dual drive (DVD+/-RW)
- ATI Radeon™ X1200 graphics solution
- Gigabit LAN
- Keyboard and mouse
- One-year limited warranty<sup>2</sup>

### Acer Veriton M410

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Genuine Windows® XP Professional  
(VM410-UF9600P)  
3GB DDR SDRAM and 320GB<sup>1</sup> SATA hard drive

### Acer Veriton M410

**\$699**

AMD Phenom™ 9500 quad-core processor  
Genuine Windows® XP Professional  
(VM410-UF9500P)  
2GB DDR SDRAM and 250GB<sup>1</sup> SATA hard drive

Display sold separately.



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

## Acer Empowering Technology



### Acer eLock Management

Acer eLock Management locks and unlocks storage media with password protection for additional security.



### Acer ePerformance Management

Acer ePerformance Management optimizes performance to make the most of your computer's power.



### Acer eRecovery Management

Acer eRecovery Management is an easy-to-use utility to create backups or restore from your archives.



### Acer eSettings Management

Acer eSettings Management provides easy access to boot options, security or general system information.



### Acer eDataSecurity Management

Conveniently integrated into the Windows® environment, Acer eDataSecurity Management provides one-click encryption and decryption of your files.

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## Acer® TravelMate® 5520



- AMD Turion™ 64 X2 Dual-Core Mobile Technology TL-52
- Genuine Windows Vista® Business
- Microsoft® Office Ready (60-day trial)<sup>3</sup>
- CD with Genuine Windows® XP Professional<sup>4</sup>
- 1GB DDR2 533 SDRAM
- 120GB<sup>1</sup> hard drive
- Integrated Super-Multi drive (DVD+R, DVD-R, DVD-RAM)
- 5-in-1 card reader
- 15.4" WXGA (1280 x 800) TFT display
- Integrated ATI Radeon™ Xpress 1250 graphics
- 802.11b/g WLAN, gigabit LAN, V.92 modem
- Fingerprint reader
- One-year limited warranty<sup>2</sup>



**e**mpowering technology

Acer TravelMate 5520-5313

**\$699**

AMD Turion™ 64 X2 Dual-Core Mobile Technology TL-52  
Genuine Windows Vista® Business  
(LX.TKU02.001)

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## Protect Your Investment with an Acer Notebook Service Upgrade

Quality is built into every notebook Acer makes, and each comes with a one-year standard limited warranty. It includes hardware technical support via toll-free phone plus a concurrent International Traveler's Warranty for travel outside the U.S. and Canada. Extra protection is available with one of these upgrades:

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(146.AD077.002)

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Prepays freight to and from Acer repair depot.  
Excludes extension of International Traveler's Warranty.

<sup>1</sup> When referring to storage capacity, GB stands for one billion bytes and MB stands for one million bytes. Some utilities may indicate varying storage capacities. Total user-accessible capacity may vary depending on operating environments.

<sup>2</sup> For a free copy of the standard limited warranty end-users should see a reseller where Acer products are sold or write to Acer America Corporation, Warranty Department, P.O. Box 6137, Temple, TX 76503.

<sup>3</sup> The 60-day trial of Microsoft® Office Ready is available with Genuine Windows Vista® Business only, not with Genuine Windows® XP Professional.

<sup>4</sup> Genuine Windows® XP Professional can be installed in place of, not in addition to, Genuine Windows Vista® Business.

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# Fujitsu, Toshiba Laptops Offer Big Value

**PCW Test Center**

NEW MODELS WITH sub-\$1500 prices, as well as the results of our recent reliability and service survey, rejiggered the rankings in our desktop replacements chart. The two newcomers—Fujitsu's 15.4-inch LifeBook A6110 and Toshiba's 17-inch Satellite P205D-S7479—are relatively inexpensive units. The LifeBook comes with a brilliant screen and a touchpad with tablet-like features, while the Satellite makes a well-rounded office laptop.



**FUJITSU'S LIFEBOOK A6110**  
offers snappy speed for \$1499.

Acer's Aspire 5920G provides solid performance and battery life for a reasonable price; it replaces the speedy MacBook Pro in the top spot on the chart, though Apple remains in the hunt thanks to top marks for its reliability; see "Technology's Most (and Least) Reliable Brands" ([find.pcworld.com/59497](http://find.pcworld.com/59497)) for more details.

—Carla Thornton

## PC WORLD TOP 10 DESKTOP REPLACEMENTS

PRODUCT	PCW Rating	Performance	Features and specifications
<b>1</b> <b>BEST BUY</b> <b>Acer Aspire 5920G</b> <b>\$1999</b> <a href="http://find.pcworld.com/58189">find.pcworld.com/58189</a>	<b>81</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>WorldBench 6 Beta 2 score: 77 Good</li> <li>Overall design: Very Good</li> <li>Tested battery life: 3:15</li> </ul>	<ul style="list-style-type: none"> <li>2-GHz Core 2 Duo T7300</li> <li>15.4-inch wide screen</li> <li>7.0 pounds</li> <li>HD DVD-ROM/DVD±R DL/DVD±RW/-RAM</li> </ul>
BOTTOM LINE: Sophisticated-looking multimedia unit has oodles of custom keyboard buttons and one-touch sound settings.			
<b>2</b> <b>Dell Inspiron 1720</b> <b>\$2184</b> <a href="http://find.pcworld.com/57903">find.pcworld.com/57903</a>	<b>81</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>WorldBench 6 Beta 2 score: 75 Good</li> <li>Overall design: Very Good</li> <li>Tested battery life: 3:33</li> </ul>	<ul style="list-style-type: none"> <li>2-GHz Core 2 Duo T7300</li> <li>17.0-inch wide screen</li> <li>8.7 pounds</li> <li>DVD±R DL/DVD±RW</li> </ul>
BOTTOM LINE: This splashily designed laptop offers excellent entertainment options and rich-sounding speakers.			
<b>3</b> <b>Apple MacBook Pro</b> <b>\$2949</b> <a href="http://find.pcworld.com/57902">find.pcworld.com/57902</a>	<b>81</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>WorldBench 6 Beta 2 score: 88 Superior</li> <li>Overall design: Very Good</li> <li>Tested battery life: 2:44</li> </ul>	<ul style="list-style-type: none"> <li>2.4-GHz Core 2 Duo T7700</li> <li>17.0-inch wide screen</li> <li>6.6 pounds</li> <li>DVD±R DL/DVD±RW/-RAM</li> </ul>
BOTTOM LINE: Lightweight 17-incher runs Mac OS or Windows and comes with useful multimedia and creative software.			
<b>4</b> <b>Gateway NX860XL</b> <b>\$1400</b> <a href="http://find.pcworld.com/56862">find.pcworld.com/56862</a>	<b>80</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>WorldBench 6 Beta 2 score: 80 Very Good</li> <li>Overall design: Good</li> <li>Tested battery life: 1:56</li> </ul>	<ul style="list-style-type: none"> <li>2.16-GHz Core 2 Duo T7400</li> <li>17.0-inch wide screen</li> <li>8.0 pounds</li> <li>DVD±R DL/DVD±RW</li> </ul>
BOTTOM LINE: Looks can deceive—the Gateway NX860XL lacks flair, but it's fast and powerful.			
<b>5</b> <b>HP Pavilion HDX</b> <b>\$3499</b> <a href="http://find.pcworld.com/57901">find.pcworld.com/57901</a>	<b>80</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>WorldBench 6 Beta 2 score: 86 Very Good</li> <li>Overall design: Superior</li> <li>Tested battery life: 2:22</li> </ul>	<ul style="list-style-type: none"> <li>2.4-GHz Core 2 Duo T7700</li> <li>20.1-inch wide screen</li> <li>15.5 pounds</li> <li>HD DVD-ROM/DVD±R DL/DVD±RW/-RAM</li> </ul>
BOTTOM LINE: Stylish, high-end desktop replacement is heavy, but its fast performance makes it a great gaming machine.			
<b>6</b> <b>Fujitsu LifeBook A6110</b> <b>\$1499 NEW</b> <a href="http://find.pcworld.com/59315">find.pcworld.com/59315</a>	<b>80</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>WorldBench 6 Beta 2 score: 84 Very Good</li> <li>Overall design: Good</li> <li>Tested battery life: 2:19</li> </ul>	<ul style="list-style-type: none"> <li>2.2-GHz Core 2 Duo T7500</li> <li>15.4-inch wide screen</li> <li>6.5 pounds</li> <li>DVD±R DL/DVD±RW/-RAM</li> </ul>
BOTTOM LINE: Brisk speed, a great screen, and a dual-mode touchpad highlight this nicely priced desktop replacement.			
<b>7</b> <b>HP Pavilion dv9500t</b> <b>\$2314</b> <a href="http://find.pcworld.com/58295">find.pcworld.com/58295</a>	<b>80</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>WorldBench 6 Beta 2 score: 73 Good</li> <li>Overall design: Very Good</li> <li>Tested battery life: 3:21</li> </ul>	<ul style="list-style-type: none"> <li>2.2-GHz Core 2 Duo T7500</li> <li>17.0-inch wide screen</li> <li>8.5 pounds</li> <li>HD DVD-ROM/DVD±R DL/DVD±RW/-RAM</li> </ul>
BOTTOM LINE: Equipped with a stylish 17-inch screen and an HD DVD drive, this is a terrific multimedia notebook.			
<b>8</b> <b>Fujitsu LifeBook E8410</b> <b>\$1699</b> <a href="http://find.pcworld.com/58296">find.pcworld.com/58296</a>	<b>79</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>WorldBench 6 Beta 2 score: 73 Good</li> <li>Overall design: Very Good</li> <li>Tested battery life: 3:42</li> </ul>	<ul style="list-style-type: none"> <li>2.2-GHz Core 2 Duo T7500</li> <li>15.4-inch wide screen</li> <li>5.7 pounds</li> <li>DVD±R DL/DVD±RW/-RAM</li> </ul>
BOTTOM LINE: This sleek-looking unit is powerful enough for the desktop yet light enough to travel well.			
<b>9</b> <b>Toshiba Satellite P205D-S7479</b> <b>\$1350 NEW</b> <a href="http://find.pcworld.com/59314">find.pcworld.com/59314</a>	<b>79</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>WorldBench 6 Beta 2 score: 68 Good</li> <li>Overall design: Very Good</li> <li>Tested battery life: 1:38</li> </ul>	<ul style="list-style-type: none"> <li>2.2-GHz Turion 64 X2 TL-64</li> <li>17.0-inch wide screen</li> <li>7.9 pounds</li> <li>DVD±R DL/DVD±RW/-RAM</li> </ul>
BOTTOM LINE: Budget desktop replacement, despite its short battery life, covers office duties and some after-hours gaming.			
<b>10</b> <b>Toshiba Satellite X205-S9359</b> <b>\$2400</b> <a href="http://find.pcworld.com/58729">find.pcworld.com/58729</a>	<b>79</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>WorldBench 6 Beta 2 score: 78 Good</li> <li>Overall design: Good</li> <li>Tested battery life: 2:34</li> </ul>	<ul style="list-style-type: none"> <li>2-GHz Core 2 Duo T7300</li> <li>17.0-inch wide screen</li> <li>8.7 pounds</li> <li>HD DVD-ROM/DVD±R DL/DVD±RW/-RAM</li> </ul>
BOTTOM LINE: Robust home laptop offers great gaming with beautiful-sounding audio and a stylish striped lid.			

CHART NOTES: Prices and rankings are as of 12/06/07. Weight does not include power adapter.

### MORE ONLINE

For more information about these laptops, including details on how we test, go to [find.pcworld.com/55176](http://find.pcworld.com/55176).

## Workspace Makes Office an Online Contender

IF YOU USE Microsoft Office, you'll want to sign up for Office Live Workspace. Currently in beta, the free service provides online file-storage, document-sharing, and desktop-presentation features, and finally gives Microsoft a challenger to the likes of Google Docs and Zoho.

Unlike those two excellent productivity suites, Workspace doesn't offer Web-based applications; instead, you edit files offline using the desktop versions of Office XP, 2003, or 2007. You install a free, downloadable plug-in, which installs a toolbar in your desktop applications. The toolbar allows you to save new files to the Workspace site, add files already saved on your hard drive to the site, or open

and edit documents previously stored online. The site supports both Internet Explorer and Firefox, but the Firefox version lacks a useful ActiveX-enabled button that opens a stored file in the appropriate Office application with a single click.

The easy tie-in to online storage (500MB for the

beta) brings welcome backup and anywhere-access advantages. You can use the service to store your work documents and then access them from your home computer, for example. In addition, you can share either single documents or collections of documents called workspaces with anyone (though users will have to be logged in to the service to edit files), and you can create online event or task lists that you can then sync with Outlook. If you're on a computer without Office, you can still preview files on the site or create simple, rich-text notes.

Because you create and edit Workspace-stored files in Office locally, you need an Internet connection only to open a file from Workspace and save the file back there. Your changes will save to the online copy when you're connected, but changes you make to the online version do not automatically syn-

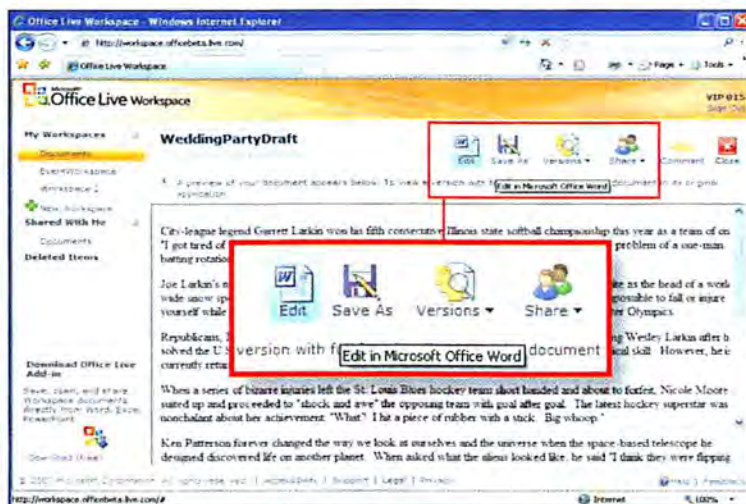
chronize with any locally stored version (if you have one). This arrangement means that you could end up with two—or more—versions of a document with the same name. Google Docs and Zoho allow you to both edit and save files online, which eliminates this potential problem.

Workspace also throws in a nice bonus feature called SharedView; Microsoft informally calls it "LiveMeeting Lite." Through SharedView you can easily invite another Workspace user to view your desktop or even take control.

Though Office Live Workspace greatly extends the usability and convenience of Microsoft Office, it's clearly still a beta. Most of the site wouldn't display on one of my test machines, and on the same system, SharedView didn't function. Microsoft was unable to figure out the cause of the problem.

Workspace makes Microsoft's suite more useful. Using it is a no-brainer if you've already sprung for Office. But if you haven't, you can find what you need in Google Docs or Zoho.

—Erik Larkin



**OFFICE LIVE WORKSPACE** allows you to view your documents, but to edit them, you'll need to open those files with your local Microsoft Office applications.

### ASK OUR EXPERTS

#### The Perfect Portable Printer?

I have to photograph about 75 subjects, and provide, on site, 4-by-6 prints, in a 4-hour time frame. I was wondering whether it would pay to invest in a dedicated 4-by-6 printer, and if so, which one?

*Stephen A. Solomon, Garland, Texas*

**Contributing Editor Melissa Riofrio responds:** You can buy a good snapshot printer for as little as \$100. Epson's PictureMate Dash (\$100) is very fast, and it makes nice-looking prints. It plugs into AC, or you can buy a battery pack for \$50. The lunchbox-like design includes a handle; Epson also sells a \$35 carrying case. Its pricier cousin, the \$200 PictureMate Zoom, has an integrated CD burner that would let you present a disc with all the photos at the end of the event.

E-mail your questions to [askourexperts@pcworld.com](mailto:askourexperts@pcworld.com) or post it online at [forums.pcworld.com](http://forums.pcworld.com).

#### Office Live Workspace Microsoft

Beta version, not rated

Adds extremely useful online features to Microsoft Office. Free  
[find.pcworld.com/59465](http://find.pcworld.com/59465)



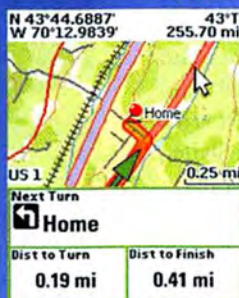
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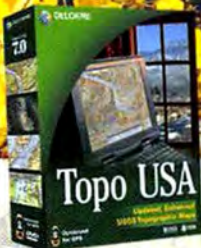


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## Pantech's Serviceable Dual-Slide PDA Phone

**PCW Test Center**

LOOKING FOR A phone that combines a unique design with a good dose of functionality? Here's one for your list: the Pantech Duo from AT&T Wireless. Business users will like its good selection of office software, while its cool, dual-sliding design will satisfy gadget lovers—so

long as they can stand the spotty sound quality.

About the size of a bar of soap, the Duo is one of the most compact phones with a QWERTY keyboard that I've seen. Even better is its dual-sliding design: Sliding the front panel vertically reveals the alphanumeric keypad, and sliding it to the right uncovers the keyboard.

Granted, small isn't always best. The Duo's keyboard is a bit cramped, though easy to use. Similarly, the 2.2-inch screen is not ideal for viewing text documents.

The Duo runs Windows Mobile 6 and, despite the limitations of the small display, it's nice to have the op-



tion to edit and view files. You can also sync POP3 and IMAP e-mail accounts, as well as send and receive corporate e-mail via Microsoft Exchange or Lotus Notes.

The phone's sound quality was subpar, however: I heard a hiss in the background during many of my calls.

AT&T states the battery will provide up to 3 hours of talk time; in our lab tests it

**THE DUO SLIDES open to reveal a full QWERTY keyboard.**

was better, lasting 4 hours, 46 minutes, but that's poor compared with other PDA phones we've tested.

Still, this unit proves that you don't always have to trade form for function—the Duo gives you both.

—Grace Aquino

**77**  
GOOD

**Duo** Pantech

Cool dual-sliding design, but saddled with spotty sound quality.

List: \$300 (with a two-year contract from AT&T Wireless)

[find.pcworld.com/59403](http://find.pcworld.com/59403)

## Roxio's Backup App Replaces System Restore

ROXIO'S BACKONTRACK 3 Suite uses a three-pronged approach to data protection: It replaces Windows' System Restore function with its own Instant Restore, images

entire drives, and backs up individual files and folders.

Instant Restore works much as System Restore does, but restoring occurs through a separate Windows

PE (Pre-install Edition) OS—handy in case you can't boot into normal Windows. Unfortunately, you must either wait on or click through the OS-selection menu it adds. Instant Restore is incompatible with System Restore and turns it off. This wouldn't be bad, except that Instant Restore can't be invoked by Windows or other applications to automatically set a restore point—one of System Restore's best features.

The drive-imaging feature, which includes boot-CD creation, is effective if used sparingly. Since it backs up only entire drives and doesn't offer incremental backups, users with lots of data may quickly find their

backup media overflowing.

I have one other complaint with BackOnTrack 3: The home screen displays annoying ads for Roxio products, which I could not turn off.

The suite is effective for users who have moderate amounts of data to protect, but it's no match for same-priced competitors Acronis True Image Home and Norton Save & Restore.

—Jon L. Jacobi



**THE APP'S HOME screen displays annoying ads for Roxio products.**

**74**  
GOOD

**BackOnTrack 3 Suite** Roxio

Decent backup app isn't on a par with its competition. List: \$50

[find.pcworld.com/59419](http://find.pcworld.com/59419)

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## Green Hard Drive Loses Little on Performance

**PCW Test Center**

WHAT DO YOU have to give up to embrace green computing?

The answer, based on our test results: Not much. We compared Western Digital's Caviar GP WD10EACS, which is touted as an eco-friendly drive, with another new model, the Seagate Barracuda 7200.11 1TB, which doesn't claim any green benefits.

The Caviar GP (for "Green Power") is the first 1TB hard drive to have variable rotational speed, ranging from 5400 rpm to 7200 rpm; Western Digital credits that technological change with helping the hard drive re-

duce its power consumption.

Though the Caviar GP isn't the fastest drive we've seen, it ranked fifth in performance, landing in the top third of drives we've tested. The Seagate 1TB drive, meanwhile, ranked third in performance. (For our full *Top 10 Internal Hard Drives* chart, see [find.pcworld.com/56534](http://find.pcworld.com/56534).)

The Caviar GP performed poorly on our file-seek tests, scoring in the bottom third of our field. On the other hand, it excelled on some of our read tests, posting the second-fastest time on our ACDSee test of performance on imaging tasks. And its



THESE DRIVES MAY look similar, but the Western Digital (at right) has power-saving technology.

performance on our WinZip file-compression test was better than average. "Better than average" describes the Caviar GP's results on our write tests as well.

By comparison, the Seagate Barracuda drive was the fastest on our write tests, outperforming the Caviar GP by 6 percent on our files and folders write test, and by 22 percent on our files and folders copy test. It was one of the slower drives on our read tests, however.

### Power Savings, Too

We also ran the two drives through system power tests. With each drive installed, we measured the watts that our test system consumed in its off, sleep, and idle states.

During the off state and the sleep state, our system drew the exact same amount of power whether the Western Digital Caviar GP or the Seagate Barracuda was installed. Where we saw a difference, albeit a slight one, was when the system was idle. In that case, we observed a 3.2 percent drop in the power draw when we used the Western Digital drive instead of the Seagate.

Note that our tests show only the overall power draw, not the individual power

draw of components such as the hard drive. Western Digital claims that the Caviar GP drops its operational draw to 8 watts, down from the 13 watts consumed by a previous-generation model. The company also says the power-consumption savings can reach up to 38 percent over a previous-generation drive. We were not able to test these claims.

You can conserve a little power with the Western Digital Caviar GP, which costs less than the Seagate—proving that going green can save a bit of green too.

—Melissa J. Perenson

## A Better Web Tablet

NOKIA'S N810 Internet Tablet, the third generation of the company's line of Linux-based Web devices, is a minor upgrade. The \$479 N810 model costs about twice what its predecessor, the N800, currently does, but the new product is far more appealing.

The N810 is slimmer and easier to hold than the N800. It also sports a slide-out keyboard—an addition that, together with the gen-



THE SLIDE-OUT keyboard is handy.

erous, 4.3-inch, WVGA (800-by-600) touch-screen display, makes this 802.11b/g Wi-Fi product more usable. However, while the inclusion of the keyboard is a huge improvement, the design still isn't perfect. The top-row buttons are positioned just a smidgen too close to the display, to the point that they impede use.

—Melissa J. Perenson

**75**  
GOOD

**N810 Internet Tablet | Nokia**

More appealing than earlier models, but it's expensive. List: \$479  
[find.pcworld.com/59413](http://find.pcworld.com/59413)

**83**  
VERY GOOD

**Barracuda 7200.11 1TB SATA Seagate**

A drive for people who need to eke out every drop of performance.

