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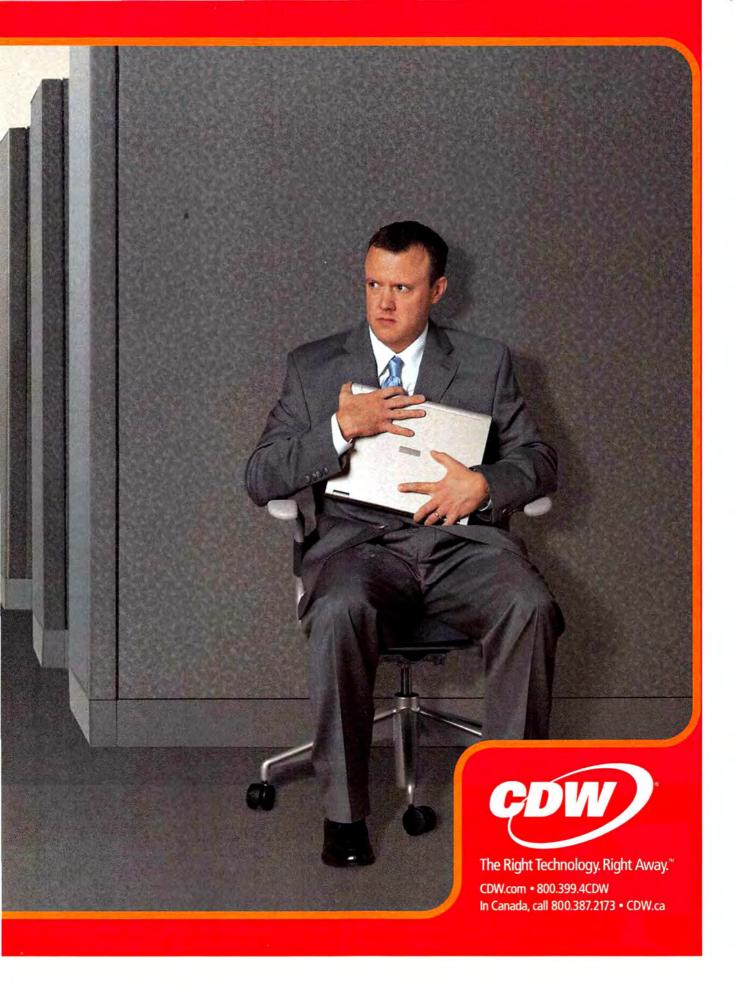- Windows® XP Professional
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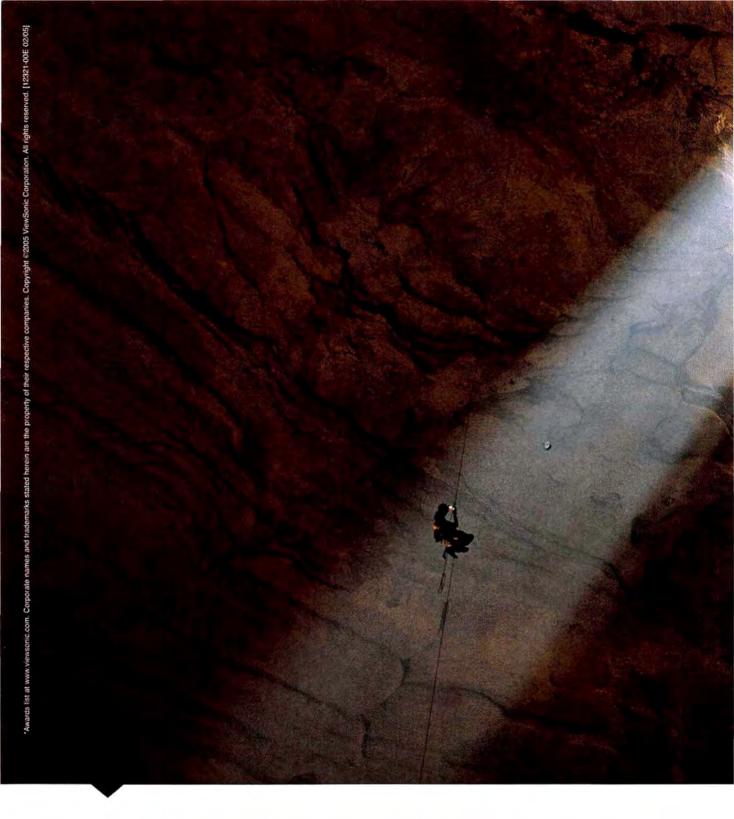hp