List: \$363

[find.pcworld.com/59409](http://find.pcworld.com/59409)

**79**  
GOOD

**Caviar GP WD10EACS Western Digital**

Eco-friendly drive will save you a little power and money. List: \$310  
[find.pcworld.com/59410](http://find.pcworld.com/59410)

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## All-in-One Communications App Tries to Do Too Much

IT'S AN INTERNET phone. No, it's an instant message service. No, it's IPTV. Wait—it's a news feed. Actually, Raketu combines all of the above, and then some. As a software client and a Web-based service, Raketu wants to be your communications, entertainment, and information hub. While that sounds great, Raketu overwhelms you with features, some of which just don't work.

After downloading and installing the Raketu client, I wasn't sure where to start—and the cluttered, just plain ugly interface didn't help. My eyes strained to adapt to its reverse-type style (white text on a black background), and the tiny, unintuitive icons were far from ideal.

I decided to check out the application's messaging features, which are supposed to let you phone other Raketu users on their computers,

call landline or cell numbers (for a fee), send e-mail and instant messages, and whisk off SMS messages (at 5 cents a pop).

I encountered several issues from the start; the first appeared while I was trying to make PC-to-PC calls. For starters, adding a Raketu contact—a seemingly simple task—took lots of clicking around. And once I successfully added my contact, we appeared offline to each other, despite being signed in to Raketu. The company concluded that the problem stemmed from my buddy's ISP (located overseas). At press time, the firm was investigating further, and said that it was planning a work-around to fix this issue. In the meanwhile, my problem

with the contact remained.

Other Raketu contacts appeared online without a hitch, though, and call quality was impressive: Our voices came through loud and clear (no echoes), and I noted just one instance of voice-packet breakdown, when a cluster of words sounded slightly distorted.

Beyond that, however, I encountered more troubles: The software initially refused to allow me to make calls to landlines and to cell phones. The company then e-mailed me a fix, which eventually resolved the issue.

Despite the unsexy interface, the universal IM feature worked well. It lets you ping your buddies on AIM, Google, ICQ, Jabber, MSN, Skype, and Yahoo; you enter your screen name and password, and Raketu efficiently imports your IM contacts from your contact lists. You can also call your Skype contacts from within Raketu. (Raketu does not offer video calls, but the firm plans to add that feature in an upcoming release.)

The messaging features are just the tip of the iceberg. You can also customize news

feeds from the BBC, CBC, The New York Times, and other news sites; set up podcasts; get weather, stock, and flight info; and view IPTV and Video on Demand. RakWeb, the Web-based piece of the pie, includes many of the same features as the software client: It lets PC and smartphone users make calls, send e-mail and text messages, and watch TV. I haven't even mentioned Raketu's media player (with a karaoke button) or its slideshow viewer. But these features just feel like overkill.

You're probably well set up already with your RSS feeds, podcasts, Internet phone calls, and instant messaging on major services like Skype and Trillian or AIM. So why use Raketu? I can't think of a good reason.

—Aoife M. McEvoy



**RAKETU'S UNATTRACTIVE INTERFACE** and its tiny icons are hard on the eyes.

### TECH TREND

## Memory Card Prices Plummet



THOUGH DIGITAL CAMERAS are generating ever-larger files—2.9MB per image in 2006, up from 2.4MB the year before, and way up from less than a megabyte in 2000, according to IDC Research—you don't have to worry about too many megapixels in your next camera.

That's because memory card prices keep dropping. On average, cards cost 22 percent less in 2007 than they did in 2006, says Christopher Chute, research manager for IDC's Worldwide Digital Imaging Practice. "The average price for a digital camera memory card fell from \$51 in 2006 to \$39 in 2007," Chute says.

Secure Digital Cards make up the bulk of such media; nearly 70 million digital cameras shipped with an SD Card slot, more than three times the percentage of the second-most-popular format, Sony's Memory Stick. The big loser? CompactFlash cards, which have become hard to find on compact cameras, though some digital SLRs still use them.

—Alan Stafford



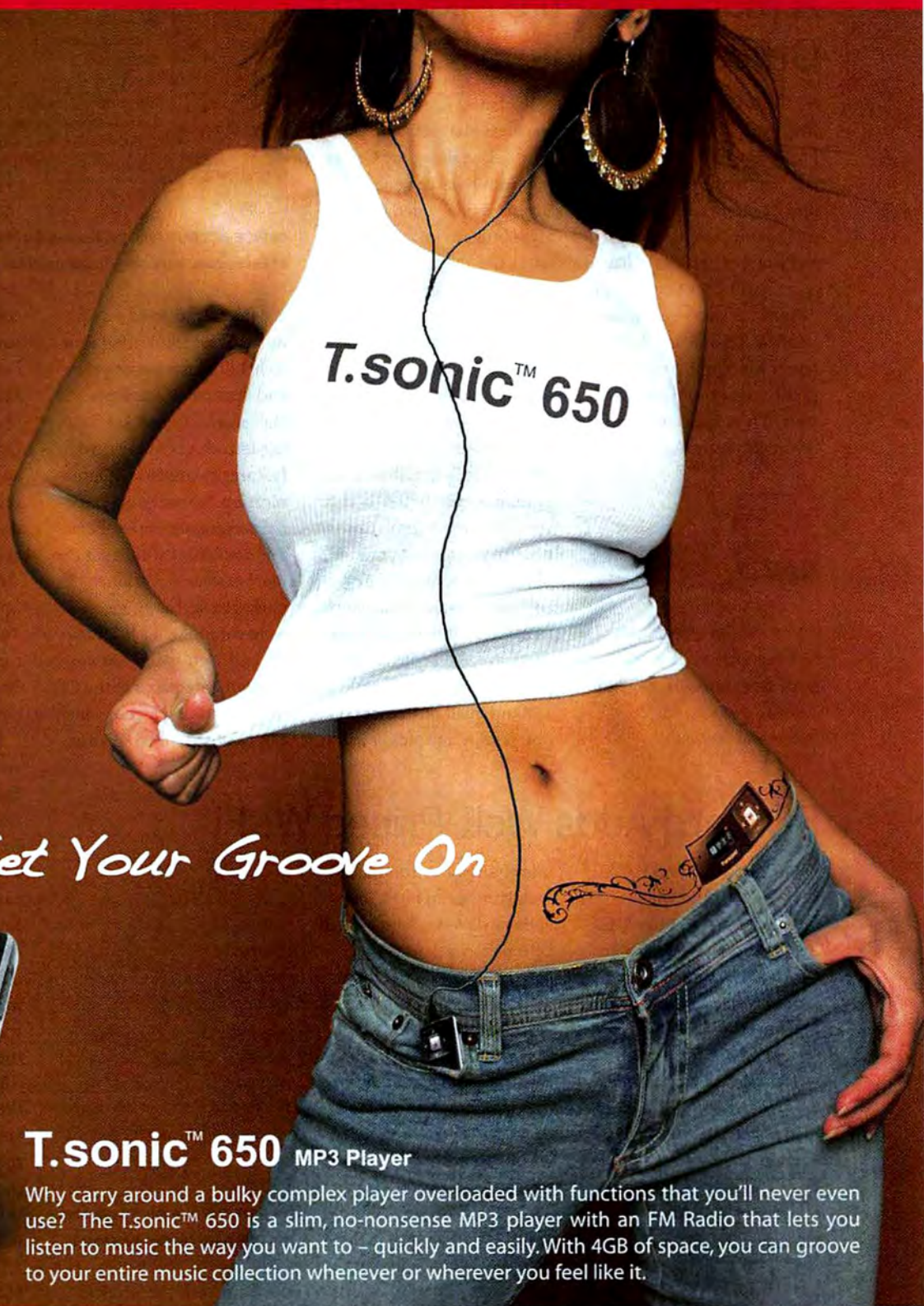
**Raketu**

**Raketu Communications**

This service's multipurpose approach just doesn't work. Free [find.pcworld.com/59291](http://find.pcworld.com/59291)

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## A More Versatile Microsoft Office Accounting Pro

AT \$200, the 2008 version of Microsoft Office Accounting Professional is \$50 more than last year's edition, but the update offers improved Web integration, simpler setup, and features that can enhance accountant-client communications for small businesses.

Office Accounting 2008 is better for neophytes than its predecessor was. Getting started is easier—especially if you currently use an Excel

spreadsheet to track your business finances. A useful new online Resource Center provides links to general business tips, video tutorials, a bulletin board where users can share questions and answers, and more.

Since debuting three years ago, Office Accounting has always had great integration with Word, Excel, and other Microsoft Office apps, allowing you to use forms and reports created in Office. Integration is even better in this version: The program can now import almost any kind of Excel data, including accounts, transactions (such as invoices and vendor bills), and listings (like inventory products and customers).

Many small businesses do not employ a professional



**OFFICE ACCOUNTING Professional 2008 can import almost any kind of Excel data, including accounts, transactions, and product listings.**

accountant, instead relying on a public accounting firm to help them prepare year-end financial statements and tax returns. Office Accounting introduces innovative features to improve communications between an external accountant and a client.

It does this by blurring the line between traditional packaged accounting software running on a Windows PC and Web-based software; both are integrated in the Office Accounting menu, which can be customized so an ac-

counting firm may offer enhanced services to its clients. For example, an accounting firm can now integrate portions of its Web site into the Office Accounting menu, so an accountant could offer reminders of tax payment due dates or links to various accounting services.

Also added this year is Spanish-language support. You can mix languages, too—for example, view Spanish menus while preparing invoices in English.

A free (but ad-supported) version, Office Accounting Express 2008, targets new and home-based businesses. Express can track income and expenses, but it doesn't manage inventory. The Professional version (designed for businesses that have up to 25 employees) supports inventory management, job tracking, sales and purchase orders, and fixed assets.

The tight integration with Word and Excel should encourage businesses that currently track their financial records in those applications to graduate to a dedicated accounting system.

Despite the \$50 price hike for the 2008 Professional edition, Office Accounting remains reasonably priced.

—Richard Morochov

**83**  
VERY GOOD

**Office Accounting Professional 2008** | Microsoft  
Better integration with Web and easier setup adds value, despite price hike. \$200  
[find.pcworld.com/59405](http://find.pcworld.com/59405)

## SD Card Adds Well-Priced Wi-Fi

DIGITAL CAMERAS HAVE been slow to add wireless file uploading, but the \$100 Eye-Fi Card, a Wi-Fi-enabled SD Card, lets you add that capability to any camera employing that memory-card format, and it makes the wireless setup very simple.

You can have the card upload photos to your PC, to

one of 18 photo-sharing Web sites, or to both. The 2GB card comes with a small USB memory card reader you use to set up the wireless connection. Afterward, when you take a shot, the card should start uploading it automatically (and most of the time, it did, though on occasion I had to wait).

You can upload images of any size, but big files take a while to transfer. I found that the card's range is pretty limited, too—you must place your camera and the card close to your router.

A 2GB SD Card costs about \$30 to \$40, so the



**INSERT THE Eye-Fi's SD card into its USB card reader for setup.**

added cost of the wireless capability is about \$60 to \$70—reasonable, I think.

—Alan Stafford

**81**  
VERY GOOD

**Eye-Fi Card** | Eye-Fi  
If you don't shoot at high resolution, this card is useful and fun.  
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## Snazzy Samsung: A Laser Printer With Style

**PCW Test Center** MONOCHROME LASERS occupy a humble niche among printer types. Designed primarily to print text (and serviceable graphics), they're fast, cheap to buy and operate, and uncomplicated. But that's all that some people, and especially some offices, need.

The crop of low-end monochrome lasers we tested this month is more diverse than you'd think. Two share the same low price but otherwise differ dramatically. The Samsung ML-1630 looks more like a mother ship than a printer, while the HP LaserJet P1505 looks like it was stripped for spare parts. The ML-1630, however, is actual-

ly the sparer of these two designs: It takes only letter- and A4-size paper, and its input tray holds just 100 sheets. Its toner costs, at 3 cents per page, are high. The LaserJet P1505 has pricey toner, too, but it's superfast—rare for a printer this inexpensive. It averaged 26.1 pages per minute when generating our text documents, and just under 10 pages per minute when outputting photos (though the photo quality is poor, even for a monochrome laser).

The more conventional,



**SAMSUNG'S ML-1630: handsome among laser printers.**

workhorse-type monochrome laser is best represented by our top-ranked model, the Dell Laser Printer 1720dn. Well suited for either a small workgroup or a busy small office, it offers

strong overall performance, lots of standard and optional features, and a competitive price. Its strictly personal, cheaper cousin, the Laser Printer 1720 (without networking or duplexing), costs the same as the HP and Samsung mod-

els discussed above, which also lack those features.

Other office-oriented models we tested include the Xerox Phaser 3150 (which didn't make our chart) and the Lexmark E352dn. The E352dn has a generous standard configuration plus expandability, while the Phaser 3150 is, unfortunately, more notable for what it lacks. Oki Printing Solutions' B4400n is laudably well built and has economical consumables.

When you shop for a laser, look closely at standard and optional features. As an individual user, you can probably live with one input tray, no duplexing, and even low-capacity toner cartridges, assuming you won't be printing that much. High-volume or office users need a fast engine, the ability to add input trays, and standard or optional duplexing. Check toner costs by dividing the cartridge price by the estimated number of pages that the cartridge can print (the yield): Anything above 2 cents per page is getting expensive.

—Melissa Riofrio

PHOTOGRAPH: MARC SIMON

### PC WORLD TOP 5 MONOCHROME LASER PRINTERS

PRODUCT	PCW Rating	Performance	Features and specifications
<b>BEST BUY</b> <b>1</b> Dell Laser Printer 1720dn <b>\$299 NEW</b> <a href="http://find.pcworld.com/59245">find.pcworld.com/59245</a>	<b>79</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Text quality: Superior</li> <li>Graphics quality: Good</li> <li>Tested speed (ppm): 29.0 text/5.7 graphics</li> </ul>	<ul style="list-style-type: none"> <li>Ethernet, automatic duplexing</li> <li>250 sheets input (standard)</li> <li>1200-by-1200-dpi maximum true monochrome resolution</li> </ul>
BOTTOM LINE: This fast, well-equipped laser can handle both small-office and workgroup needs, and has room to grow.			
<b>2</b> HP LaserJet P1505 <b>\$199 NEW</b> <a href="http://find.pcworld.com/59247">find.pcworld.com/59247</a>	<b>78</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Text quality: Very Good</li> <li>Graphics quality: Poor</li> <li>Tested speed (ppm): 26.1 text/9.9 graphics</li> </ul>	<ul style="list-style-type: none"> <li>Ethernet optional; manual duplexing</li> <li>250 sheets input (standard)</li> <li>600-by-600-dpi maximum true resolution</li> </ul>
BOTTOM LINE: Cheaply priced but also cheaply designed, this printer's saving grace is its speed.			
<b>3</b> Samsung ML-1630 <b>\$199 NEW</b> <a href="http://find.pcworld.com/59246">find.pcworld.com/59246</a>	<b>78</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Text quality: Superior</li> <li>Graphics quality: Fair</li> <li>Tested speed (ppm): 17.2 text/6.2 graphics</li> </ul>	<ul style="list-style-type: none"> <li>No ethernet or duplexing</li> <li>100 sheets input (standard)</li> <li>1200-by-600-dpi maximum true resolution</li> </ul>
BOTTOM LINE: Sleek and shiny black, the ML-1630 has lots of style and adequate performance for personal use.			
<b>4</b> Oki Printing Solutions B4400n <b>\$329 NEW</b> <a href="http://find.pcworld.com/59248">find.pcworld.com/59248</a>	<b>76</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Text quality: Superior</li> <li>Graphics quality: Good</li> <li>Tested speed (ppm): 28.8 text/8.9 graphics</li> </ul>	<ul style="list-style-type: none"> <li>Ethernet optional; manual duplexing</li> <li>250 sheets input (standard)</li> <li>600-by-2400-dpi maximum true resolution</li> </ul>
BOTTOM LINE: This sturdily built, solid performer is overshadowed by lower-cost competitors with similar specs.			
<b>5</b> Lexmark E352dn <b>\$449 NEW</b> <a href="http://find.pcworld.com/59249">find.pcworld.com/59249</a>	<b>72</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Text quality: Superior</li> <li>Graphics quality: Good</li> <li>Tested speed (ppm): 32.8 text/7.2 graphics</li> </ul>	<ul style="list-style-type: none"> <li>Ethernet, automatic duplexing</li> <li>250 sheets input (standard)</li> <li>1200-by-1200-dpi maximum true resolution</li> </ul>
BOTTOM LINE: The price may be high, but this printer offers speed and features galore, plus expandability.			

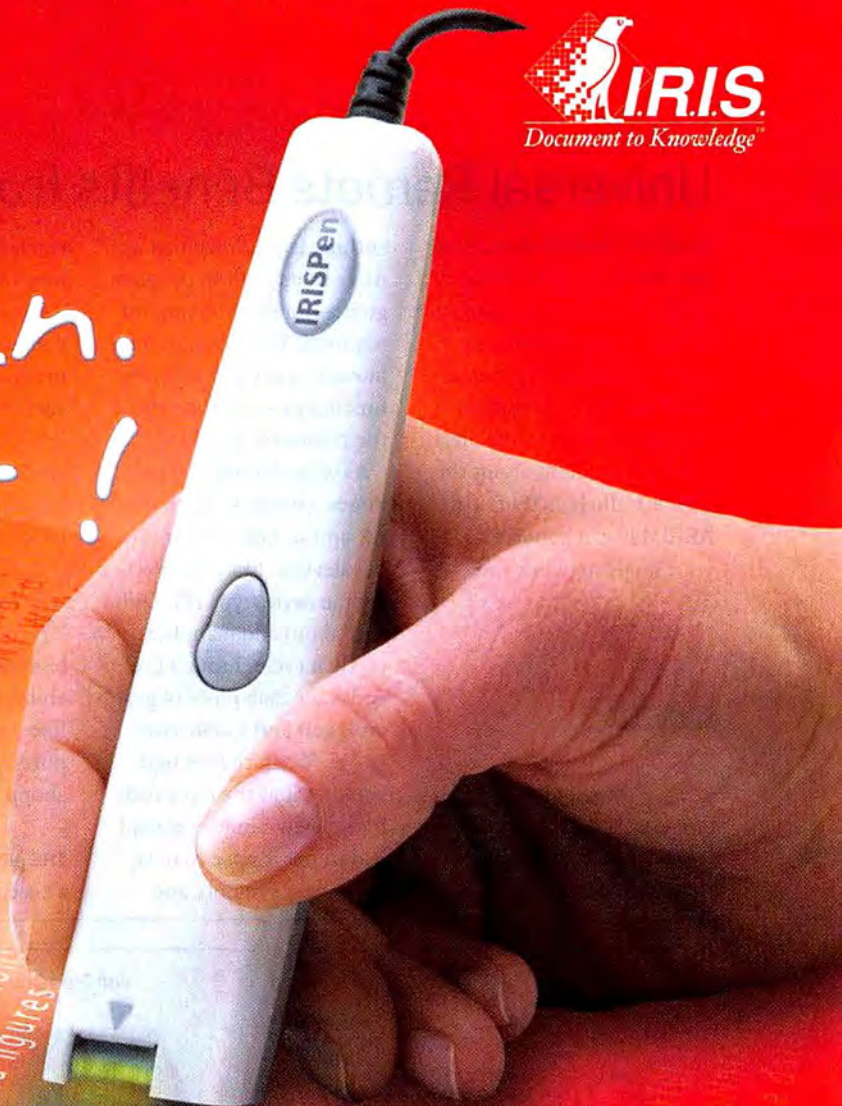
CHART NOTES: Prices and ratings are as of 12/10/07. Speeds are in pages per minute (ppm); resolutions are in dots per inch (dpi).

**MORE ONLINE** For a review of each monochrome laser printer and details on how we test them, go to [find.pcworld.com/59459](http://find.pcworld.com/59459).

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## Universal Remote Benefits from Built-In Wi-Fi

FORGET PEACE on earth or love sweet love. What the world needs now is a simple, easy-to-program universal remote. Acoustics Research's Universal Wi-Fi Remote is closer than most to the ideal.

What's different about this \$399 handheld is Wi-Fi. The ARRU449 can connect to your home network and

automatically download updates to its built-in program guide—no PC intervention required. You can search for movies, sports, or high-def broadcasts—and then check the results on its LCD.

As with all universal remotes, you must teach the AR unit to talk to your various devices. Start by selecting the device type (TV, DVR, and so on) and manufacturer; then cycle through the codes for each piece of gear until you find a code that works. When the AR unit couldn't find the right code for my new Sony receiver, I had to put it nose to nose with Sony's remote and

teach it what to do, button by button.

Once it recognizes your devices, you can program activities, such as loading a DVD, to work with a single button press. Expect to put in a lot of time tweaking it until it works the way you want it to.

A cool but pointless feature is the ability to view headlines, weather reports, and Amazon shopping lists on the

**THE ARRU449 features a 2-inch color LCD.**



remote. (Isn't that why God gave us computers?)

Meanwhile, some basic features are counterintuitive. To delete something that you just entered, for example, you must press the <Enter> key.

Bottom line: The AR unit improves on its competitors. Just be prepared to spend time training it to work the way you want. As with peace and love, patience is essential.

—Dan Tynan

**81**  
VERY GOOD

**ARRU449 Universal Wi-Fi Remote** | Acoustic Research  
Built-in Wi-Fi makes this pricey remote a winner. \$399  
[find.pcworld.com/59373](http://find.pcworld.com/59373)

PHOTOGRAPH: MARC SIMON

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# Portable Gadget Charger Harnesses the Sun

WANT A WAY to juice up your gadgets when the power grid is unavailable? One solution: Powertraveller's easy-to-use Powermonkey-eXplorer solar charger.

The charger has two main parts. First is the plastic-and-rubber Powermonkey-

eXplorer unit, a lithium ion battery that looks like a car power adapter. This is what you plug into your devices.

The second component is the "solar slave," a light but sturdy, 5-volt DC folding solar panel. According to the company, six hours of exposure to sunlight will charge the unit enough to fully recharge a mobile phone.

You can tell that the Powermonkey is building a charge by watching the moving bars on its 1-inch blue LCD or on the solar slave's green LED.

If you happen to be enduring an arctic winter bereft of

**YOU CAN USE the Powermonkey with a variety of handheld devices.**

any sun, you can charge the Powermonkey by plugging it into a wall outlet (using one of the four bundled international plug adapters) or into a USB port on your PC.

Powertraveller also provides ten adapters that plug into many types of handheld gadgets such as cell phones, MP3 players (including the

iPod), and Bluetooth headsets (but not laptops).

The Powermonkey is expensive, but its LCD and its rugged design will be worth the premium for outdoor types. For others, however, cheaper options exist.

—Narasu Rebbapragada



**85**

VERY GOOD

**Powermonkey-eXplorer**  
Powertraveller

Pricy solar charger is handy—and ecofriendly. Street: \$130  
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THE 3.2-INCH SCREEN shows video and displays photos.

## A Potential Alternative to the iPod

THOUGH THE OLD 30GB Zune didn't go over too well, the second generation of Microsoft's media player is more impressive. I tested a \$250, 80GB hard-drive model, which performed well in our output and frequency response tests.

Ever since Wi-Fi-equipped players came out, users have wanted wireless syncing. Well, it's here. Transfers weren't lightning-fast over my 802.11g network, but the ability to sync without touching my PC was handy.

All in all, the 80GB Zune sounds good, and its price is in line with its competition.

—Eric Dahl



**Zune 80GB** | Microsoft

Wireless syncing makes this Zune a capable iPod alternative. List: \$250  
[find.pcworld.com/59411](http://find.pcworld.com/59411)

## DOWNLOAD THIS

LAURA BLACKWELL



## Free Apps for Words, Screen Capture, and Sudoku

SOME PEOPLE NEED big-name, big-bucks programs. But if your software requirements are modest, your software budget should be, too. Here are free alternatives for word processing, screen captures, and all-important fun.

### A Portable Word Processor

Talk is cheap, but Word is expensive. Fortunately, Jarte is free. This clever little word processor from Carolina Road Software lets you open, modify, and save files in common formats. And I do mean "little": Jarte fits onto a 64MB USB drive with room to spare for a few documents—it's perfect for travelers who want to work on projects and might not have Internet access for using Web-based alternatives.

Jarte's tabbed interface makes editing several open files—in different formats—easy. I also liked the clickless file menus, which open with a mere mouse-over. (Selecting menu items requires clicks, of course.)

You have your choice of three layouts: the Notepad-like Minimal; the default, aptly named Compact; and Classic (with big, handy buttons). Whether I ran Jarte off an XP system's hard drive or a USB drive, it opened Word .doc, Rich Text Format, and Word 2007 .docx files without a hitch (but for .docx files you need Microsoft's free compatibility pack for Word, Excel, and PowerPoint 2007, at [find.pcworld.com/59265](http://find.pcworld.com/59265)). I saved files in .doc, .txt, and .rtf formats.

For \$19, Jarte Plus adds automatic spelling correction and outlines; the ability to save clipings; and support for independent user profiles, which Jarte calls "personalities." Free, [find.pcworld.com/59256](http://find.pcworld.com/59256).

### Shoot All of Your Screens!

EasyCapture lets you capture screen images in a variety of sizes and formats. This free program adds a few nifty extra functions, too.

To nab a screen with EasyCapture, you select

the desired area type (full screen, region, window, and so on), move your pointer to select the area, and click. The tabbed interface allows you to capture and edit several screen shots, and then deal with each at your leisure. A smattering of graphics tools lets you perform simple tasks such as adjusting brightness and contrast; converting to grayscale; and adding text and simple included graphics such as lines, arrows, and word balloons. You can save your work as BMP, GIF, JPEG, PCX, PNG, and TIFF files. Free, [find.pcworld.com/59257](http://find.pcworld.com/59257).



EASYPICURE LETS YOU embellish your screen shots with notes.

### Get a Clue for Sudoku Puzzles

What's the method to your Sudoku madness? Reader Ernie Jellinek of Voorhees, New Jersey, has a tip: Do the puzzles in SudoKlue. This clever freebie analyzes puzzles and provides cell-by-cell solution instructions.

SudoKlue generates random puzzles or lets you input your own. Use the pencil tool to mark the possibilities, and the pen tool to enter your solution. SudoKlue can give hints, find errors, and solve individual cells. Links to the SudoKlue site explain the techniques.

The free SudoKlue is a demo of the \$20 SudoKlue Pro. You can play only the easiest of the six difficulty levels; clicking advanced levels elicits a nag screen. Only beginner hints appear at the Beginner level, so you won't learn a lot. But even the basic version can help sharpen your wits without making you sharpen a pencil. Free, [find.pcworld.com/59258](http://find.pcworld.com/59258).

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40% over the next 10 years. Yet today, investment in utilities is at an all-time low. It's a "perfect storm" for computer users, one that makes APC protection even more essential.

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testing phase. When this happens we generally contain our enthusiasm, talk in ads about the new technology that made the product possible, and leave it to others to comment on the performance. This time we are bursting with enthusiasm and we decided to share it. So here we go!



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## Addlogix InternetVue™ 2020

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**BREAK ON THROUGH:**  
Among the Innovation  
Award winners (clock-  
wise from top) are HP's  
TouchSmart (displaying  
Microsoft's Popfly),  
Toshiba's Portege R500  
(displaying Mint.com),  
Seagate's hybrid hard  
drive, NetGear's Digital  
Entertainer HD EVA8000,  
and—no surprise—  
Apple's iPhone.



# Today's Most Innovative Products

Web apps that transcend the Web.

PCs that redefine what a PC can do.

And oh yeah, a certain cell phone you

may have heard of.

We pick 25 breakthroughs that you can get your hands on right now.

MAKE NO MISTAKE, the Web is taking over. Applications are moving to browsers en masse, and technology to take Web apps offline promises to smooth the road ahead. And let's not forget breakthrough devices advancing the Web-anywhere world: Apple has redefined the phone, and One Laptop per Child's sub-\$200 laptop is delivering Internet-style collaboration to kids in developing nations. But innovation isn't all on the Web; the PC is evolving as well. Apple has reenvisioned backup, HP has created the first useful touch-screen PC, hybrid hard drives boost speed and battery life, and ultraportables have become even more useful. Chosen from the hundreds of products we reviewed in 2007, here are 25 that will change the way you work, communicate, and play this year—and beyond. >>

BY THE PC WORLD STAFF  
PHOTOGRAPHS BY MARC SIMON



## Google Gears

1

**Innovation:** Plug-in lets Web applications work offline.

**Benefit:** Tackles the single biggest hurdle to making Web apps truly convenient.

Imagine firing up only one application—a Web browser—for handling all of your daily computer tasks. It's a nice dream, but it has one major problem: What do you do when you're offline? Google Gears, a Windows application now in beta, solves this problem by allowing service designers to create versions that still work when your PC doesn't have an Internet connection. Google Reader (take a tour at [find.pcworld.com/59361](http://find.pcworld.com/59361)), Zoho Writer (which added offline editing via Gears in late 2007; [find.pcworld.com/59362](http://find.pcworld.com/59362)), and online task manager Remember the Milk already use it, and Google is working to add Gears to other applications in its stable. (If you're thinking of ditching desktop software entirely, read one writer's take at [find.pcworld.com/59363](http://find.pcworld.com/59363).)

## Apple iPhone

2

**Innovation:** Gee-whiz touch-screen interface and spartan case dial up a mobile revolution.

**Benefit:** Mac OS—simple software offering slide-and-glide access to bright, colorful menus sets this cell phone apart from its rivals.

The \$399 iPhone has taken some criticism for its shortcomings ([find.pcworld.com/59279](http://find.pcworld.com/59279)), mainly its lack of 3G connectivity, but you can't deny that the sleek handset is innovative. Apple made navigating via a touch screen—sure to be a staple in future PDA phones and other small devices—intuitive and fun. iPhone's Safari browser makes the handset a great mobile Web device (at least when you can get a Wi-Fi connection). And, sure, many phones play music, but Cover Flow cranks the iPhone up to 11 as a music player. (See PCWorld.com's iPhone Central at [find.pcworld.com/59280](http://find.pcworld.com/59280).)

## One Laptop per Child XO

3

**Innovation:** \$200 laptop does mesh networking, is sand- and waterproof, and works well in direct sunlight.

**Benefit:** What every child in the developing world needs; makes you ask, "When will my laptop be able to do that?"

Innovation isn't always about being bigger, better, and faster. One Laptop per Child's Linux-powered XO laptop (see [find.pcworld.com/59281](http://find.pcworld.com/59281) for our review), with a 7.5-inch display—designed for children in poor countries—is one of the cheapest, most power-conscious, and sturdy notebooks on the planet. It also has features you might wish you had on your mainstream laptop. One clear standout: XO's Wi-Fi allows it to function as a mesh-network node that can connect with other XOs, even when no Internet connection is available.



## Time Machine, in Mac OS X 10.5 (Leopard)



4

**Innovation:** Backs up changes hourly to an external drive behind the scenes, then lets you "go back in time" to restore data.

**Benefit:** Makes light work of the one task that every computer user should do and most people put off—and gives the function a pretty face, to boot.

Time Machine is the killer feature in Leopard. You'll either love or hate this wild and wacky space-and-time user interface, but performing backups will never be the same. One question: Why doesn't Windows Vista have anything this simple and useful? (For more information about the new Mac OS, read our Leopard review at [find.pcworld.com/59457](http://find.pcworld.com/59457).)

## Amazon Kindle

**5 Innovation:** Device takes the e-book to the next level with free EvDO connectivity.

**Benefit:** Tight integration with Amazon's bookselling site; thoughtful design.

Electronic-book readers are not new, and Sony's experience with its Reader shows that sales are not guaranteed. But with its Kindle reader (\$400, [find.pcworld.com/59283](http://find.pcworld.com/59283)), Amazon has brought the e-book into the connected age by including free EvDO wireless connectivity to the e-commerce giant. Did we mention the seamlessness of buying books with this always-on device? EvDO could be the magic that e-books have lacked.



## HP TouchSmart IQ770 PC

**7 Innovation:** The first all-in-one PC on the market to boast a touch-screen display.

**Benefit:** Does for the computer what the iPhone has done for mobile handsets.

HP's kitchen-friendly computer (\$1650, [find.pcworld.com/59284](http://find.pcworld.com/59284)) is beautifully designed, and its touch screen makes it suitable for use on a countertop as well as a desktop. HP also supplies a software interface, optimized for use with the touch screen, that ties into news, weather, and calendar details, among other daily-living information. The handy, customizable HP control panel lets you quickly access photos, launch a photo editor, and play back music, too.

## NetGear Digital Entertainer HD EVA8000

**6 Innovation:** Only streaming-media device to play protected files in both iTunes and Windows Media formats. Also handles 1080p HD video and acts as a DVR.

**Benefit:** It makes life easier in a multiple-DRM world.

Netgear's Internet media player (\$400, [find.pcworld.com/59364](http://find.pcworld.com/59364)) busts through the DRM (digital rights management) wall, and even allows you to check your e-mail and watch YouTube videos on your television. >>

## Last Year's Innovations: The Keepers and the Flops

SOMETIMES THE PUBLIC embraces a product breakthrough like a long-lost friend. Other times, being innovative just isn't enough. (Remember the Apple Newton?) Maybe the company just can't find the right way to sell its idea. Or perhaps the public simply isn't ready for a new technology. With that in mind, we look back at the winners and losers among our Innovation Award picks from last year ([find.pcworld.com/59450](http://find.pcworld.com/59450)).

### Keepers

• **Intel Core 2 Duo** Intel's Core 2 Duo line of CPUs pumped up processing while reducing power consumption—no mean feat. The company's

launch in late 2007 of its 45-nanometer Penryn chips (see our first desktop review at [find.pcworld.com/59345](http://find.pcworld.com/59345)) looks likely to extend its current lead over key rival AMD.

• **Nintendo Wii** The wee, \$250 Wii broke new ground with its innovative motion-sensing controller. Since then, the appeal of this still-hard-to-find console to casual gamers has helped it outsell the more powerful PlayStation 3.

• **Parallels Desktop for Mac** Apple's dual-boot software, Boot Camp, is now in Leopard—great. But who wants to reboot every time they need to switch operating systems? Parallels Version 3 (\$80; [find.pcworld.com/59449](http://find.pcworld.com/59449)) adds Windows gaming prowess.

### Flops

• **Sony PlayStation 3** The long-delayed introduction of the PlayStation 3 landed it in the eighth spot in our "Top 21 Tech Screw-ups of 2006" ([find.pcworld.com/59346](http://find.pcworld.com/59346)), and the console might be the poster child for engineering overkill: Even though the original 60GB model cost \$599, analysts speculated that Sony was still losing \$200 on each living-room "supercomputer." The new \$399 entry-level PS3 model should make the console more popular with buyers, at least.

• **Sony Reader** Last year, we were wowed by this svelte e-book reader's electronic-paper display, which delivers long battery life and exhibits no flicker. The company later improved the screen with its \$300 PRS-505 ([find.pcworld.com/59347](http://find.pcworld.com/59347)), but the Reader has failed to become an "iPod for books."





## AT&T Tilt

8

**Innovation:** Clever, unique hinge lets you slide the screen up at an angle.

**Benefit:** Well-positioned QWERTY keyboard results in what looks like a tiny notebook that you can use in your hands or rest on a table.

The tilting screen is the main innovation, but the Tilt (made by HTC under the name TyTN II, \$400 with a two-year AT&T contract, [find.pcworld.com/59287](http://find.pcworld.com/59287)) is one of the most powerful phones available, period. Want a quick rundown of the specs? How about the Windows Mobile 6 operating system, a large screen, 3G wireless connectivity, GPS, a 3-megapixel camera, and the ability to talk to corporate BlackBerry servers? Top that, iPhone.



## Facebook API

9

**Innovation:** Platform lets anyone with a good idea and some coding chops add real value to Facebook.

**Benefit:** Facebook taps developers' creativity, in turn permitting Facebook users to customize their pages.

Sure, the killer app of Facebook has not been written yet—and many of the ones that exist now are kind of silly. But Facebook has been on a roll in more ways than one, having led to the creation of the Google-backed OpenSocial, which looks likely to result in open platforms' becoming widespread. Common ground should spark lots of creativity, and it should keep the social networking and media buzz alive.



## DeviceVM Splashtop

10

**Innovation:** Allows a PC to boot in a few seconds into a simple, secure interface with a Mozilla-based browser.

**Benefit:** Lets you save energy by keeping your PC powered off when you're not using it.

DeviceVM's Linux-based technology allows you to boot into its Internet-appliance-like platform in a few seconds, so you don't have to spend minutes waiting for Windows to start up. If all you want to do is check your Web mail account or make a Skype call, for example, you'll save both time and watt-hours. Though the technology is currently shipping as a feature only in the Asus P5E3 Deluxe/WiFi AP motherboard, it should be more widely available in desktops, laptops, and additional motherboards in 2008.

## Toshiba Portege R500

11

**Innovation:** First ultraportable laptop to squeeze in an optical drive.

**Benefit:** You don't have to give up much at all to go truly lightweight.

Thin takes on new meaning with the lightweight Portege R500 (\$2000 for the R500-S5002, [find.pcworld.com/59295](http://find.pcworld.com/59295)). But you don't have to sacrifice function for form with this laptop, which is equipped with an ultralow-voltage Intel processor. The stylish 2.4-pound ultraportable manages to include both a rewritable-DVD drive and a 12.1-inch LED-backlit display in its svelte, 0.77-inch-thick chassis. Enough said.

## Data Robotics Drobo

# 12

**Innovation:** High-end, redundant storage for the masses.

**Benefit:** USB 2.0

storage appliance delivers RAID 5 benefits without mind-numbing complexity.

"Redundant array storage" and "sexy" don't normally go hand-in-hand. But Data Robotics' unique Drobo (\$500, [find.pcworld.com/59296](http://find.pcworld.com/59296))

offers high-end storage features in a sleek design with software that doesn't require a master's degree in IT to figure out. Drobo uses storage virtualization algorithms to provide many of the benefits of RAID 5, but is relatively easy to set up: Just place the drives into the case, plug in the USB cable, install the software, and you're off.



## Panasonic TH-42PZ700U

# 15

**Innovation:** Packs full 1080p high-definition resolution into today's most popular size for flat-screen televisions, 42 inches.

**Benefit:** Stellar image quality.

Though 1080p LCD sets quickly became commonplace in 2007, showing 1080 vertical lines on a plasma TV this small remained technically difficult. Panasonic's efforts paid off: In our tests the TH-42Z700U (\$1800, [find.pcworld.com/59365](http://find.pcworld.com/59365)) earned stellar image-quality marks. With high-definition content from Blu-Ray and HD DVD sources, the picture is phenomenal; and because it's a plasma, even standard-definition programs look pretty good.

## Hybrid Hard Drives

# 13

**Innovation:** First hard drives with a built-in NAND flash memory cache.

**Benefit:** Power savings and performance boost for laptops.

Samsung and Seagate each have shipped new hard drives that combine traditional hard-disk media with a flash cache to improve both reliability and performance. Our tests of the Samsung Spinpoint MH80 and the Seagate Momentus 5400 PSD (\$250 and \$190, respectively; [find.pcworld.com/59297](http://find.pcworld.com/59297)) showed that the 256MB NAND flash cache provides some clear benefits—particularly in power saving and read speed.

## Eye-Fi Card

# 14

**Innovation:** Allows digital cameras to upload wirelessly to photo-sharing sites or your PC.

**Benefit:** Wi-Fi-enabled SD Card bridges digital photography's wireless divide.

The Eye-Fi Card (\$100, [find.pcworld.com/59298](http://find.pcworld.com/59298)) does what few digital cameras have done, and what no digital camera has done well: enable wireless uploading to a photo-sharing site. Pop the 2GB SD Card into your camera and fire off a few shots, and the Wi-Fi-enabled card transmits the images to your preferred site—and, if you like, to your PC. The setup is simple, the device imposes no limitations on the image size, and the uploads happen automatically. And you can use the card at any Wi-Fi hotspot that does not require a splash screen.



## Yamaha Tenori-On

# 16

**Innovation:** Inspired and intuitive handheld instrument redefines music-making.

**Benefit:** Nothing else even comes close to Japanese media artist Toshio Iwai's digital instrument.

While the Tenori-On is likely to appeal to a fairly specialized audience, the device screams innovation. Consisting of a 16-by-16 grid of LED-illuminated buttons that a user touches to manipulate sound in a variety of intuitive and eye-catching ways, the Tenori-On—designed by the creator of the cult-hit Nintendo DS music game *Electroplankton*—is like nothing you've ever seen (head to [find.pcworld.com/59299](http://find.pcworld.com/59299) for a product demonstration video). It has 256 built-in sounds, and an integrated SD Card slot lets you copy original samples from your computer. You can also use its MIDI-out port to connect with your PC's music software or your other hardware instruments. Currently it is sold only in Great Britain, but anybody willing to pay £599 (about \$1200) can order one from [dolphinmusic.co.uk](http://dolphinmusic.co.uk). »



## Zoho Notebook

**17** **Innovation:** Web-only app stores just about

any kind of content and allows you to share it with anyone.

**Benefit:** More full-featured than competing online tools.

AdventNet's Zoho tools include everything from wiki software to customer relations management and project management applications, many of them free. Notebook (free, in public beta; [find.pcworld.com/59300](http://find.pcworld.com/59300)) continues the winning streak. You can enter text, graphics, audio, video, and embedded content from other sites onto your notebook's pages—or use the page as a single word processing document or spreadsheet. Put together everything on a certain subject, and you're ready to share your work with online compatriots.



## Mint.com

**20** **Innovation:** Web site aggregates your financial account transaction data,

alerting you to any unusual activity or to a rapidly dwindling balance.

**Benefit:** Takes most of the work out of keeping on top of your money.

Signing up for Mint ([find.pcworld.com/59303](http://find.pcworld.com/59303)) requires a leap of faith—you must give the site the numbers and passwords for your bank and credit card accounts. But once you do, it acts as your personal-finance lackey. Mint downloads your latest transactions for all accounts and does its best to categorize them. You decide when you want to receive an alert, such as for when a bill is due, a big purchase appears on your credit card, or you just got a nice, fat deposit.

## 'In Rainbows' by Radiohead

**18** **Innovation:** Band allows its fans to pay whatever amount they want for this new album, starting at zilch.

**Benefit:** Approach calls the bluff of illegal downloaders, who say they're happy to pay artists but not music studios.

The recording industry is desperate for new ideas about how to sell music. Radiohead's pay-what-you-want approach may not work for all acts—and the band has remained mum on reports that 62 percent of early downloaders paid nothing for the group's new album—but the strategy certainly does one thing that most music companies seem loath to do: It respects fans. And all of the voluntary fees go directly to Radiohead, not to a publisher.

## Microsoft Popfly

**21** **Innovation:** Lets you use Microsoft's Silverlight platform to create Web mashups.

**Benefit:** Though Popfly is still in early beta, its operation is clearer and its display is more attractive than that of the similar Yahoo Pipes tool.

If you ever played with Legos as a kid, then you should be able to assemble a Web mashup in Popfly. No coding know-how needed—using Popfly is as simple as choosing content sources (such as pictures, video, or news feeds from various online sources) and connecting them to a display model (such as a video player, a dynamic box for text, or a game of whack-a-mole that pops up pictures, for instance). Voilà, you have your mashup. You can embed the resulting creation in a blog entry or Web page, or just share its URL so others can admire your work. (See [find.pcworld.com/59366](http://find.pcworld.com/59366) for more information.)

## IOGear Wireless USB Hub and Adapter

**19** **Innovation:** USB-speed connections without cable spaghetti.

**Benefit:** Presents none of the flakiness and proprietary technology that hobbled

previous wireless USB products.

IOGear's hub and adapter are based on an industry standard that should soon be built into laptops and other devices. Setting up IOGear's Wireless USB Hub and Adapter (\$160, [find.pcworld.com/59301](http://find.pcworld.com/59301)) was tricky, but once we had everything arranged, our data flew, thanks to its streaming, HD-capable, 250-megabits-per-second throughput. Wireless USB will become more versatile once it's built into devices.



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## Sprint Airave

**22**

**Innovation:** Delivers cheap, unlimited Internet-based calling at home

through any Sprint CDMA handset.

**Benefit:** You can use your cell phone (and all of the contacts you have stored in it) as a universal phone, with better reception, while at home.

T-Mobile was first to enhance at-home cell calling with the debut of its Hotspot @ Home service, but that offering requires use of one of the company's few dual-mode Wi-Fi/cellular handsets. Sprint's device, made by Samsung (\$50 with Sprint service, [find.pcworld.com/59306](http://find.pcworld.com/59306)), creates a mini cell tower in your home to which your phone can roam. As a result, you can enjoy more convenience and even bigger savings than what you get from VoIP providers such as Vonage.



## eXpresso

**24**

**Innovation:** Allows Excel users to share their spreadsheets, online or off.

**Benefit:** Melds the best of traditional office software and Web-based services.

eXpresso (\$80 per seat per year, [find.pcworld.com/59307](http://find.pcworld.com/59307)) adds a new twist to Web applications, offering both Web-based sharing in a standard format and tight integration with the most familiar spreadsheet application, Microsoft's Excel. Users can share spreadsheets in real time using eXpresso's service, which also allows you to restrict some users' access to certain segments of a master spreadsheet. In a nutshell, eXpresso is delivering today what Microsoft has promised that its Office suite will do in the future.



## Ask.com

**23**

**Innovation:** Melds comprehensive search results more coherently than

competing universal searches do.

**Benefit:** Proves that not every site needs to mimic Google, and that a venerable search engine company can do cool new stuff.

Ask.com, a complete redesign of the former Ask Jeeves site, asks very little but gives a lot via its thoughtfully designed interface, including search suggestions as you type. With one query you can retrieve traditional search results as well as news, images, blogs, video, and more. Once you've searched, you can filter the results with useful suggestions to home in on just what you were looking for. The site is visually minimalist, but you can skin it for a new look. If privacy is a concern, AskEraser wipes away private data that search engines typically store (read more at [find.pcworld.com/59305](http://find.pcworld.com/59305)).

## Kodak EasyShare All-In-One Printers

**25**

**Innovation:** The printers are slightly more expensive, but their ink is priced more like the no-name stuff advertised around the Web.

**Benefit:** You can print cheaply without worrying that the cartridge will burst all over your printer.

Kodak's midlevel EasyShare printers (from \$150, [find.pcworld.com/59308](http://find.pcworld.com/59308)) may be a bit pricier at first. But when you combine one with the company's paper-and-ink packs, you can print photos for as little as 10 cents each (according to Kodak)—about half the industry average. The printer's pigment-ink system uses one black-ink cartridge and one five-ink tank; replacing them with non-photo-specific inks directly from Kodak costs just \$10 and \$15, respectively. We think most people will appreciate the benefit of having one source for affordable, reliable replacement ink cartridges. ●



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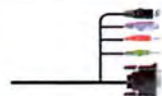
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### Where to Buy:



www.hdnw.com

**COMP-U-PLUS**

www.compuplus



www.kvms.com



www.dalco.com

**DIRECTRON.COM**

www.directron.com

**COMPUTERSTOP.COM**

www.computerstop.com



The illustration depicts a vibrant, orange-toned scene of a technology store. A large, white, isometric building with yellow window frames is the central focus. Inside the store, various electronic devices are displayed on a white floor: a desktop monitor, a laptop, a mobile phone, a printer, a digital scale, a digital camera, and a power strip. Small black silhouettes of people are scattered throughout the scene, some standing near the products and others walking in the aisles. The background is a solid orange color with white circuit-like lines and dots. In the foreground, a parking lot with several cars and more people is visible. The overall style is a clean, modern illustration with a strong color palette of orange, yellow, and white.

# TECH-MART

# The Best Places (and Times) to Buy

You know which products you need. But where and when can you get the best deals? Our ratings of the best tech stores—and our tips for timing your purchases—can help. »

BY JEFF BERTOLUCCI  
ILLUSTRATIONS BY HARRY CAMPBELL

Given a choice, Jay Gorman would rather shop online for tech gear. An IBM employee who works amid whirring mainframes in Lake Katrine, New York, Gorman estimates that he buys 90 percent of his gear online, including camcorders, computers, and MP3 players.

He's not opposed to brick-and-mortar stores—he frequents Best Buy, too—but he thinks sites such as Buy.com typically offer better prices—and more convenience. Says Gorman: “I live out in the boonies, and the only two places close by are Best Buy and Circuit City.”

The appeal of online shopping is growing. Between August 2006 and the same month a year later, 14 percent of the \$159 billion that U.S. shoppers spent on consumer electronics was spent online, up from 5 percent a year earlier, according to the Consumer Electronics Association. Yet brick-and-mortar stores—including con-

sumer electronics emporiums Best Buy and Circuit City, discount retailers Target and Wal-Mart, and warehouse clubs Costco and Sam's Club—clearly aren't going away anytime soon.

Add online vendors to the mix, and it's evident that retail competition for tech customers is as fierce as ever, which is good news for savvy shoppers. The Web's selection of vendors is particularly deep. You'll find popular online-only shopping sites like Amazon.com, Newegg.com, and TigerDirect.com, as

well as the Web counterparts of brick-and-mortar stores, and vendor-specific sites for Apple, Dell, HP, and others.

**Between August 2006 and the same month a year later, 14 percent of the \$159 billion that U.S. shoppers spent on consumer electronics was spent online.**

And don't forget auction sites such as eBay and uBid, which can be good sources for tech-gear bargains.

Which stores offer the best prices, service, and selection? Is online shopping better than offline, or vice versa? To find out, we polled thousands of *PC World* readers, most of whom shop both on the Web and at brick-and-mortar stores.

### The Good, the Bad, the Ugly

Our survey identified the Apple Store as the best brick-and-mortar retailer overall; behind it were Costco and Staples (though the latter received below-average scores in two areas). The top online retailers, Newegg.com and TigerDirect.com, earned better-than-average scores in every category, including prices, site design, and product selection.

The lowest-rated brick-and-mortar shops were discounters Target and Wal-Mart, and electronics retailer Circuit City. All three received low grades in buying advice and overall satisfaction. Readers also said that Circuit City's prices were too high, Target and Wal-Mart's product selection was poor, and Wal-Mart's store design needed help. Wal-Mart did get high marks for its low prices, however.

Among online sellers, BestBuy.com and Walmart.com finished at the bottom. BestBuy.com earned subpar marks across the board, while Walmart.com rated below average in nearly every category except price, where it was average.

## Brick-and-Mortar Stores: No Perfect Ones, but Apple and OfficeMax Come Closest

READERS WE SURVEYED liked everything about the Apple Store except its prices; OfficeMax earned high marks from shoppers for its store design and easy returns.

STORE <sup>1</sup>	Best prices	Product information and buying advice	Product selection	Return experience	Store design	General satisfaction
Apple Store	▲	▲	▲	2	▲	▲
OfficeMax	▲	▲	▲	▲	▲	▲
Costco	▲	▲	▲	▲	▲	▲
Office Depot	▲	▲	▲	▲	▲	▲
Staples	▲	▲	▲	▲	▲	▲
Best Buy	▲	▲	▲	▲	▲	▲
Radio Shack	▲	▲	▲	2	▲	▲
Sam's Club	▲	▲	▲	▲	▲	▲
Wal-Mart	▲	▲	▲	▲	▲	▲
Circuit City	▲	▲	▲	▲	▲	▲
CompUSA/Good Guys	▲	▲	▲	▲	▲	▲
Target	▲	▲	▲	2	▲	▲

▲ AVERAGE ▲ BETTER ▼ WORSE NOTES: Scores are in comparison to the average for all major brick-and-mortar stores. <sup>1</sup> Chart position is based on the balance of better-than-average and worse-than-average scores for each store; stores with roughly equal scores are listed in alphabetical order. <sup>2</sup> We received too few responses to rate the store on

### Top Brick-and-Mortar Stores

The Apple Store, the boutique retailer for all things Apple, now has more than 200 stores worldwide. Our survey takers gave it high marks for its buying advice, store design, product information, and selection. Readers rated the Apple Store below average on price, however, possibly because Apple products tend to cost more than their PC counterparts.

Readers gave Costco above-average grades for its prices and return policies. Its customer satisfaction scores were impressive, too. But readers were not nearly as enamored with the membership warehouse's product selection and

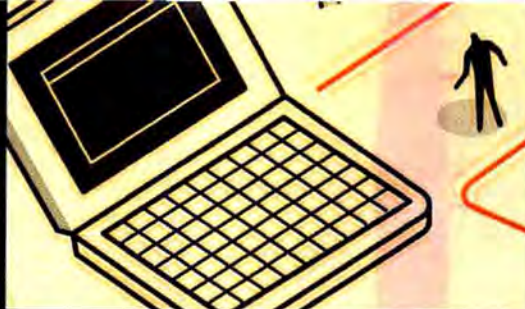
buying advice. As for Staples, readers liked the office supplier's store design and return policies, but weren't thrilled with its prices or product selection.

### Apple's Good Service

Apple Store fan Andy Odom recently switched from a Windows PC to a Mac, which he calls "more intuitive" and easier to use. Odom, a Webinar trainer in Denton, Texas, bought his MacBook laptop at an Apple Store in Dallas, using a student discount to knock \$100 off the \$1299 price. He was impressed with the retailer's well-trained staff: "They came across as really knowledgeable, and it seems they work a lot with people who are new converts. They're able to explain things pretty well."

One Apple Store disadvantage, however, "is the slight premium that customers pay in price," writes Apple Store customer Jason Syth in an e-mail interview. "I think that Apple's market share would grow at a much faster rate if it priced its products more competitively."

## A Calendar for Buying Computers



THERE ARE FOUR best times of the year to buy laptops and desktops. The first three are the holiday shopping season, the back-to-school period in August and September, and inventory clearance time in late January and February.

The fourth time is variable from year to year and involves product transitions. "When a new technology is introduced, the channel typically tries to flush the older stuff," says technology analyst Roger Kay, president of Endpoint Technologies Associates. "That's not predictable as a time of year, but has to do with when products are launched."

If your computing needs are modest—consisting primarily of word processing and Web surfing, for example—closeout models may be a good choice. Vendor outlet sites, such as Dell Outlet ([www.delloutlet.com](http://www.delloutlet.com)) and HP Business Outlet ([www.hp.com/go/businessoutlet](http://www.hp.com/go/businessoutlet)) are good online destinations for finding closeout, overstocked, and refurbished laptops and desktops. At press time, for instance, Dell Outlet was selling a refurbished Vostro 1700 laptop for \$700; an identically equipped new model at the main Dell site cost \$1363 (or \$900 during a limited-time sale).

### Good Prices or Good Service?

Not surprisingly, our survey suggests that low prices and great selection and service seldom mix. Discount retailers and warehouse clubs such as Costco, Sam's Club, and Wal-Mart offer great

prices but tend to skim in other areas, our survey takers say. Target received low marks for its service, too, and readers rate its prices as just average.

Sam Lamp of Bennington, Vermont, shops at Wal-Mart because it's one of the few brick-and-mortar retailers in her area. The prices there are good, she says, but the selection isn't—a circumstance that she attributes to her local Wal-Mart's small size. "It doesn't really have a lot of electronic items" but is fine for office supplies, DVDs, and CDs, according to Lamp, a professional photographer who does computer repair and Web design in her spare time.

Lamp says that she frequents Staples, as well. "It's not too bad. It's just that the people there aren't exactly what I would call technology-savvy. If you have a question, you're better off just saving it for somebody else," she laughs.

But not all brick-and-mortar sales reps are similarly clueless. When Bill Ellis of London, Ontario, Canada, visited Costco last year, he was impressed with the technical know-how of the representative who helped him.

"I spoke with him about two things. One was about a computer we were looking at upgrading, and the other had to do with an LCD TV," says Ellis, a health care worker. "He was very knowledgeable >>

## Online Outlets: The Price—And Everything Else—Is Right at Newegg and TigerDirect

LOW PRICES HELPED Newegg and TigerDirect reach the summit of our list of online retailers. The two earned top scores on each of our six satisfaction measures.

SITE <sup>1</sup>	Best prices	Product information and buying advice	Product selection	Shopping cart experience	Site design	General satisfaction
Newegg.com	▲	▲	▲	▲	▲	▲
TigerDirect.com	▲	▲	▲	▲	▲	▲
Amazon.com	▲	◆	▲	▲	▲	▲
Apple.com	▼	▲	▲	▲	◆	◆
Buy.com	▲	◆	◆	◆	◆	◆
CircuitCity.com	▼	◆	◆	◆	◆	◆
Costco.com	▲	▼	▼	2	◆	◆
Dell.com	▼	◆	◆	◆	▼	◆
eBay.com	▲	▼	◆	◆	▼	▼
HP.com	▼	◆	◆	◆	◆	▼
Walmart.com	◆	▼	▼	2	▼	▼
BestBuy.com	▼	▼	▼	▼	2	▼

◆ AVERAGE ▲ BETTER ▼ WORSE NOTES: Scores are in comparison to the average for all major sites. <sup>1</sup> Chart position is based on the balance of better-than-average and worse-than-average scores for each site; sites with roughly equal scores are listed in alphabetical order. <sup>2</sup> We received too few responses to rate the site on this measure.



**“It’s not too bad. It’s just that the people there aren’t exactly what I would call technology-savvy.”**

—Sam Lamp of Bennington, Vermont, on her local Staples

in both respects. I expected him to regurgitate what I could read on the [product] boxes and [shelf] cards, but he went a little deeper than that. He was able to answer all my questions.”

Despite that positive experience, Ellis gave Costco an average grade overall because of its limited product selection. “Every time I go in there, it’s more of the same. For the size of store they are,

and for the amount of products they push through there, they would do well to diversify a little more,” he says.

Price, not service, matters most to warehouse patrons, many of whom don’t even seek a salesperson’s help. About 40 percent of the Costco and Sam’s Club shoppers who took our survey said they bypass store employees and simply grab the products they want.

## Electronics Emporiums

It’s a very different story at big-box electronics retailers. More than 80 percent of the Best Buy and Circuit City shoppers in our survey said they avail themselves of the hired help—not surprising, since you can’t buy many big-ticket items, such as a computer or a television, without a staffer’s assistance.

Big-box stores encompass not only consumer-oriented outlets such as Best Buy and Circuit City but also business-focused stores such as Office Depot and Office Max. These vendors, which earned average marks overall, set prices between the highs charged at specialty boutiques (the Apple and Sony stores, for example) and the lows of the discounters. Big-box shoppers expect both low prices and a knowledgeable sales staff—a combination that can be hard to find in today’s cutthroat retail landscape. For instance, Circuit City last year fired 3400 highly paid, experienced employees, and replaced them with new, lower-paid staffers. But while such cost-cutting moves may look perfectly good on a balance sheet, they can backfire.

San Diego resident Lee Cain, who shops at Circuit City, isn’t thrilled with the retailer’s recent downsizing. The biggest problem: “Fewer employees, and they got rid of the established ones,” says Cain, an in-home elder- >>

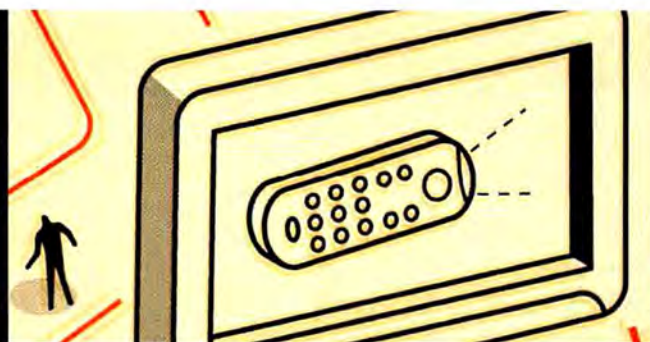
PHOTOGRAPH: ALDEN PELLETT

## Good Times for HDTV Buys

ONE OF THE two optimal times to buy a high-def TV is during the holiday shopping season that runs from late November through December. This includes “Black Friday”—the notorious day-after-Thanksgiving retail frenzy marked by incredible (and short-lived) bargains. Ask anyone who has braved a Black Friday queue at 5 a.m.: The loss-leader deals sell out fast.

“Shoppers have to realize what is a subsidized promotion versus a good deal that they can count on for more than 60 minutes,” says HDTV analyst Richard Doherty, research director of The Envisioneering Group. If you miss a Black Friday sale, don’t fret. You’ll still have until Christmas to find “the longest sustained series of bargains,” says Doherty.

Another good time to grab a television is in late January, as the Super Bowl approaches, Doherty says. That’s when “retailers have specials and closeouts, and try to one-up each other.”



According to Doherty, if prices have been falling for a while, it’s probably a good time to buy. Over the past two years, HDTV prices have dropped an average of 2 percent per month. “That can’t go on forever,” says Doherty. “Sets are not going to go down to \$32. There isn’t a lot more room [to cut prices] as you get near the basement.” Bottom line: Buy while prices are still heading down.



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care provider. "And they've cut down on their stock too. It's all very annoying." Cain still shops at Circuit City, but he says that he's now just as likely to shop somewhere else: "More and more, I assume I won't find what I want at this particular store." If he needs PC or Mac software, or an add-in card, he says, he goes to Fry's instead.

## The Best Sites

Among Web vendors, Newegg.com and TigerDirect.com earned better-than-average scores in six out of six of our ratings categories, which include price, product selection, and site design.

Amazon was close behind, garnering top marks in every area except product information and buying advice, where readers rated it average. Apple.com fared reasonably well, though not as well as its offline Apple Store sibling.

What makes a site special? Low prices

**SUBTLE IT ISN'T, but shoppers don't seem to mind much. TigerDirect.com earned high marks for its low prices, its generous assortment of products, and even (gulp) its site design.**

are obviously relevant, but easy navigation and good product selection are essential, too. Another factor is the "shopping cart experience," meaning the ease with which you can see the items in your cart, fill out payment information and save it for future purchases, and find the final price—including shipping and taxes—early in the process.

Online vendors may vary in price, selection, and ease of use, readers report, but they do a good job of keeping cus-

tomers in the loop after a purchase.

Overall, 97 percent of online shoppers reported getting a confirmation e-mail after buying an item. Also, 92 percent received a notice once their product shipped, and 86 percent were able to track their packages online.

Newegg, TigerDirect, and Amazon—the top three shopping sites—share a penchant for no-frills design. They may be efficient, but they're not pretty. Newegg's home page, for instance, has



## Timing Is Key to Finding Gadget Deals

**Cameras**  
Camera vendors like to introduce their newest models in January and

February to coincide with big trade events, including the Consumer Electronics Show (CES) and the Photo Marketing Association (PMA) convention. As new cameras arrive, sellers deeply discount the older models—a boon for bargain hunters who don't need the latest and greatest technology. "A lot of people don't realize that cameras are very seasonal, so February's a really, really good time to look for deals," says Richard Doble, who has written two books on photography and is the editor of Savvy-Discounts.com. Presidents Day sales tend to mark the peak of the discount season for cameras, according to Doble.

### MP3 Players

The best time to buy an MP3 player is when new models reach the market, which typically occurs late in the third quarter or early in the fourth, says IDC consumer audio analyst Susan Kevorkian. Of course, the new players usually won't be discounted, but there's a pretty good chance their predecessors will be.

"It's possible to get good deals—whether on Amazon, on Craigslist, or through your local brick-and-mortar retailer—pretty much year-round, depending on which models are being sold down and

discontinued," says Kevorkian. For instance, we found a Toshiba Gigabeat 60GB model advertised at Conns.com for \$225, a considerable savings from its preclearance list price of \$400.

### Cell Phones

Cell phone customers generally get deals on a new handset when signing or renewing a long-term (typically two-year) contract with a service provider. Since the carrier doesn't want to lose your business, you're in a good position to negotiate a lower price—or no price at all—on a new phone. Another tactic is to request more minutes for the same monthly fee.

You have several ways to buy a new phone, including from an independent dealer in a brick-and-mortar store, from a cellular service provider's Web site, or over the phone with a cell provider's sales rep. Which method is best? David Wood, cell phone expert for ConsumerAffairs.com, says that an independent might offer a lower-price phone than a carrier-operated shop, but that the contract terms are often better at a carrier store. (A phone purchased from an independent might carry higher fees, for instance.) Wood stresses the importance of reading the fine print before signing a contract: "A kiosk in a mall might have a better deal on the phone, but then they might also have an additional termination fee. I've seen fees as high as \$400, in addition to the carrier termination fee," says Wood, who was a cell phone salesperson before becoming a consumer advocate.

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Quad Q6700 2.66Ghz	<b>\$ 1429</b>
Quad Q6600 2.40Ghz	<b>\$ 1145</b>
(4MB Cache, 1333Mhz FSB)	
E6850 3.00Ghz	<b>\$ 1145</b>
E6750 2.66Ghz	<b>\$ 1055</b>
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- Logitech Keyboard
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- Microsoft® Optical Intelli Explorer Mouse
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(4MB Cache, 1333Mhz FSB)	
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- High Definition 7.1 Surround Sound
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- Free 802.11g Wireless PCI Network Adapter
- 3 Year Limited Warranty + Lifetime Toll Free 24/7 Techsupport
- Add ViewSonic Q7B 17" Active Matrix Gaming LCD Display for \$195

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(8MB Cache, 1066MHz FSB)	
Quad Q6700 2.66Ghz	\$ 1369
Quad Q6600 2.40Ghz	\$ 1085
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long lists of clickable categories of tech gear, but not many aesthetically pleasing graphics or other artistic touches. TigerDirect's garish, busy design, like its print catalog, shouts "Bargains!" with the subtlety of a swap-meet barker.

## One Word: Price

But that's okay as long as prices are low, our readers say. They listed price as the most important criterion they consider when deciding where to buy. Product selection came in a distant second, followed by security and site layout.

TigerDirect.com's low prices keep Lamp of Bennington, Vermont, coming back. "I always shop there when I can. You get good deals," she says.

Cain of San Diego visits Newegg.com for several reasons. "Great selection, intuitive Web site order, good experience," he says. "I recommend them."

Odom of Denton, Texas, prefers the Apple Store offline but goes to Amazon online. "For price. They have a pretty

good deal on things," he says. "If they're not right at the level of other online retailers, they're a little bit less." Amazon was one of six online vendors whose prices got a better-than-average rating.

Ellis, who usually shops at brick-and-mortar stores Costco and Future Shop in London, Ontario, is another fan of Amazon. He purchased a pair of noise-cancellation headphones from Amazon for \$68—a product that cost \$158 at his local Costco store. "Same model, same brand, not refurbished," he says.

Price is not the only thing that lures shoppers online. Odom, for instance, also shops at BestBuy.com, which readers rated below-average on price. "I'm in the Rewards Zone—the frequent shopper club. Sometimes I'll decide to purchase there to build up points."

In general, however, *PC World* readers didn't find very many reasons to shop at BestBuy.com; that site, along with Walmart.com, fared the worst among Web-based retailers in our survey. Lamp expresses a low opinion of Walmart's online store: "I don't really care for it. It doesn't give you as much product information as I would like."

## Bricks or Clicks?

Like most other consumers, Lamp and Cain shop at both online and real-world outlets. In our survey, about 70 percent of participants who described themselves as customers of brick-and-mortar shops said that they frequented Web retailers too. But how do you decide between the two? In Cain's view, a physical store is usually better. "I get to look at the product a little more closely and ask questions. If it's something new and different, I'd want a brick-and-mortar store," he says. But "if I absolutely know what I want, like swapping a part, I'd probably go online."

Says Lamp: "I prefer shopping online if I can get a good deal. But a lot of times the shipping can be more outrageous than the price." (Sites sometimes offer free shipping, however.)

R. Cantu, a federal employee from Germantown, Maryland, says he would



## Printers

PRINTER BARGAINS ARE less likely to be seasonal, though the back-to-school, holiday, and inventory-clearance (usually late January to early February) seasons are usually good times to buy. "Customers should always keep their eyes open for new printer or new technology announcements," says Canon printer spokesperson Justin Joseph. "Often, these announcements coincide with the beginning of the calendar year and the end of the summer."

Remember the savvy shopper mantra: "What will I use this product for?" A multifunction (print-fax-scan-copy) device may be ideal for a home office, but it's probably overkill for basic home use. Don't forget to determine and factor in the total cost of printer ownership before you buy, so you aren't slammed by ink charges. For instance, if a set of printer cartridges costs \$30 and is good for 600 pages, your per-page cost (excluding the price of paper) is 5 cents.

rather buy tech gear from the comfort of his PC. "I prefer online if I know my product," says Cantu, who appreciates the detailed product specs that good shopping sites often provide. Nevertheless, he says, he'll sometimes walk into a store. "There's only one dynamic at play—do I need it now, or can I wait a couple days?" Cantu says. In other words, you can't beat brick-and-mortar stores for immediate gratification.

## Haggling for Bargains

Over 90 percent of shoppers who tried to negotiate a better deal got one, according to a recent *Consumer Reports* survey. Richard Doble, editor of Savvy-Discounts.com, an online guide for frugal shoppers, says that he once haggled



## Monitors

LIKE OTHER CATEGORIES of tech gear, the cheapest monitors will be closeout, overstocked, and refurbished models. The best times to buy are the usual big three: the back-to-school period, post-Thanksgiving holiday sales, and January-February inventory clearance time. In addition, throughout the year, vendors bundle "free" monitors with desktop systems, though they undoubtedly factor the cost of the monitor into the package price. Still, if you buy a monitor with a PC, you're likely to get a better deal.

the price of a \$700 digital camera down to only \$50. The unit was a floor model that the retailer had initially discounted to \$200. Sensing an incredible bargain, Doble had driven to the store (an hour's journey away) but found less than he had hoped for. Besides missing a few minor items, including the retail box and a polishing cloth, the camera didn't work. "I then tried the tactic of not saying much but looking very disappointed," writes Doble on his site.

The store manager cut the price to \$50, tossed in a one-year warranty and a free AC adapter, and told Doble to send the camera to the manufacturer's repair shop. The store even agreed to give Doble a full refund if the camera still didn't work. "I thought, gosh, how can I lose with that?" says Doble, who sent the camera in for repairs. It turned out that the camera needed only a new fuse—an easy fix—and it now works perfectly.

The key to successful haggling is to be prepared. "I tell people, don't just throw out numbers," says Doble. "When you suggest a number, actually have a reason." Don't focus exclusively on price,

## Surf for Sales

The Internet is a great shopper's tool even if you don't buy online. Pricing engines such as PC World's Product Finder (powered by PriceGrabber.com), Bottomdollar.com, Dealtime.com, PriceScan.com, and Shopzilla.com all work in pretty much the same way, allowing you to search by product category, vendor name, or another criterion to find the best deal. Some sites, such as PriceScan, even let you enter a target price and will notify you via e-mail, pager, or cell phone when the service locates a price that hits your target.

Of course, online shoppers need to be attuned to bottom-line pricing—the final price after sales tax and shipping fees factor in. About 85 percent of Web shoppers we surveyed said they consider shipping costs an important factor when deciding where to buy online; state and local taxes rank as somewhat less important. To reduce her shipping fees, Sam Lamp sometimes buys multiple items in a single shopping visit.

Coupon codes are a great resource as well. Sites such as CurrentCodes.com,

DealTaker.com, Ebates, GottaDeal.com, and RetailMeNot.com maintain lists of discount codes for retail sites. By entering a coupon code at a retailer's site—usually on the shopping cart page—you'll obtain a percentage or dollar amount off the sale price, or perhaps free shipping or another perk. In addition to offering coupon codes, sites such as DealNews list specials from major retailers.

## Don't Fear the Refurb

Another way to unearth a bargain is to purchase refurbished equipment from a product vendor's outlet site.

It's natural to feel hesitant about buying repaired or returned goods, but these items are generally safe buys.

"When you buy something that's re-



## Routers

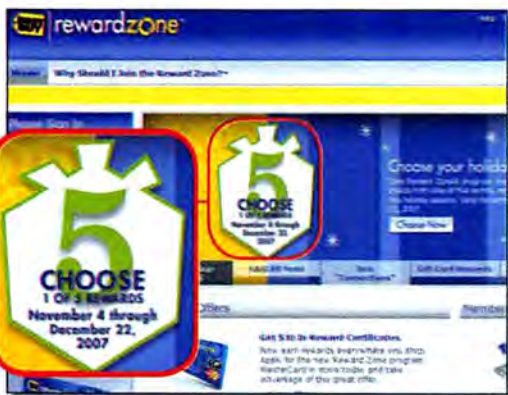
ROUTERS CAN BE tricky to buy: The specs are confusing, vendors are numerous, and prices vary considerably. There isn't a best time of year to buy a router, but you do have ways to ensure that you get a good value. One sensible step is to compare routers at a respected shopping site such as TigerDirect.com—one of the top two online retailers in our survey. Enter routers in the search field, and sort the results by price (low-to-high or high-to-low), by popularity, or by customer rating. (Other major shopping sites work pretty much the same way as TigerDirect.com does.)

furnished, a lot of times you're getting a full warranty, and getting [the product] at a third to half off, and it's been thoroughly tested," says Doble, who adds that manufacturers commonly do not test products that are fresh off the assembly line before shipping them.

Avoid extended warranties, however. These usually cover the product during a period when it's least likely to fail—between the first and third years. If you want added peace of mind, buy the product with a credit card that extends the manufacturer's warranty on the carrier's dime. American Express, for instance, will increase the warranty period for many items by up to a year.

If you're shopping at the online incarnation of a brick-and-mortar retailer, you may avoid shipping charges by having the item sent to the retailer's nearest store for you to pick up.

Finally, when shopping online, it's wise to stick with e-tailers you know. If you buy from an unfamiliar vendor at a very low price, you risk ending up with counterfeit goods, waiting for products that never arrive, or becoming the victim of credit card fraud. ●



either, he advises. "Let's say you buy an HDTV and you need cables. You say, 'Well, I'm spending \$800 for this, how about throwing in some cables?'" Similarly, if you're buying a digital camera, ask for a memory card to go with it. And if you're buying a big-screen HDTV or home-theater system, ask the retailer to deliver it for free.

**BESTBUY.COM GOT slammed by readers in nearly every category, but some people did like the site's rewards club.**

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photos  
or create  
a family  
page

All-inclusive  
packages  
with up to  
5 free  
domains

Enhanced  
customer  
communica-  
tion tools

Showcase  
your  
hobbies &  
interests  
on a web  
page

Microsoft®  
Gold  
Certified  
partner

State-of-  
the-art  
Data  
Center

90 day  
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Guarantee:  
Details  
online

Suitable  
for any  
level of  
user



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phone  
and e-mail  
support

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feature-rich  
servers at  
attractive  
prices

Start  
your own  
business  
online

Blog  
about  
your  
interests

Free private  
domain  
registration  
for domains

Use our  
templates to  
easily create  
an appealing  
website

Seamlessly  
upgrade your  
package to fit  
your growing  
business

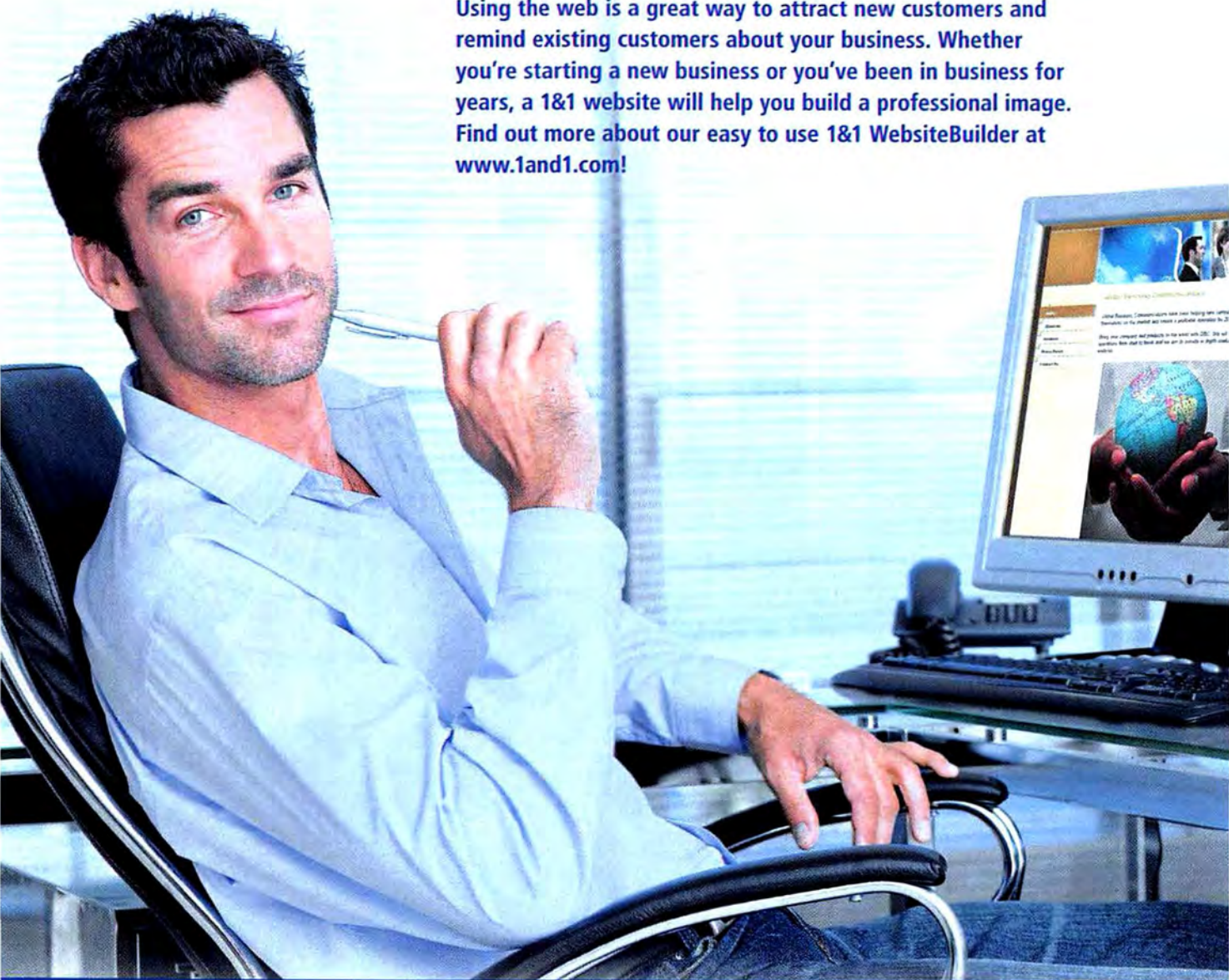
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Mailbox Size	2 GB	Unlimited	10 MB
Search Engine Submission	✓	✓	Extra charge applies
Website Builder	18 Pages	✓	Freeware
Flash Site Builder	18 Pages	—	—
Photo Gallery	✓	✓	✓
RSS Feed Creator	✓	—	\$4.99/month
Ad-free Blog	✓	✓	Freeware
Map & Driving Directions	✓	✓	—
Dynamic Web Content	✓	✓	—
Web Statistics	✓	✓	✓
E-mail Newsletter Tool	✓	\$10/month	\$3.99/month
In2site Live Dialogue	✓	—	—
Chat Channels	✓	—	✓
Form Builder	✓	✓	—
1&1 Marketing Center	✓	—	—
Premium Software Suite	✓	—	—
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# The Wide World of Monitors

We brought 17 flat-screen LCDs—from the wide to the double-wide to the ultrawide—into the PCW Test Center. Whether you want to see more work or more movie, we have product recommendations and shopping tips for you. »

BY DANNY ALLEN  
PHOTOGRAPHS BY ROBERT CARDIN



**WIDE-SCREEN BEST BUYS** (from left): LG's 19-inch LG196WTY-BF, Samsung's 27-inch SyncMaster 275T, and HP's 20-inch w2007.

Everyone needs a good monitor (or two) to get the most out of a PC. But finding the right model depends on several factors: what applications you use, how much room you have on your desk, the amount of on-screen real estate you need, and, of course, how much you can afford to spend. For many people, the wide-screen display wins, and bigger is better.

But that's not the whole story. Though our discussion covers such critical factors in the purchase decision as screen size and native resolution, it's still very important to consider a monitor's ability (or lack thereof) to render sharp text and vibrant images, as well as—for ergonomics—the range of physical adjustments that it lets you make, from basic tilt-and-swivel maneuverability to height and pivot options (some higher-end displays rotate 90 degrees to portrait orientation).

We tested 17 new midrange-priced wide-screen LCDs in three size categories that are growing in popularity: 19 inches, 20 or 22 inches, and 25.5 to 28 inches. The Top 5 charts you'll find here represent the best in each category. Online, we've also updated our Best Buy charts for other popular flat-panel sizes, including standard-aspect 19-inch models plus 23- to 24-inch and 30-inch wide-screen units.

## The Future of the Monitor Port

FOR YEARS, PC users had a simple choice of connecting a monitor to a computer via either an analog port (VGA) or, more recently, a digital port (DVI). But new monitors and high-definition content require technologies that can handle more data.

A limited number of display vendors (such as Samsung) are using the ubiquitous USB connection to route graphics data from the PC to the monitor through a technology called DisplayLink. Its main benefit is that it allows you to daisy-chain up to six monitors to one PC. Meanwhile, USB 3.0, expected to arrive in 2008, could send ten times as much data as USB 2.0. And Wireless USB, touted as offering

freedom from corded technology, may be another way of using DisplayLink.

But the real port showdown is between the emerging DisplayPort and HDMI. Because DisplayPort is a royalty-free standard, manufacturers don't have to pay for each use of the technology (for HDMI, the current cost is 4 cents per port/use), so economic considerations may be an incentive to push DisplayPort.

Tom Mainelli, senior research analyst for monitors at IDC, thinks HDMI has the edge, partly because it's largely compatible with DVI through the use of simple adapters. DisplayPort, on the other hand, has a new structure that may require new, more complex (hence, potentially more expensive) adapters. For now, the upstart DisplayPort may be royalty-free, but the more-established HDMI has already appeared on some large monitors, and is slowly working its way into smaller ones. —Roy Santos



**DELL'S 30-INCH, \$1999, DisplayPort-equipped UltraSharp 3008WFP display.**

## More Online

YOU CAN FIND in-depth reviews, specifications, and test scores for all of the monitors in this story online, at PC World's Monitors Info Center ([find.pcworld.com/59424](http://find.pcworld.com/59424)).

an industry-standard display evaluation and diagnostics program. We also assess motion using a scripted demo from the game *Return to Castle Wolfenstein*, and DVD video playback of *Star Wars: Episode I—The Phantom Menace*. See [find.pcworld.com/59423](http://find.pcworld.com/59423) for full details of how we test and rank LCDs in key areas such as features, performance, and design.

### What's the Right Size?

Buy too small a monitor, and you'll have trouble cramming everything you need to see on your screen; purchase a display that's too large, and you may run out of space on your desk, or you might have to crane your neck to take it all in. We'll start with 19-inch wide-screen models and make our way up to the 30-inch monsters.

The most recent forecast from research firm IDC predicts that U.S. shipments of 19-inch wide-screen LCD monitors will finally edge out those of long-dominant standard-aspect 17-inch and 19-inch units in the second quarter of 2008. At the time of writing, a search on PC World's Shopping and Price Comparison Center ([find.pcworld.com/59421](http://find.pcworld.com/59421)) showed 19-inch wide-screen displays ranging in price from about \$130 to \$400; we found models with great quality for a little more than \$200. The \$220 LG Electronics L196WTY-BF, the least expensive of our test group, offers finely rendered text and consistently strong performance, which helped the monitor earn our Best Buy award.

On 19-inch units you can also get some (but not a lot) of the high-end features common on larger models. Two examples: While many rival 19-inchers and some bigger units offer tilt only, Dell's third-ranked, \$259 UltraSharp 1908WFP provides easy height, swivel, and pivot adjustments. And AG Neovo's \$399 E-W19 boasts hardened scratch-resistant glass; though it's pricey, you get top-notch performance.



**19-INCH WIDE SCREENS:** Dell's \$259 UltraSharp 1908WFP (left) and Gateway's \$230 FPD1975W share a native resolution of 1440 by 900.

The next step up is a 20-inch display: Such monitors offer features and prices very similar to those of 19-inch models, but their typically higher native resolution (1680 by 1050 versus 1440 by 900) lets you fit more on screen.

And because 22-inch wide-screen LCDs—like the seven we first tested for our December 2007 story “22-Inch LCDs: More Screen for Less Green” ([find.pcworld.com/59425](http://find.pcworld.com/59425))—have the same native resolution as most 20-inch LCDs, *PC World* now scores the two screen sizes against each other for the same chart. Interestingly, IDC expects sales of 22-inch wide-screen flat-panel displays to ramp up to about 19 percent of all U.S. monitor shipments by the end of 2008, second only to the popularity of 19-inch wide-screen displays, which stands at just over 30 percent.

The least expensive model to make our chart on page 120 is the \$239 Samsung SyncMaster 205BW, which placed second behind the \$260 HP w2007. The latter is a praiseworthy display that delivers razor-sharp text and lusciously deep colors, despite some problems producing discernible darker shades of color or readable text against a dark background. The top 22-inch wide-screen LCD in our tests was the pivot-capable, \$330 HP w2207—it reached third place overall, largely because of its comparatively higher price.

## Big Screens, Small Budget

Need even more space? Entry-level wide-screen models sized at 23 or 24 inches start at around \$250—not much more than 22-inch units—while the least expensive midrange model on our online 23- and 24-inch wide-screen LCD chart ([find.pcworld.com/59427](http://find.pcworld.com/59427)) is the \$649 HP LP2465, ranked third, behind the 24-inch Dell UltraSharp 2407WFP. With a typical native resolution of 1920 by

1200, 23- and 24-inch or larger LCDs are your best bet for watching Blu-ray or HD DVD movies, because these displays do not have to scale down the content to fit the screen.

Since people tend to rate bigger monitors higher when comparing them with smaller ones, we allow only displays with a 10 percent difference along the diagonal (which translates into roughly 20 percent along the horizontal) to be tested against one another. That's why the models in our first-ever 25.5- to 28-inch wide-screen monitors chart on page 121 aren't tested against 23- and 24-inch monitors, despite sharing the same 1920 by 1200 native resolution.

Though basic 26-inch monitors start at about \$550, the 28-inch (27.5-inch viewable area) Hanns.G HG-281DJB that ➤

### PC WORLD TOP 5 19-INCH WIDE-SCREEN LCDS

MODEL	PCW Rating	Performance	Features and specifications
<b>1</b> <b>BEST BUY</b> <b>LG Electronics</b> <b>L196WTY-BF</b> <b>\$220</b> <a href="http://find.pcworld.com/59377">find.pcworld.com/59377</a>	<b>81</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Good</li> <li>Text quality: Very Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Tilt and swivel adjustments</li> <li>2ms response time</li> <li>3000:1 contrast ratio</li> </ul>
BOTTOM LINE: Tall LCD monitor delivers solid, consistent performance on many text and graphics tasks.			
<b>2</b> <b>HP w1907</b> <b>\$230 NEW</b> <a href="http://find.pcworld.com/59378">find.pcworld.com/59378</a>	<b>80</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Good</li> <li>Text quality: Very Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Tilt and swivel adjustments</li> <li>5ms response time</li> <li>1000:1 contrast ratio</li> </ul>
BOTTOM LINE: LCD sports fewer physical adjustments than larger HP models do, but is suitable for home and office use.			
<b>3</b> <b>Dell UltraSharp 1908WFP</b> <b>\$259 NEW</b> <a href="http://find.pcworld.com/59379">find.pcworld.com/59379</a>	<b>79</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Good</li> <li>Text quality: Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Multiple adjustments</li> <li>5ms response time</li> <li>1000:1 contrast ratio</li> </ul>
BOTTOM LINE: Stylish monitor has ergonomic adjustments usually found on bigger LCDs, but its performance is lackluster.			
<b>4</b> <b>Samsung SyncMaster 932GW</b> <b>\$270 NEW</b> <a href="http://find.pcworld.com/59380">find.pcworld.com/59380</a>	<b>78</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Very Good</li> <li>Text quality: Very Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Tilt adjustment only</li> <li>2ms response time</li> <li>3000:1 contrast ratio</li> </ul>
BOTTOM LINE: Glossy LCD produced top-notch text and graphics, but its price and too few features kept it from a higher rank.			
<b>5</b> <b>Gateway FPD1975W</b> <b>\$230 NEW</b> <a href="http://find.pcworld.com/59381">find.pcworld.com/59381</a>	<b>78</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Good</li> <li>Text quality: Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Tilt adjustment only</li> <li>8ms response time</li> <li>700:1 contrast ratio</li> </ul>
BOTTOM LINE: This display's image quality is average, and you'll have to pay extra for a DVI cable and an adjustable stand.			

CHART NOTES: Prices and ratings are as of 12/10/07. Response times are as reported by the vendor (ms = milliseconds).

we tested is temptingly priced at \$600; that alone earned it a spot on our chart. The display does a decent job with office documents and has HDMI, but in our tests it was unable to handle very light and very dark blocks of color, producing muddled tones instead. The 26-inch (25.5-inch viewable area) Acer AL2626Wd, also low-priced, at \$649, struggled with graphics, too; it lacked the color saturation to produce truly vivid images. Note that with monitors of this size category in particular, we're seeing vendors slightly round up an LCD's viewable image size (calling a flat-panel measuring 25.5 inches a 26-inch model for instance). So far they've been good about not totally misrepresenting the true size, but you should always be sure to check the specifications.

Our Best Buy nod went to the reasonably priced (for its features) \$1000 Samsung SyncMaster 275T, a 27-inch model. It received accolades from our jury for excellent text rendering, as well as for delivering sufficiently good graphics.

With larger models, picture-in-picture abilities become more common. The Samsung, along with the second-place, \$1199 Dell UltraSharp 2707WFP, for example, lets you work on documents while also watching video on a smaller screen.



**22-INCH WIDE SCREENS:** ViewSonic's \$319 VG2230wm (left), and HP's \$330 w2207 pivoted into portrait orientation.

## The Swinging 30s

Just a year ago, a 24- or 27-inch display might have been considered luxurious, but now 30 inches is the new size to lust after. The least expensive model on our online chart ([find.pcworld.com/59429](http://find.pcworld.com/59429)) is also our Best Buy, the \$1179 Samsung SyncMaster 305T. It rendered impressive text, but some of its photos exhibited a slightly dark cast. All of the models on the chart deliver excellent image quality with incredibly

sharp text and vibrant colors. In addition, each offers features such as built-in media card slots or multiple DVI ports. Because of their high 2560 by 1600 resolution, these 30-inchers require a high-bandwidth dual-link DVI cable, as well as a graphics card that drives dual DVI-out. Most models include this cable in the box, but you may have to supply the graphics card, which can add to the cost if you don't already have one.

## The Big Picture

Let's take a look at some other monitor options and shopping considerations.

**LCD TV vs. monitor:** With their prices commonly on a par with, or even below, those of 30-inch monitors, it's natural to wonder if using a high-definition LCD TV—such as those on our ➤

### PC WORLD TOP 5 20- AND 22-INCH WIDE-SCREEN LCDs

MODEL	PCW Rating	Performance	Features and specifications
<b>1</b> <b>BEST BUY</b> <b>HP w2007</b> <b>\$260 NEW</b> <a href="http://find.pcworld.com/59384">find.pcworld.com/59384</a>	<b>82</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Very Good</li> <li>Text quality: Very Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Tilt and swivel adjustments</li> <li>5ms response time</li> <li>1000:1 contrast ratio</li> </ul>
BOTTOM LINE: HP's excellent 20.1-inch wide-screen LCD has a stylish design, great graphics and text, and a reasonable price.			
<b>2</b> <b>Samsung SyncMaster 205BW</b> <b>\$239</b> <a href="http://find.pcworld.com/54948">find.pcworld.com/54948</a>	<b>82</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Very Good</li> <li>Text quality: Very Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Multiple adjustments</li> <li>6ms response time</li> <li>600:1 contrast ratio</li> </ul>
BOTTOM LINE: Bargain 20-inch display posted solid scores in our performance tests, and its design is easy on the eyes.			
<b>3</b> <b>HP w2207</b> <b>\$330</b> <a href="http://find.pcworld.com/58687">find.pcworld.com/58687</a>	<b>80</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Good</li> <li>Text quality: Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Multiple adjustments</li> <li>5ms response time</li> <li>1000:1 contrast ratio</li> </ul>
BOTTOM LINE: This 22-inch LCD offers several extras, including pivot adjustment, and an attractive design.			
<b>4</b> <b>Asus PW201</b> <b>\$499</b> <a href="http://find.pcworld.com/53632">find.pcworld.com/53632</a>	<b>80</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Very Good</li> <li>Text quality: Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Multiple adjustments</li> <li>8ms response time</li> <li>800:1 contrast ratio</li> </ul>
BOTTOM LINE: Expensive 20-inch display has a built-in Webcam, good performance, and plenty of entertainment inputs.			
<b>5</b> <b>ViewSonic VG2230wm</b> <b>\$319</b> <a href="http://find.pcworld.com/58688">find.pcworld.com/58688</a>	<b>80</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Very Good</li> <li>Text quality: Very Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Multiple adjustments</li> <li>5ms response time</li> <li>700:1 contrast ratio</li> </ul>
BOTTOM LINE: This 22-inch monitor is thoughtfully designed, and it offers very good rendering of graphics and text.			

CHART NOTES: Prices and ratings are as of 12/10/07. Response times are as reported by the vendor (ms = milliseconds).

Cyberpower recommends Windows Vista™ Home Premium

**AMD**

Smarter Choice



### GAMER ULTRA SLI™ PRO

- Asus M2N-E nForce® 500 SLI™ Chipset MB with Dual 16X PCI Express
- Genuine Windows Vista™ Home Premium
- Corsair® 4GB PC6400 DDR2 800 Dual Channel Memory
- 500GB 7200RPM SATA-II 3.0Gb/s 16MB Cache Hard Drive
- (2) NVIDIA® GeForce® 8800 GT 512MB DDR3 in SLI™ Mode Powered by EVGA
- 20X DVD+-RW Drive & 16X DVD-ROM
- NVIDIA® nForce® 5 7.1 3-D Surround Sound
- Logitech 5.1 Subwoofer Speakers
- Logitech Keyboard & Logitech Optical Wheel Mouse
- CoolerMaster Cosmo Sport Gaming Tower Case
- 600Watt SLI™ Power Supply
- CoolerMaster Aquagate S1 Liquid Cooling System
- Free 802.11G Wireless PCI Network Adaptor
- 3 Year Limited Warranty
- + Lifetime Toll Free 24/7 Techsupport
- Add ViewSonic VG2230WM 22" SXGA Active Matrix Gaming LCD Display for \$368

**\$ 1365**

- AMD Phenom™ X4 Quad-Core Processor**
- |           |         |
|-----------|---------|
| 9600+ CPU | \$ 1595 |
| 9500+ CPU | \$ 1549 |
- AMD Athlon™ 64 X2 Processor**
- |                         |         |
|-------------------------|---------|
| 6400+ CPU Black Edition | \$ 1495 |
| 6000+ CPU               | \$ 1465 |
| 5200+ CPU               | \$ 1415 |
| 4400+ CPU               | \$ 1385 |
| 4000+ CPU               | \$ 1365 |



### GAMER ULTRA 9000 GT

- Asus M2N-E nForce® 500 SLI™ Chipset MB with Dual 16X PCI Express
- Genuine Windows Vista™ Home Premium
- Corsair® 2GB PC6400 DDR2 800 Dual Channel Memory
- 320GB 7200RPM SATA-II 3.0Gb/s 16MB Cache Hard Drive
- NVIDIA® GeForce® 8800 GT 512MB Powered by EVGA
- 20X DVD+-RW Drive & 16X DVD-ROM
- NVIDIA® nForce® 5 7.1 3-D Surround Sound
- 600Watt Subwoofer Speakers
- Logitech Keyboard & Logitech Optical Wheel Mouse
- Raidmax Sagitta II Gaming Tower w/ 600Watt SLI™ Power Supply
- CoolerMaster Aquagate S1 Liquid Cooling System
- Free 802.11G Wireless PCI Network Adaptor
- 3 Year Limited Warranty
- + Lifetime Toll Free 24/7 Techsupport

**\$ 875**

- AMD Phenom™ X4 Quad-Core Processor**
- |           |         |
|-----------|---------|
| 9600+ CPU | \$ 1105 |
| 9500+ CPU | \$ 1059 |
- AMD Athlon™ 64 X2 Processor**
- |                         |        |
|-------------------------|--------|
| 6400+ CPU Black Edition | \$ 999 |
| 6000+ CPU               | \$ 975 |
| 5200+ CPU               | \$ 925 |
| 4400+ CPU               | \$ 895 |
| 4000+ CPU               | \$ 875 |



### GAMER XPLOER-64 9550

- AMD Turion™ 64 X2 Mobile Technology
- AMD PowerNow! Technology
- HyperTransport Technology
- Enhanced Virus Protection Technology
- Genuine Windows Vista™ Home Premium
- 2GB PC5300 DDR2 667 Memory
- 160GB SATA150 Hard Drive
- ATI Mobility Radeon™ HD 2600 XT 256MB w/ HDMI
- 8X DVD+-RW Drive
- 15.4" WXGA+ Wide-Screen TFT Display 1440x900 Pixels
- Gigabyte Network Card & 56K V.92 Modem
- Wireless 802.11G 54Mbps Networking
- 3-in-1 Built-in Media Reader
- 1 PCMCIA Type II Slot
- 1 Firewire IEEE 1394 & 3 USB 2.0 Ports
- 5 Custom Colors to Choose From
- Weight only 6.39 Lbs; Free Carrying Case
- 1 Year Limited Warranty
- + Lifetime Toll Free 24/7 Techsupport

**\$ 965**

- AMD Turion™ 64 X2 Mobile Technology**
- |       |         |
|-------|---------|
| TL-66 | \$ 1309 |
| TL-64 | \$ 1219 |
| TL-62 | \$ 1175 |
| TL-60 | \$ 1139 |
| TL-56 | \$ 965  |



### GAMER ULTRA SLI™ ELITE

- Asus M2N-E nForce® 500 SLI™ Chipset MB
- Genuine Windows Vista™ Home Premium
- Corsair® 2GB PC6400 DDR2 800 Dual Channel Memory
- 320GB 7200RPM SATA-II 3.0Gb/s 16MB Cache Hard Drive
- (2) NVIDIA® GeForce® 8500 GT 512MB Powered by EVGA
- 20X DVD+-RW Drive & 16X DVD-ROM
- NVIDIA® nForce® 5 7.1 3-D Surround Sound
- 600Watt Subwoofer Speakers
- Logitech Keyboard
- Logitech Optical Wheel Mouse
- X-Jupiter Jr. Mid-Tower Case w/ See Through Window
- CoolerMaster HyperTX2 Silent & Overclocking Proof CPU Cooling System
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- 3 Year Limited Warranty
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- Add ViewSonic Q7B 17" Active Matrix Gaming LCD Display for \$195

**\$ 795**

- AMD Phenom™ X4 Quad-Core Processor**
- |           |         |
|-----------|---------|
| 9600+ CPU | \$ 1029 |
| 9500+ CPU | \$ 985  |
- AMD Athlon™ 64 X2 Processor**
- |                         |        |
|-------------------------|--------|
| 6400+ CPU Black Edition | \$ 929 |
| 6000+ CPU               | \$ 895 |
| 5200+ CPU               | \$ 845 |
| 4400+ CPU               | \$ 815 |
| 4000+ CPU               | \$ 795 |



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- True multi-tasking capability - get more done in less time.



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32-inch wide-screen LCD HDTVs chart ([find.pcworld.com/59445](http://find.pcworld.com/59445))—is a worthwhile option. But beyond the sets' lack of physical adjustments, using one as a desktop monitor has drawbacks. The native resolution of most 32-inch HDTVs, for example, is typically 1366 by 768. "In the TV world, that's great for viewing almost any type of HD content from 720p to 1080i (interlaced) or even 1080p," says Chris Connery, vice president of market research for analysis firm DisplaySearch, "but for up-close viewing, this resolution is too low for computer use."

**A sharper image:** Because you use your computer in an up-close way, you're more likely to notice the individual pixels on the screen if you employ an LCD TV, as they have lower counts of pixels per inch (ppi). The pixels-per-inch measurement works the same as dots per inch does for printers. The lower the number, the larger and more noticeable a screen's pixels will be, which detracts from the image you're viewing. A 32-inch LCD TV with a resolution of 1366 by 768 has a count of just 49 ppi. Connery puts that in context: "30-inch LCDs, on the other hand, have much higher resolution (2560 by 1600) and an excellent ppi of just above 100." That increase translates to sharper text and more detailed graphics—explaining why bigger isn't always better when your goal is image sharpness. 23-inch and 24-inch models, which have a native resolution of 1920 by 1200, have very good counts of 98 ppi and 94 ppi, respectively. Newer 25.5-inch (89 ppi), 27-inch (84 ppi), and 27.5-inch (82 ppi) units have lower pixel-per-inch numbers, as they also have a native resolution of 1920 by 1200, despite being larger.

Connery continues the breakdown: "22-inch wide-screen monitors tend to have a resolution of 1680 by 1050 (for a ppi of around 90), while their smaller, 20-



**BUDGET BIG SCREENS:** Hanns.G's \$600 HG-281DJB (left; 27.5-inch viewable area) and Acer's \$649 AL2626Wd (25.5-inch viewable area).

inch wide-screen cousins share the same resolution, allowing for a better ppi of 99. The ppi for 19-inch wide-screens, which typically have a resolution of 1440 by 900, is 89."

**High-definition video:** For optimum 1080p high-def playback—be it Blu-ray, HD DVD, or even Windows Media and DivX content—you'll want a monitor with 1920 by 1080 resolution or higher. Wide-screen monitors 23 inches or greater will do the job natively, but Connery says that "these days, almost every size of wide screen, including 19-inch models, will scale HD content using a chip inside the monitor itself so that >>

#### PC WORLD TOP 5 25.5- TO 28-INCH WIDE-SCREEN LCDs

MODEL	PCW Rating	Performance	Features and specifications
<b>1</b> <b>BEST BUY</b> Samsung SyncMaster 275T <b>\$1000 NEW</b> <a href="http://find.pcworld.com/59390">find.pcworld.com/59390</a>	<b>81</b> <b>VERY GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Good</li> <li>Text quality: Very Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Multiple adjustments</li> <li>6ms response time</li> <li>3000:1 contrast ratio</li> </ul>
BOTTOM LINE: 27-inch LCD boasts the right combination of price, performance, and premium features like picture-in-picture.			
<b>2</b> Dell UltraSharp 2707WFP <b>\$1199 NEW</b> <a href="http://find.pcworld.com/59391">find.pcworld.com/59391</a>	<b>79</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Very Good</li> <li>Text quality: Very Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Multiple adjustments</li> <li>6ms response time</li> <li>1000:1 contrast ratio</li> </ul>
BOTTOM LINE: Stunning design and features such as a USB hub and picture-in-picture make for a desirable 27-inch display.			
<b>3</b> Hanns.G HG-281DJB <b>\$600 NEW</b> <a href="http://find.pcworld.com/59392">find.pcworld.com/59392</a>	<b>79</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Good</li> <li>Text quality: Very Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Tilt and swivel adjustments</li> <li>3ms response time</li> <li>800:1 contrast ratio</li> </ul>
BOTTOM LINE: 28-inch (27.5-inch viewable area) LCD with HDMI is priced temptingly low, but it didn't impress in graphics tests.			
<b>4</b> NEC MultiSync LCD2690WUXi <b>\$1300 NEW</b> <a href="http://find.pcworld.com/59393">find.pcworld.com/59393</a>	<b>75</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Good</li> <li>Text quality: Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Multiple adjustments</li> <li>16ms response time</li> <li>800:1 contrast ratio</li> </ul>
BOTTOM LINE: Lacks the extras and standout performance we expect from a pricey 26-inch (25.5-inch viewable area) display.			
<b>5</b> Acer AL2626Wd <b>\$649 NEW</b> <a href="http://find.pcworld.com/59394">find.pcworld.com/59394</a>	<b>71</b> <b>GOOD</b>	<ul style="list-style-type: none"> <li>Graphics quality: Good</li> <li>Text quality: Good</li> <li>DVD motion quality: Very Good</li> </ul>	<ul style="list-style-type: none"> <li>Analog and digital inputs</li> <li>Tilt adjustment only</li> <li>5ms response time</li> <li>800:1 contrast ratio</li> </ul>
BOTTOM LINE: Best for viewing documents, this 26-inch (25.5-inch viewable area) LCD's weak graphics scores defeat its low price.			

CHART NOTES: Prices and ratings are as of 12/10/07. Response times are as reported by the vendor (ms = milliseconds).

## USB FLASH DRIVES

Disney Series T703 •



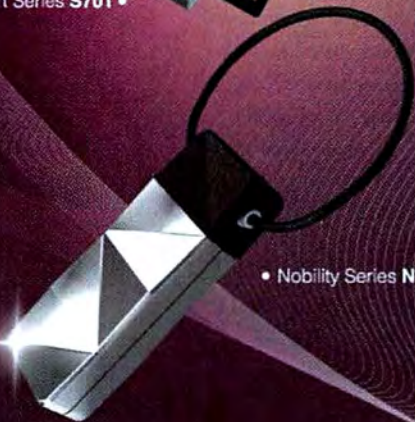
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## Accessorize Your Monitor

THE RIGHT ACCESSORY can transform your flat-panel from staid to standout.

For instance, HP's \$13 Easy Clip Accessory Kit includes a vase and photo holders that attach to the edge of its displays. See our video at [find.pcworld.com/59359](http://find.pcworld.com/59359).

PC and monitor maker Gateway sells a bare-bones line of wide-screen monitors that can be tricked out to match the features of loaded displays. For example, its 19-inch, \$230 wide-screen FPD1975W has optional speakers (\$30), and an alternative stand that will let you do height adjustments (\$50). For the extra costs, however, you may be better off getting a bigger monitor with all those options included. ViewSonic carries a line of monitors called ViewDock with built-in iPod docks, and—for people who want swank—is planning to let users add Swarovski crystals to its LCD bezels.

The most cramped desks may benefit from a desk-mounted monitor arm (pictured) or a wall mounting kit.

Most displays have a provision for such mounts, usually exposed after you detach the stand from the back panel.

Then you have modding sites, such as Steampunk ([find.pcworld.com/59447](http://find.pcworld.com/59447)) or MetkuMods ([find.pcworld.com/59448](http://find.pcworld.com/59448)), that take display customization to the extreme. You'll need to be comfortable opening up electronics, be handy with a screwdriver, and in some cases be ready to spray-paint. But with lots of patience, you can add eye-catching LEDs and customized bezels to change a boring monitor into a desirable objet d'art. —Roy Santos

**FREEDOM TO MOVE:** Ergotron's \$130 LX adjustable desk-mounted display arm ([find.pcworld.com/59495](http://find.pcworld.com/59495)).



all types of high-def content from 720p to 1080p can be viewed on the screen regardless of the monitor's native resolution." As always, we recommend that you double-check a monitor's specifications. In order to play copy-protected content, such as Blu-ray and HD DVD media, for example, your monitor will also need a DVI or HDMI port with High-bandwidth Digital Content Protection (HDCP) compatibility, a feature that all of the models on our charts include.

And for anyone still considering a combined LCD TV and monitor, new higher-resolution full-HD (1080p) models are beginning to hit the market, but you'll be spending a few hundred dollars more than you would on a standard LCD TV.

**Standard vs. wide screen:** Take a step back—will a wider screen necessarily give you more for your money? Connery suggests a relatively simple calculation aid to figure out your bang for the buck. "A 20-inch monitor with a standard 4:3 ratio and a native resolution of 1600 by 1200 has around 1.92 million pixels [and can be found for as low as \$180]. But 20-inch wide-screen LCDs with a 1680 by 1050 native resolution [start at around \$200] and display about 1.76 million pixels," he concludes. Using those prices, the 20-inch monitor with a

4:3 ratio has the better price per pixel.

But the productivity benefits of a wide-screen unit can't be underestimated. You can open two documents or Web pages side by side, and better manage large spreadsheets or apps with floating toolbars. Wide screens are appealing for watching movies without black bars at the top and bottom, too.

**LCDs get a wider color palette:** Traditionally, graphics pros have preferred CRT monitors, partly due to their ability to represent up to about 85 percent of the NTSC color space (the main benchmark for color matching between things such as the printed page and electronic displays). Most flat-panels, on the other hand, have managed only about a 72 percent color representation.

Two major advancements in LCD technology are changing such color-gamut limitations. First, the standard backlights used for LCDs, called CCFLs (cold cathode fluorescent lights), have seen improvements; many vendors have been implementing new CCFLs that can allow for a 92 percent color representation. Second, other backlight sources such as colored LEDs (light-emitting diodes) are being explored as alternative backlights for desktop monitors. The use of RGB

(red, green, blue) LEDs as a backlight source can improve the color representation to about 125 percent of the NTSC color standard. Wide-color-gamut displays are already available and include Dell's 27-inch UltraSharp 2707WFP and NEC's 25.5-inch viewable MultiSync LCD2690WUXi. A handful of RGB-LED-backlit monitors have also begun to appear, but color-matching the hundreds of RGB LEDs is still costly and labor-intensive, keeping prices for such displays quite high.

Meanwhile, Sony has released an 11.1-inch OLED (organic light-emitting diode) LCD TV in Japan, but Connery tells us that we aren't likely to see large-volume production of desktop LCD monitors with the technology for another four to five years, mostly because of their high cost of manufacture.

An interesting item slated for the more immediate future: Dell's \$1199 Crystal display, an innovatively designed 22-inch wide-screen unit with capacitive touch controls, an integrated Webcam, and speakers built into its 4mm glass fascia. It's set to be unveiled at January's 2008 Consumer Electronics Show.

Danny Allen is a PC World associate editor. Roy Santos is a freelance writer and Web designer in the San Francisco Bay Area. ●

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# Free webmail service and call it

The screenshot displays the GMX Mail web interface. The left sidebar shows folders like 'Inbox (8)', 'College', 'Newsletter (3)', 'Private', 'Sports (1)', 'Work', 'Spam', 'Drafts', 'Sent', and 'Trash'. The main area shows an inbox with a table of emails:

From	Subject	Size	Date
Sarah McDonald	Got your message!	325 KB	10.34 a.m.
Kevin Smith	Dinner last night	116 KB	11:11 a.m.
Susan L. Moore	How are you?	334 KB	11:18 a.m.
Bob Jones	Baseball on Thursday	325 KB	11:40 a.m.
Peter Williams	Call me tonight	49 MB	11:52 a.m.
James Walsh	How was your trip?	334 KB	01:41 p.m.
Alex Miller	Shopping with mum	325 KB	02:08 p.m.
Jennifer Moran	What's up?	116 KB	09/26/07
Simon B. Miller	Good morning sweetheart	334 KB	09/26/07

The selected email is from Kevin Smith with the subject 'Dinner last night'. The body text reads:

Hi John,

I wanted to let you know that we changed our weekly gym training to Thursday nights. Meet us in front of the courts at 7:30 - please be on time. If we want to win we really need to focus and work hard.

If you can't make it, let me know by calling me.

Thanks, Mark

A basketball icon is visible next to the text.

Overlaid on the bottom right of the screenshot is a red box with white text:

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# Here's How

## Advanced Google: Search Faster, Find More

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### "GOOGLE IT."

Whatever you're looking for, just type the appropriate words into your browser's search field, or into the Google ([www.google.com](http://www.google.com)) search field, and press <Enter>. In most cases, the information you're looking for will appear somewhere in the first page of results. But this won't always happen.

If your search targets a specific aspect of a common topic—say, contemporary analyses of Albert Einstein's *Special Theory of Relativity*—then finding it in the results can be a needle-in-the-haystack affair.

To guide Google to your search goal, you may need to use some of the service's advanced features. Once you're familiar with these great, free tools, you can access them with no extra clicks by entering Google's command-line options directly into the familiar search box. I'll show you how to speed up your basic and advanced searches, and how to generate more-accurate search results.

For a look at recent search alternatives to Google, see

"Search Evolution: New Ways to Get Better Results" ([find.pcworld.com/59351](http://find.pcworld.com/59351)).

### Narrow Your Search

Looking for pages that mention Albert Einstein? (Who isn't?) If you simply enter **Albert Einstein** in the search field, you'll pull up a trove of

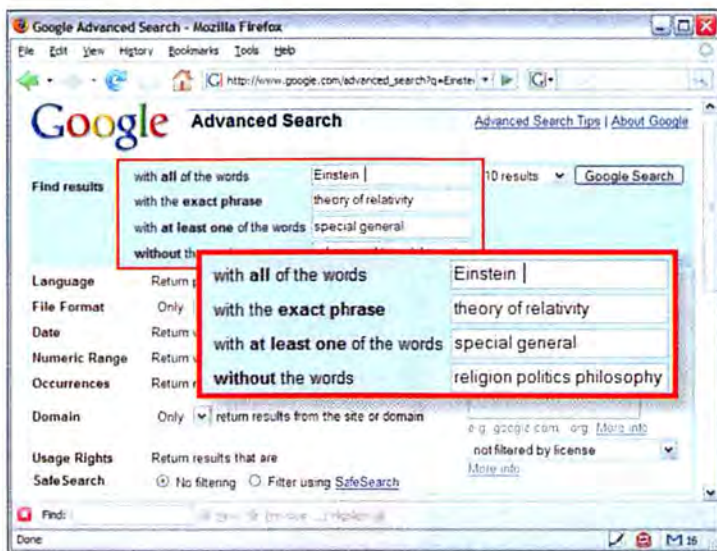
while working his day job. You'll know that you have introduced too many search terms if Google either reports no matches or coughs up only pages containing useless dictionary-like lists of words. Enclosing terms in quotation marks instructs Google to match the quoted

term, but also pages that mention all of those other theories of relativity as well.

### Dig Deeper

Adding and subtracting search terms, and using quotation marks and wildcards are simple tricks that facilitate casual searching. But

Google's search tools let you do much more than that. To view your search options, click **Advanced Search** on Google's home page. The blue 'Find results' section at the top of the Advanced Search page replicates some of the techniques that are described above. For example, entering your terms in the 'with all of the words' field is the same as a plain Google search. Entering search terms into the 'with the



**USE GOOGLE'S ADVANCED-SEARCH tools to narrow your Google search for popular subjects from millions of results to dozens.**

Einsteiniana, starting with photos, biographies, official archive sites, and extensive Wikipedia articles. In short, it's more than you can deal with. To narrow your search, add terms; Google accepts up to ten. Searching for 'Albert Einstein Swiss patent clerk relativity' yields lots of pages detailing how the good doctor developed his revolutionary theories

terms literally; when you enter "Albert Einstein" and "patent clerk", Google skips pages that discuss Tom Einstein and grocery clerks.

The wild-card character \* lets you search for terms that include other, unknown words: Type **Einstein\*\*theory of relativity**, and Google finds not only pages that mention Einstein's general and special theories of rela-

exact phrase' field returns the same results as enclosing your search term in quotes. The 'with at least one of the words' field lets you search for pages containing any of several words, but not necessarily all of them; and the 'without the words' field excludes from the results all pages containing the unwanted terms that you entered.

The search shown in the screen above left finds pages that mention the name 'Einstein' (only about 44 million

in all do so) and that contain both the exact phrase “theory of relativity” (this reduces the results to just 1.8 million pages) and either the word “special” or “general” (now we’re just under a million pages). This search also excludes pages that mention religion, politics, or philosophy (which gets us down to just over half a million total).

The Google command-line version of the same search is easy to follow; it even appears in the search field that’s located at the top of the results page: ‘Einstein special OR general “theory of relativity” -religion -politics -philosophy’.

Half a million is still a lot of pages to sift through. Assuming that you speak only English, you can winnow things further by selecting *English* from the drop-down list on the Language line. But suppose you want to find a good, recently authored, English-language document in PDF file format from an academic source that examines Einstein’s thinking about relativity during the decade or so when he published his special and general theories. To the previous search terms, add **definition** in the ‘with all of the words’ field; select *Only* and *Adobe Acrobat PDF (.pdf)* on the File Format line; choose *past 6 months* from the drop-down

**Google Advanced Search** [Advanced Search Tips](#) | [About Google](#)

Find results with **all of the words** Einstein definition 10 results

with the **exact phrase** theory of relativity

with **at least one of the words** special general

**without the words** religion politics philosophy

**Language** Return pages written in English

**File Format** Only  Adobe Acrobat PDF (.pdf)

**Date** Return web pages first seen in the past 6 months

**Numeric Range** Return web pages containing numbers between 1905 and 1916

**Occurrences** Return results where my terms occur anywhere in the page

**Domain** Only  .edu  
e.g. google.com .org [More info](#)

**Usage Rights** Return results that are not filtered by license

**Safe Search** ☒ No filtering ☐ Filter using SafeSearch [More info](#)

**FIND FILES AND SPECIFY time frames (in the Numeric Range line) and source domains (in the Domain line) of Google’s time-saving graphical interface, if you’d rather not perform a command-line search.**

menu on the Date line; enter **1905** and **1916** (the years in which Einstein published his papers on special and general relativity, respectively) on the Numeric Range line; and select *Only* and type *.edu* on the Domain line (see the screen above). When you click the Google Search button, wham! Your earlier half-million results have now been narrowed to just 18 documents hosted at Harvard, Princeton, MIT, and other academic institutions.

To perform the same search from the Google command line, type **Einstein definition special OR general “theory of relativity” -religion -politics -philosophy site:.edu filetype:pdf 1905..1916**. Now let’s say you’re looking for a *PC World* article from a few years back that describes the backup software built into Windows XP. You know it came out before Vista’s release, and you’re pretty sure it was written by some joker named Scott, but you’re not sure whether it was Scott

Spanbauer or Scott Dunn. Here’s the appropriate search command to use: **backup software Scott Dunn OR Spanbauer “Windows XP” -Vista site:pcworld.com 2004..2007 filetype:ht\***.

The site: and filetype: operators are only two of many such search helpers that Google supports. For example, if you know that the term you’re looking for is part of the page’s URL or title (the text that appears in the very top-left of the browser), specify that fact in the Advanced Search page; by default, Google searches for terms in all page elements. Alternatively, to find pages with the words “Denver Broncos” in the page title, but without the words “Oakland Raiders,” enter the relevant terms in the ‘with all of the words’ and ‘without the words’ fields, respectively. Then select *in the title of the page* on the ‘Occurrences’ line, and click the *Google Search* button. The corresponding command-line

search in Google to obtain these results is **allintitle:Denver Broncos -Oakland -Raiders**.

## The Hunt for Files

Command-line searches are the only way to search different parts of the page simultaneously for different terms (the Advanced Search page searches for your terms in only one location at a time). Looking for non-HTML files available on the Web is one of the most popular uses of these Google power searches. Google will search for any kind of file you tell it to—not just the file types that are listed on the Advanced Search page. For example, if you would like to find a directory of MP3 files of music by Louis Armstrong available for download, use the command **-inurl:htm -inurl:html intitle:"index of" mp3 "Louis Armstrong"**. Presumably, some of the older songs are public-domain versions that are legal to download. Be forewarned, however, that downloading copyrighted >>

# Here's How

media and document files may be illegal. It's a dangerous activity, too, because of the numerous viruses that exist in such files, and because of the security flaws in the programs that open the files on your PC. If this fails to scare you off, you can search for open directories of other file types, such as movies, by replacing 'mp3' and 'Louis Armstrong' with other search terms. For a complete list of Google's advanced search operators and how to use them, browse to [find.pcworld.com/59186](http://find.pcworld.com/59186).

## Get a New View of Your Results

One of the problems with searching Google is that no matter how well you craft your query, you still end up with a big list of text that you have to scroll up and down to read. Couldn't the geniuses at Google come up with some other way to dis-

play the results of Google searches? Well, it just so happens that they're working on it. Browse to the Google Experimental Search page at [find.pcworld.com/59187](http://find.pcworld.com/59187) to see and try several experimental results options that put a new spin on your googling. One adds timeline and map views to the Google interface, enabling you to see graphical interpretations of

search results (shown in the screen above). Another lets you navigate search results using keyboard shortcuts, so you can quit reaching for the mouse every time you want to move up and down the results list. Two others add contextual menus with items related to your results to the left or right side of the page when you conduct deeper topical searches. To roll out

one of these pages for a test drive, click *Join this experiment*, and take a gander at what could be Google's next interface upgrade.

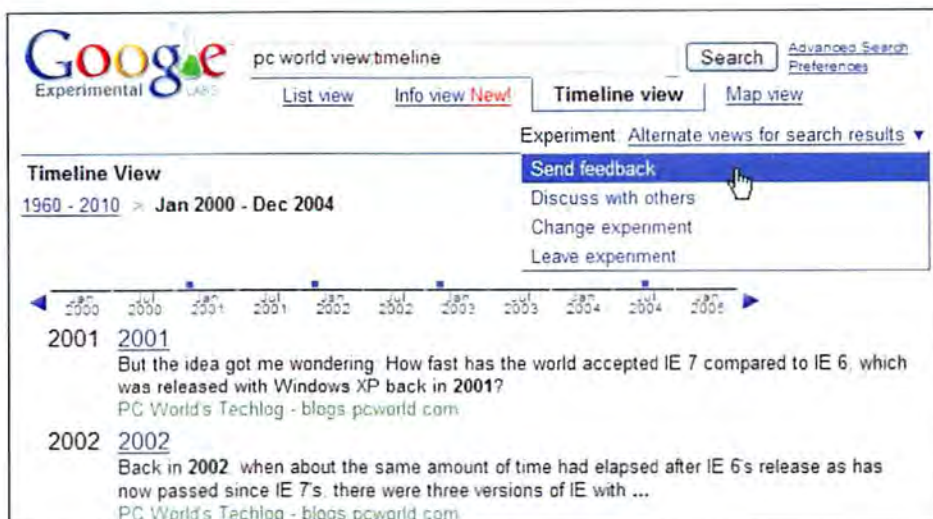
## Try One of These Search Helpers

Trust your friends, but cut the cards. Trust Google, but use Ksoft's \$30 G-Zapper (30-day free trial; [find.pcworld.com/59352](http://find.pcworld.com/59352)) to block the service from tracking the keywords you search for. The program also blocks Google Analytics from recording the sites you browse to.

My friend, coworker, and idol Steve Bass will tell you all you need to know about Google Hacks ([find.pcworld.com/59353](http://find.pcworld.com/59353)). This freebie, which was written by Jason Stallings, makes advanced Google searches as easy as entering your keywords and selecting a category.

Finally, for the collective educated guess of 37 different experts at how Google's ranking algorithm works, check out SEOmoz.org's Search Engine Ranking Factors ([find.pcworld.com/59355](http://find.pcworld.com/59355)).

—Scott Spanbauer



**SEE AN ALTERNATIVE** version of your search results by trying out one of the interfaces under development at Google Experimental Search, such as the chronological method used for this timeline view.

## E-MAIL TIP

## Three Ways to Use Gmail on Your Phone

EMAIL IS WONDERFUL, free, and ubiquitous. Thanks to its support for the POP3 and IMAP protocols, you can access your Gmail inbox via Outlook, Thunderbird, or other e-mail programs in addition to using the standard Web method. Alternatively you can read your Gmail messages on your cell phone through your phone's browser by navigating to Gmail's Web site ([www.gmail.com](http://www.gmail.com)). Some phones (including my Motorola Razr V3 with T-Mobile service) won't display standard Web sites, unfortunately, though they will display sites designed to support the Wireless Applications Protocol (WAP) using the Wireless Markup Language (WML). Google's WAP-compatible Gmail site is <http://m.gmail.com> (don't leave off the 'http://' part—unlike the browser on your PC, your phone's browser may not add that prefix automatically).

Gmail's mobile site is perfectly functional, but the company offers something even better for Java-compatible phones. The Gmail Java app promises faster performance than the Web interface, and it supports attachments better. To try it, visit <http://gmail.com/app> and click the big blue *Get Started Now* button. After you enter your mobile phone number and click the *Send Now* button, Gmail will send you a text message with instructions on how to download the application. If neither the WAP page nor the Java applet work on your phone, you may be able to see your Gmail on your phone by configuring your cell phone carrier's e-mail system to download messages from Gmail via POP3 or IMAP. Consult tip #6 of "Thirteen Simple Ways to Bring Order to Your Inbox" ([find.pcworld.com/59199](http://find.pcworld.com/59199)) for instructions on how to do this.

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WRT600N

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## The Show Goes On: Play HD Movies on Any PC

THESE DAYS, nearly any PC is capable of playing high-definition movies, thanks to improved software and drivers, and new HD-assisting graphics cards.

ATI's Radeon HD 2600 (\$100) and nVidia's GeForce 8400GS (\$60) expertly offload high-definition chores. Meanwhile, ATI's entry-level Radeon HD 2400 (about \$60) offloads HD processing, too, but it renders movies at only 720 lines of vertical resolution (1080 lines is the standard for high-def movies).

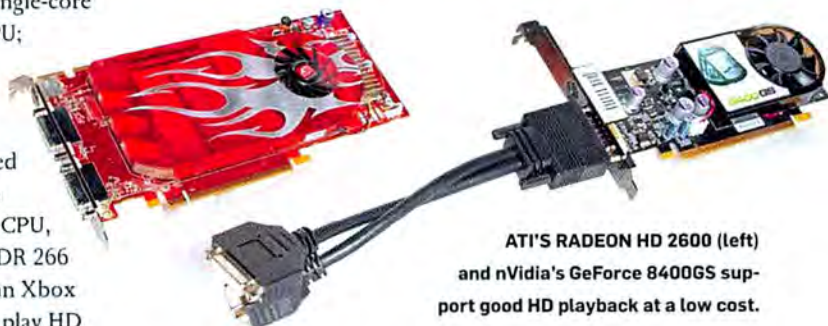
### Minimum Needs for HD

To gauge how slow is too slow for a CPU to play HD movies smoothly, I set up two fairly tame test beds: a PCI Express system with a GA-K8N51PVM9-RH nForce 6150 motherboard from Gigabyte, 1GB of DDR 400

memory, and a single-core Athlon FX-53 CPU; and an AGP system with an Abit KV8-MAX Via K8T800-based motherboard, an Athlon 64 3200+ CPU, and 512MB of DDR 266 memory. I used an Xbox external drive to play HD DVDs on each system, and I used a Pioneer BDC-2202 to play Blu-ray titles. In all cases I used a Dell 2407 monitor with a maximum resolution of 1920 by 1200—the resolution required to view high-def movies in full 1080.

I gradually underclocked the FX-53 from its native 2.4 GHz to 1 GHz, watching for playback deterioration. The 3200+ was locked at 2 GHz, so I had to extrapolate results based on CPU usage.

I tested four graphics cards



ATI'S RADEON HD 2600 (left) and nVidia's GeForce 8400GS support good HD playback at a low cost.

on the PCIe system: MSI's ATI-based Radeon HD 2400 Pro (\$50) and RX2600XT (\$170), and XFX's nVidia-based GeForce 8400GS (\$60) and 8600GTS (\$170). VisionTek's Radeon 2600XT, at \$180, was the priciest board I tested, but it also was the only fully offloading AGP card I found. I ran it with the KV8-MAX.

I used CyberLink's PowerDVD 7.3 software to play *Casino Royale* on Blu-ray and *Lucky Number Slevin* on HD DVD; both are encoded with AVC, the most CPU-intensive codec. I tested under Vista, with the Aero environment and Windows Search disabled. I eyeballed the movies for smooth playback and I monitored CPU usage.

After I updated PowerDVD to build 3502 to fix a bug, all of the PCIe cards efficiently offloaded HD movie playback. Even MSI's budget HD 2400 Pro played *Casino Royale* acceptably at 1 GHz, albeit at its 720p limit, with about 95 percent CPU usage. Its higher-end sibling, the RX2600XT, hit similar CPU usage at 1 GHz but rendered at full 1080p. With either ATI-based card, I had to set the CPU to at least 1.2 GHz

to smooth out the playback of *Lucky Number Slevin*.

Neither the XFX 8400GS nor the 8600GTS managed acceptable playback at 1 GHz; but at 1.2 GHz and higher, they played both discs—and ran every other HD DVD and Blu-ray title I threw at them—flawlessly.

The VisionTek 2600XT AGP card (which I couldn't underclock) was equally facile with the test bed running at 2 GHz, using only 65 percent of the CPU cycles. I likely could have dropped the CPU speed to at least 1.4 GHz before hitting a glitch.

My test sampling is too small to base concrete system requirements on, but they do show that you don't need a state-of-the-art PC to play HD. Any PCIe or AGP system with a 1.4-GHz or faster CPU—single- or dual-core, AMD or Intel—and a fairly fast hard drive should suffice for HD movies, if you use one of the graphics cards I tested. Even if your similarly configured PC can't quite scale the HD hill, upgrading to a CPU that can handle the load will cost you only about \$50. Browse to [find.pcworld.com/59269](http://find.pcworld.com/59269) for instructions.

—Jon L. Jacobi

PHOTOGRAPH: ROBERT CAROIN

## How Slow Can High Def Go?

YOU DON'T NEED the latest PC configuration to play high-def movies. In our tests, even inexpensive graphics boards and relatively slow CPUs supported acceptable playback quality.

GRAPHICS BOARD (maximum resolution)	Hardware configuration	Slowest CPU speed for successful playback
XFX nVidia GeForce 8600GTS (1080p) \$170	Gigabyte K8N51PVM9-RH nForce 6150 motherboard, single-core 2.4-GHz Athlon FX-53 CPU, 1GB of DDR 400 memory	1.2 GHz
XFX nVidia GeForce 8400GS (1080p) \$60		1.2 GHz
MSI ATI Radeon HD 2400 Pro (720p) \$50		1.2 GHz
MSI ATI Radeon RX2600XT (1080p) \$170		1.2 GHz <sup>1</sup>
VisionTek ATI Radeon 2600XT AGP (1080p) \$180	Abit KV8-MAX Via K8T800 motherboard, 2-GHz Athlon 64 3200+ CPU, 512MB of DDR 266 memory	2 GHz <sup>2</sup>

<sup>1</sup> HD DVD showed occasional minor stutters at 1.2 GHz. <sup>2</sup> CPU was locked, but mild usage (65 percent) suggests that significantly slower CPU speeds would have worked.

# Forget Word! WordPad May Be Able to Do Everything You Need

IF YOU DON'T need such advanced features of Microsoft Word as smart quotation marks and macros, but you do want more composing and editing options than are available in Notepad, Windows' free WordPad word processor may be just the program that you have been looking for. To open it, click *Start•All Programs* (or just *Programs*)•*Accessories*•*WordPad*. Following is a quick summary of several little-known features of WordPad that may convince you to keep Word on the shelf.

**Zoom with a view:** If you want to magnify or reduce the size of text on your screen in WordPad, all you have to do is hold down the <Ctrl> key and spin the mouse wheel forward or backward. (This trick also works in browsers and

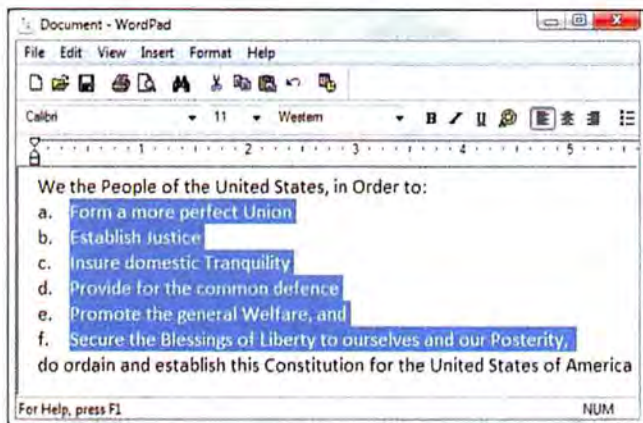
of-place paragraph into its proper position? Just hover your cursor over any part of the paragraph, triple-click your mouse to select the text block, and then drag it to the right location.

**Cycle through list styles:** You have two ways to tell WordPad to automatically format a paragraph with a bullet and a hanging indent: Click the *Bullets* icon on the far right of the toolbar, or select *Format*•*Bullet Style*. (Click the button again to remove the style.) If you've selected all or part of one or more paragraphs, however, press <Ctrl>-<Shift>-L repeatedly to cycle through various list styles, including bullets, numbers, and letters (see the screen shot below).

**Bonus tip:** To indent a paragraph that is under a list style without adding the bullet or number, just press <Shift>-<Enter> at the end of the list paragraph to create a line break.

**Undo/redo:** You can press <Ctrl>-Z repeatedly to step back to previous versions of your editing; press <Ctrl>-Y to step forward again.

**Set the table:** WordPad can't create tables on



**MAKE NUMBERED, LETTERED, or bulleted lists instantly from selected text by pressing <Ctrl>-<Shift>-L repeatedly.**

with a number of other applications.) Or you can select the text that you want to appear larger or smaller and press either <Ctrl>-<Shift>-> (the right-pointing bracket) or <Ctrl>-<Shift>-< (the left-pointing bracket), to increase or decrease the characters' on-screen size. (Note that this method affects the on-screen appearance of the text only, not the actual font size of the characters in your document. The text will print out on a page at the same size as before.)

**Be a drag:** Do you want to move an out-

its own, but you can create a simple one in Excel or another spreadsheet, and then copy and paste the cells you need into your WordPad document.

**Spell it out:** WordPad lacks a spelling checker, but that doesn't doom you to spelling *accommodate* with one *m*. The free tinySpell app works with any word processor, alerting you to misspelled words as you type or stepping methodically through all the words you copy to the Clipboard ([find.pcworld.com/59243](http://find.pcworld.com/59243)).

—Scott Dunn



it sees you

Get the whole picture at  
[www.samsung.com/225UW](http://www.samsung.com/225UW)



## Three Secrets for Better Digital Photographs

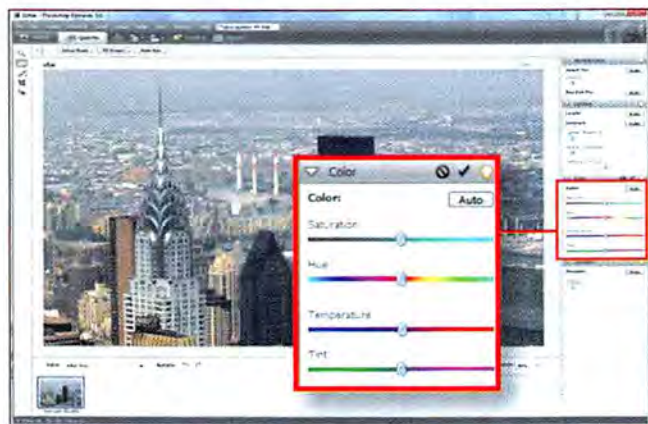
SMARTER CAMERAS and advanced technology yield better images than a 1-hour photo shop used to create. But why stop there? A few simple editing tricks will improve almost any shot. Here are three of my favorites.

### Fix the Color Balance

Your camera measures the light each time it snaps a picture, setting the color balance

One way to obtain accurate colors is to set the white balance by hand before taking the shot. Check the camera's manual for instructions on accessing its white balance control. Dial in a setting designed for your conditions (such as daylight or indoors).

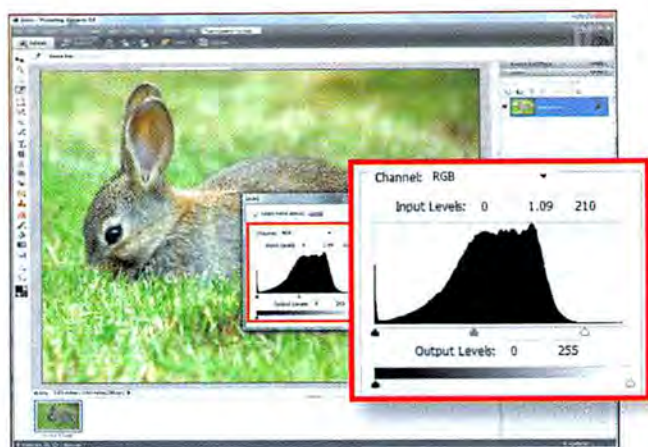
Another option is to tweak the colors afterward through an image editing program. In Photoshop Elements, for



**IF THE COLORS** in your digital images are out of whack, it's time to experiment with your image editor's color-temperature slider.

so all colors in a scene look accurate. If photos seem too blue or too red, your white balance may be out of whack.

example, click the *Quick Fix* tab and drag the *Temperature* slider until colors look right (see the screen shot above).



**ADJUST A PHOTO'S** exposure with the help of a histogram—a graph that shows the distribution of bright and dark pixels in the image.

### Correct the Exposure

Even pros underexpose or overexpose a shot occasionally. You can improve most photos by using the Levels or Histogram control in your photo editor. In Photoshop Elements, open the image and choose *Enhance*•*Adjust Lighting*•*Levels*.

You'll see a graph (called a "histogram") that shows the distribution of bright and dark pixels in your photo. If lots of pixels are crowded against the right side of the graph, the image is probably overexposed. Conversely, a concentration of pixels on the far left of the graph may indicate underexposure (see the screen shot above right). To lighten the whole photograph, drag the White Point on the right side of the graph

to the left; to darken the photo, drag the Black Point on the left side to the right. To adjust only the midtones in the photo, drag the middle arrow to the left or right.

### Straighten Verticals

Have you ever seen a photo of a tall building that looks as though it's ready to fall over? That effect is called "perspective distortion," and photography pros use expensive hardware to avoid it. The rest of us can use a little digital trickery instead.

In Photoshop Elements, you can reduce the intensity of the distortion by choosing *Filter*•*Correct Camera Distortion*. Adjust the Vertical Perspective setting to reduce the perspective distortion. (You must crop the photo to eliminate the tapered bottom.) Many people prefer to use a Photoshop plug-in filter designed for perspective correction, such as Andromeda Software's \$119 LensDoc ([find.pcworld.com/59253](http://find.pcworld.com/59253)). The program corrects various lens-distortion effects, and it can make the architecture in your shots appear as straight and true as the Tower of Pisa (when construction of the building began in 1173).

—Dave Johnson

## ANSWER LINE

### ? How do I fill in a dialog box using just my keyboard?

Gerald Hoppe, via e-mail

KEYBOARD SHORTCUTS ARE a great way to improve your productivity. Most dialog boxes support the same keystroke combinations as your favorite applications do:

Press **<Tab>** to move to the next field in the box, and **<Shift>+<Tab>** to move back one field. Move between multiple tabs in a dialog box by

pressing **<Ctrl>+<Tab>** or **<Ctrl>+<Page Down>** to move forward, or **<Ctrl>+<Shift>+<Tab>** or **<Ctrl>+<Page Up>** to move back.

To select items in the current field or drop-down menu (or to make them appear), press the up or down arrow keys. To select the current item—for instance, to check an option box—press the spacebar. If an option has an underlined letter in its name, press **<Alt>** and that letter. To view the parent folder of the current folder, press **<Backspace>**. To close the dialog box, press **<Enter>**.

—Lincoln Spector

## ANSWER LINE

## ? How can users with limited Windows accounts run my applications?

Dan Keating, Silver Springs, Maryland

USING WINDOWS XP'S limited account ("standard" in Vista) can be a nightmare: Some programs won't install, run, or update. When an app tries something dubious in Vista, up pops a User Account Control dialog box, no matter what kind of account you have; if you logged in to a limited account, you must enter the password for an administrator account to finish the task.

Many of XP's limited-account problems arise when you try to install applications. Some installation programs ask whether you want every user on that computer to have access to the app. In such cases, always select the option that lets everyone use it. If a program doesn't give you that option, you can probably still get the app to work on every account by placing a shortcut to it on every-

one's Start menu: Right-click the Start button, select *Explore All Users*, and double-click the *Programs* folder to bring up the shared Start Menu folder. Now right-click the Start button a second time, select *Explore*, and double-click the *Programs* folder to open your private Start Menu folder. Drag the appropriate folders and shortcuts from your private Start Menu window to the shared one.

Unfortunately, some programs won't work for any account except the one used to install it. Here are two workarounds:

First, reinstall the problem program in a location other than the C:\Program Files folder, which is Windows' default destination for programs. Limited accounts can read items in this folder but not alter them.

If that doesn't work, right-click the program's icon and select *Run As*. (If you

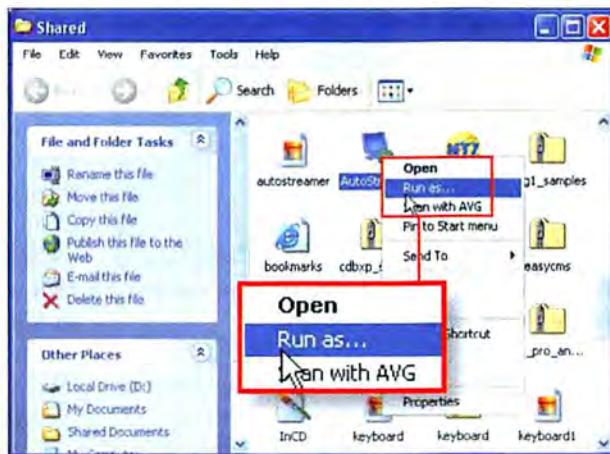
don't see a *Run As* option, press <Shift> and right-click the option; see the image below.) Select *The Following User*, choose an administrator account from the 'User name' drop-down menu, enter the administrator password, and click *OK*.

### How do I send a fax from Windows?

Fred Weil, Toms River, New Jersey

Both Windows XP and Windows Vista come with perfectly serviceable fax programs. Of course, to use either of them, you will need to have a dial-up analog modem plugged into your telephone line.

To set up faxing in XP, open Control Panel's *Printers and Faxes* applet. In the left pane, click *Set up faxing* (this option may be identified as 'Install a local fax printer'



**OPEN A PROGRAM** from a limited account in XP by right-clicking its icon, choosing 'Run As', and picking an administrator's account.

on some versions of the program). The fax configuration wizard is self-explanatory. When you've completed the steps it prescribes, you'll see the Fax icon among your various printer options.

From now on, you can fax anything that you can print. To do so, simply select *Fax* from the list of available printers. Vista Business and Vista Ultimate come with a program called 'Windows Fax and Scan' that makes faxing extremely easy.

—Lincoln Spector



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## Find Your System's Performance Bottlenecks

IS YOUR PC as slow as molasses on a winter morning in Manitoba? With a little detective work, you can track down the cause of your system's sluggishness, and get it running at full speed again.

The Windows Task Manager offers a quick and easy way to check the load on your CPU. To open it, press <Ctrl>+<Alt>+<Del> (in Vista, you must then click *Start Task Manager*). Click the *Performance* tab to see graphs showing CPU usage (see the image at right). If your processor consistently runs at more than 50 percent of capacity, you may have a problem. To distinguish between your system's CPU usage for Windows and its CPU usage for any applications, select *View>Show Kernel Times*. Windows breaks the CPU usage graph into a red line for Windows and a green bar for applications.

Click the *Processes* tab to view all your currently running processes—the microprograms that make up your applications—and to display the CPU usage for each one under the CPU column. Reinstall any program that you discover is eating up processes unnecessarily, or find and install a less processor-hungry alternative.

### Take Your System's Slowdowns to Task

Task Manager's Performance tab provides a quick snapshot of your PC's RAM use, too. In XP, if the Total Commit Charge regularly exceeds the Total Physical Memory, your system must frequently

rely on the slower, hard drive–based page file (aka virtual memory or swap file). The greater this reliance, the slower your performance. (In Vista, click *Resource Monitor* and then the Memory bar near the bottom of the win-

to a faster drive may help as well. See [find.pcworld.com/59259](http://find.pcworld.com/59259) for instructions.

If you suspect that your hard drive is slowing down your PC, click *Start+Run* (just *Start* in Vista), type *perfmon*, and then press <Enter> to

Vista, you can check on your disk use in the Disk graph under Resource Overview.

### A Fresh Perspective on Peripherals

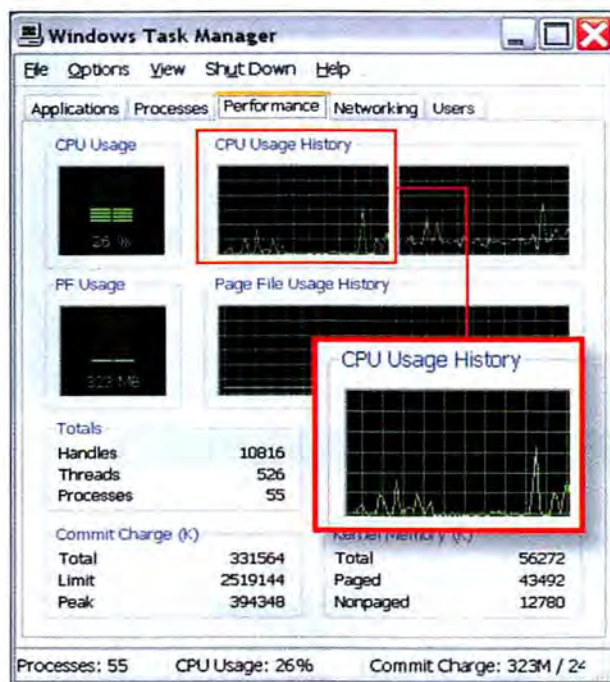
Instead of upgrading to a hard drive that spins faster and has more cache, you could add a second drive configured in a RAID 0 array. Browse to [find.pcworld.com/59261](http://find.pcworld.com/59261) for the details. A cheaper (but less effective) option is to defrag your drive; in XP, right-click *My Computer*, select *Manage*, and click *Disk Defragmenter+Defragment*. In Vista, click *Start*, type *disk defragmenter*, press <Enter>, and select *Defragment now*.

Your graphics chip may not be able to keep up with today's latest games and other graphics-intensive applications. Check your system's documentation or the vendor's Web site to identify your PC's graphics configuration and to determine whether you can add an AGP or PCI Express graphics card. (Some budget PCs won't let you upgrade their graphics at all.)

The Windows Experience Index in Vista runs a basic check of your machine's graphics capabilities. To open it, click *Start*, type *performance information*, and press <Enter>. For an explanation of the scores, browse to [find.pcworld.com/59263](http://find.pcworld.com/59263).

For detailed instructions on how to reinstall Windows XP, browse to [find.pcworld.com/59349](http://find.pcworld.com/59349); alternatively, visit [find.pcworld.com/59350](http://find.pcworld.com/59350) to view the video version of the tip.

—Kirk Steers



**IDENTIFY THE CPU usage hogs that are wallowing on your system via these indicators in the Windows Task Manager.**

dow to view your Commit Charge by application.)

Total Commit Charge is the sum of physical RAM and the virtual memory currently in use. Peak Commit Charge is the amount of combined physical and virtual memory currently available to your PC. Allowing the Total Commit Charge to hover near the Peak Commit Charge can lead to trouble.

The most effective way to cure memory bottlenecks in your machine is by adding RAM, but increasing the size of the swap file or moving it

open XP's System Monitor or Vista's Reliability and Performance Monitor. If your system is running XP but you don't see '% Disk Time', right-click *Counter* near the bottom of the window and select *Add Counters*. Then choose *PhysicalDisk* under 'Performance object', select % Disk Time in the list below the menu, and end by clicking *Add* and *Close*. If the % Disk Time counter consistently runs higher than 40 to 50 percent, your drive may be hindering your PC's performance. If you're running

# Take Full Advantage of the New XML Format in Word 2007

WHEN YOU SAVE a file in Word 2007's default .docx format, you're actually saving a compressed (or zipped) file containing several different XML documents. This XML format improves on the binary formats found in earlier versions of Word: Files may be up to 75 percent smaller. In addition, each XML component of a document is segmented into modules whose contents you can manipulate individually.

To uncover the separate components of a .docx file, open Windows Explorer, highlight the file, click *File>Rename*, change the '.docx' extension to .zip, and press <Enter>. Always keep a copy of the original .docx file on hand, however, because any alterations you make to the .zip version are permanent.

Now double-click the renamed file to open the "package" in a new folder window. The screen shot below illustrates the components of a .docx file that has one embedded image. To send someone the document without the image, merely delete that part of the package without ever opening the file in Word. When you open a .docx file that has been renamed from .zip with one of its components (such as an image) deleted, Word may try to "repair" the file, putting a placeholder where the deleted image was, for example. To delete the placeholder, just double-click it.

Similarly, if you want to revise the text, open only the document.xml component and make your changes

there. If the file contains comments that you want to remove, strip them out by deleting the comments.xml component. Other elements are styles.xml, which holds the document's style definitions; headers.xml, which has section heads (listed as Header 1, Header 2, and so on); and theme1.xml, which hosts any templates used to style the document. Note that document.xml.rels has the instructions for reassembling the components into the complete document, which could include the sources of inserts.

## Scroll the Ribbons

In Word, Excel, and PowerPoint, you can quickly move through the ribbons by placing your pointer anywhere in a ribbon and turning the scroll wheel on your mouse forward or backward. As you are scrolling, the program's available ribbons appear on the screen. Of course, you can always click the menu tabs atop a ribbon, too.

## Reclaim Your Screen

Office 2007's ribbon uses much more screen space than did the toolbars of previous versions. If you want to devote more space to your document, spreadsheet, or presentation, you can hide the ribbon by pressing <Ctrl>-<F1>. Want to bring the ribbon back? Press <Ctrl>-<F1> again. To perform the same disappearing act using your mouse, double-click any ribbon tab.

—Michael S. Lasky

Name	Ext	Size	Comp	Ratio	Date M...	Time	Type	Attr	Path
.rels	.rels	590	243	59%	1/1/1980	12:00 AM	XML Document		_rels/
[Content_Types].xml	.xml	1,364	371	73%	1/1/1980	12:00 AM	XML Document		
app.xml	.xml	993	486						docProps/
core.xml	.xml	755	383						docProps/
document.xml	.xml	5,336	1,402						word/
document.xml.rels	.rels	650	272						word/_rels/
fontTable.xml	.xml	1,296	407						word/
image1.jpeg	.jpeg	73,286	73,286		1/1/1980	12:00 AM	JPEG Image		word/media/

CONVERT FILES FROM Word 2007's .docx format to .zip to see and open its components.



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## STEVE BASS'S HASSLE-FREE PC

### Four Quick and Simple Tweaks Toward a More Perfect Windows

Teach your <Windows> key new tricks, capture video screens, and lock your drive letters.

SOMETIMES WINDOWS ACTS like an OS on life support. Can the patient be saved? I don't know about that, but I can help with triage.

#### Supercharge the <Windows> Key

**The Hassle:** I use the <Windows> key on my keyboard early and often, but it can do only so much. How can I get more use out of it?

**The Fix:** I know of a freebie that turns your <Windows> key into a super shortcut. Clavier ([find.pcworld.com/59237](http://find.pcworld.com/59237)), a small utility, lets you create <Windows>-key combinations for opening virtually any program, pasting short strings of text, and performing other operations. For instance, I created custom shortcuts that can start my e-mail program and turn my PC's volume up or down.

**Bonus tip #1:** If you want your hands to stay on the keyboard, you have options. See "Keep Your Hands Off the Mouse" ([find.pcworld.com/59235](http://find.pcworld.com/59235)) for a list of useful keyboard shortcuts that you probably don't know about. The article's ancient, but the shortcuts work.

**Bonus tip #2:** If you have a child, cat, hamster, or goldfish that occasionally taps on your keyboard, use the free ToddlerTrap utility ([find.pcworld.com/59236](http://find.pcworld.com/59236)) to lock the keyboard down.

#### Reshuffle Your Keyboard

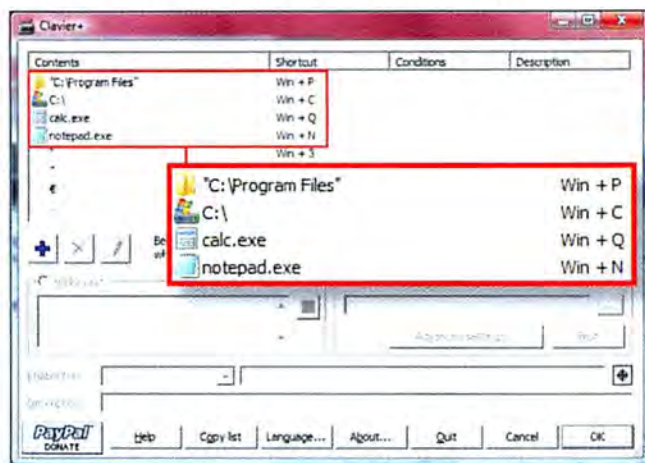
**The Hassle:** My Lenovo ThinkPad laptop's keyboard has no <Windows> key—a key I use often on my desktop PC. Am I out of luck?

**The Fix:** You need KeyTweak ([find.pcworld.com/59238](http://find.pcworld.com/59238)), a no-cost keyboard-remapping tool that arranges the keys in whatever way makes you happy. I suggest converting the <Ctrl> or <Alt> key on the right side of your ThinkPad's spacebar into a <Windows> key.

#### TOOL OF THE MONTH

### Quick Upgrades With AppSnap

ONCE A MONTH or so I run AppSnap ([find.pcworld.com/59240](http://find.pcworld.com/59240)), a free tool that shows which free, open-source programs on my PC need updating. The utility scans my system and lists the version of each app it finds, as well as the most recently released version of each. Choose the programs in need of upgrading (and any new ones you want to install) and click *Upgrade*. AppSnap silently installs each one so you don't have to deal with separate installation routines. You can scan for applications in categories such as Installed, Not Installed, Upgradable, and (if you want to remove programs) Removable. I was surprised at how many of my favorite tools AppSnap had in its database, including CCleaner, Firefox, Google Desktop, and Winamp.



CLAVIER CONVERTS YOUR <Windows> key into a super shortcut.

I used KeyTweak to swap the <Esc> key in the upper-left corner of the keyboard with the slant-apostrophe/tilde key directly above the <Tab> key. If you're a gamer and want to avoid the disaster of accidentally pressing the <Windows> key during a game (which may minimize the window), use KeyTweak to disable it temporarily. To use KeyTweak in Vista, you must be logged in as an administrator.

#### Grab Video Screens

**The Hassle:** I need to grab screens from videos running in Windows Media Player. But no matter what screen-capture utility I try, all I scrape is a black screen. Any ideas?

**The Fix:** The easiest solution is to use a capture-friendly player, such as VLC Media Player ([find.pcworld.com/59241](http://find.pcworld.com/59241)); click *Video* • *Snapshot* to capture a video frame. Or you can modify Windows Media Player's settings instead: Select *Tools* • *Options* • *Performance* • *Advanced*, uncheck *Use Overlays*, and click *OK*. Disabling overlays can hinder your playback performance, so you may want to re-enable overlays once you've captured your screen.

#### Freeze Your Drive Letters

**The Hassle:** When I mapped a network drive, Windows assigned it to the next available drive letter on my PC. When I plugged in a USB flash drive, Windows inexplicably gave it the same drive letter as the networked drive. Now I can't access either one. What the...?

**The Fix:** Congrats! You've uncovered an ancient Windows bug. One quick trick is to assign the network drive to a back-of-the-alphabet letter, such as Y: or Z:. If you're constantly plugging in flash drives and mapping and unmapping networked drives, however, use USBDM ([find.pcworld.com/59239](http://find.pcworld.com/59239)), a very geeky freebie that runs as a Windows Service and automatically resolves drive-mapping conflicts by checking to see whether the letter is already in use, and assigning the next available letter if it is. ●



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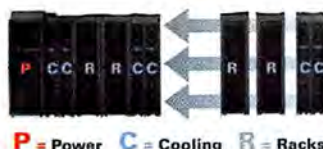
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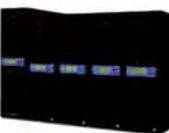
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STEPHEN MANES



## It's Reliable! It's Also Obsolete!

WHEN IT COMES to PCs, reliability is more important than ever. In the DOS era, recovering from a major disaster generally involved little more than copying a bunch of files. With Windows and its infernal Registry, when a hard drive goes bad, you're in for a complete reinstall of not just your operating system but also all your applications and all their security updates. And when reliability woes strike, it's increasingly difficult to diagnose exactly what's causing them.

Is it the hardware or the software? Your educated guess may be all you have to go on. The other day, after an application upgrade, my year-old desktop delivered two scary blue screens and several other odd malfunctions—even though I wasn't using the software I'd just upgraded. Mucking around in Windows' Msconfig utility, I figured out how to disable some new startup surprises, which seems to have solved the problem for now. But I'm crossing my fingers that I don't have a hunk of hardware that's suddenly gone flaky.

Upgrade-induced headaches are one reason why I'm philosophically inclined to avoid new versions of Windows for as long as I possibly can. And they're also why I continue to employ a four-year-old notebook whose keys are losing their letters and whose AC adapter seems to have developed a loose internal wire—or the adapter may be mating to a bad power connector in the laptop itself.

The laptop's keyboard problem is depressing given that my desktop machine is connected to a wonderful 1990-era keyboard (cannibalized from an old Zenith system) on which every key remains perfect. As for the adapter, it does get beat up on my travels, and I wouldn't mind springing for a new one—but not if the trouble is actually somewhere else. Just try to find somebody who knows how to diagnose that kind of headache.

Too many tech products have one thing in common: They seem to be designed to turn into handy-dandy doorstops.



Reliability, though, is only part of the story. In the fifties, when cars changed their shapes with every new model year, critics moaned about "planned obsolescence," but at least the old out-of-fashion car got you where you wanted to go. No need to worry about that in the digital age. Today, obsolescence is baked right in, so even when something still runs just fine, that may not be enough.

I use Office 2000 rather than later versions, largely because (1) it does everything I need, (2) I've paid for it (twice!), and (3) it doesn't phone home for "authentication" the way later versions do. It functioned well—until my wife brought home some Outlook 2003 files from work.

Those files—as I found out after a bit of Googling to decipher a couple of error messages—are not compatible with my older Office version. The only way to export them to make them work? Load them back into a machine running Outlook 2003 or later. Once again, Microsoft couldn't be bothered to offer a simple way of maintaining compatibility across old and new versions, like a piece of conversion software.

And Microsoft is not the only culprit. The entire tech world too often consigns its older products to a premature death.

SmartMedia cards such as the one in my perfectly serviceable Olympus digital voice recorder are no longer made. If that card dies, I will have to buy a whole new device—or shop eBay for a used sliver of memory. And while I'm at it, I would probably be wise to get a card reader, too. What are the chances that the SmartMedia format will be built into my next PC?

So when you're thinking about reliability, briefly ponder potential obsolescence. Today's clever hardware or software could well be tomorrow's doorstep—but by then you probably won't be able to read the letters on the keyboard, or even the files you create with it. ●



Volume 26, number 2, PC World™ (ISSN 0737-8939) is published monthly at \$24.95 for one year (12 issues), \$49.90 for two years (24 issues), \$74.85 for three years (36 issues) by PC World Communications, Inc., 501 Second Street #600, San Francisco, CA 94107. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$12 per year for Canada, add \$30 per year for airmail for all other countries. Canadian GST Registration #R12469680. Periodicals Postage Paid at San Francisco, California, and at additional mailing offices. Canada Post Publications Mail Agreement #40812608. Return undeliverable Canadian addresses to: Bleuchip Intl., P.O. Box 25542, London, ON N6C 6B2. POSTMASTER: Send address changes to PC World, Subscription Dept., P.O. Box 37571, Boone, IA 50037-0571. Editorial and business offices: 501 Second St. #600, San Francisco, CA 94107. 415/743-0500. Copyright © 2008, PC World Communications, Inc. All rights reserved. The trademark PC World is owned by International Data Group and used under license by PC World Communications, Inc. Technology Advice: You Can Trust™, PC World Top 10™, Top 10™, PC World Top 100™, Top 100™, and Consumer Watch™ are trademarks of International Data Group, Inc., and used under license by PC World Communications, Inc. Printed in the United States.



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