care pack 3-year, 4-hour, 9 x 5, onsite warranty upgrade $170 (CDW 585483)

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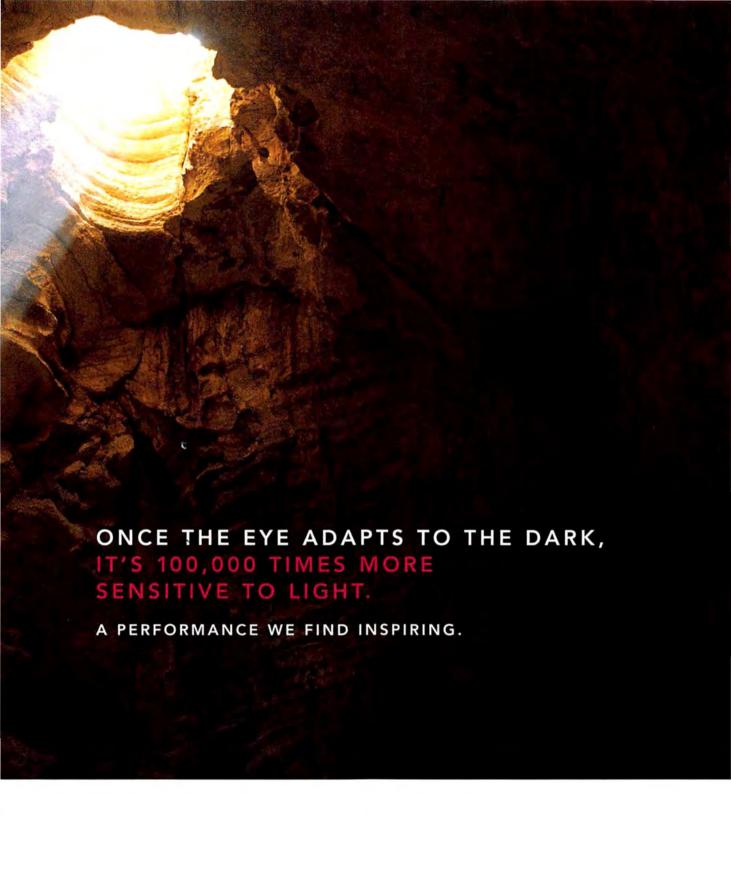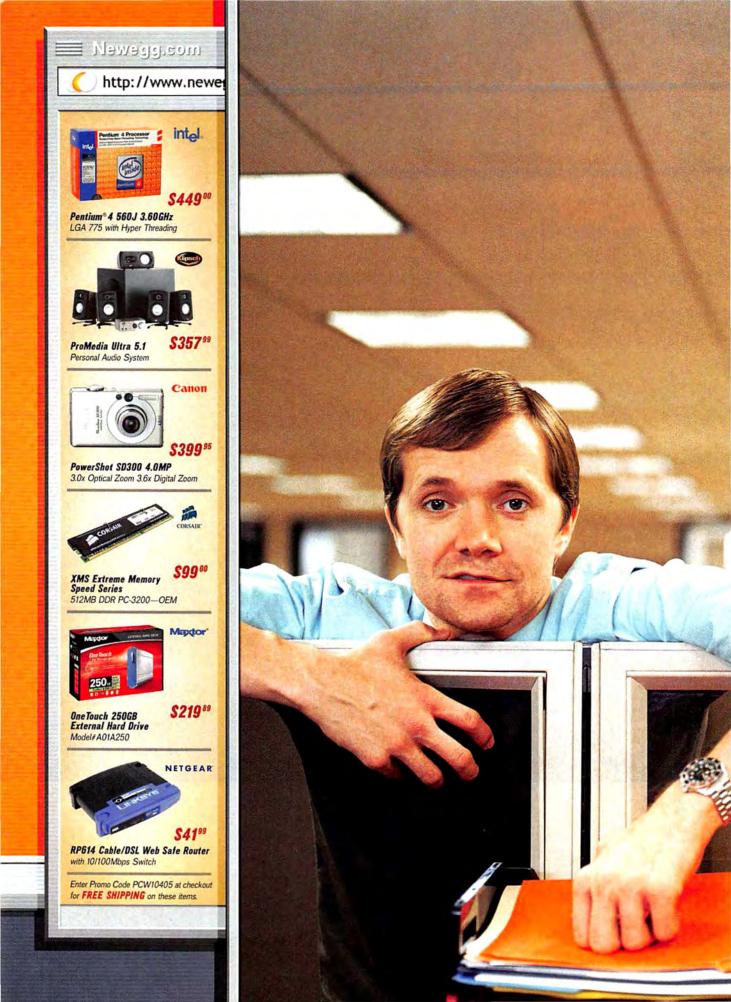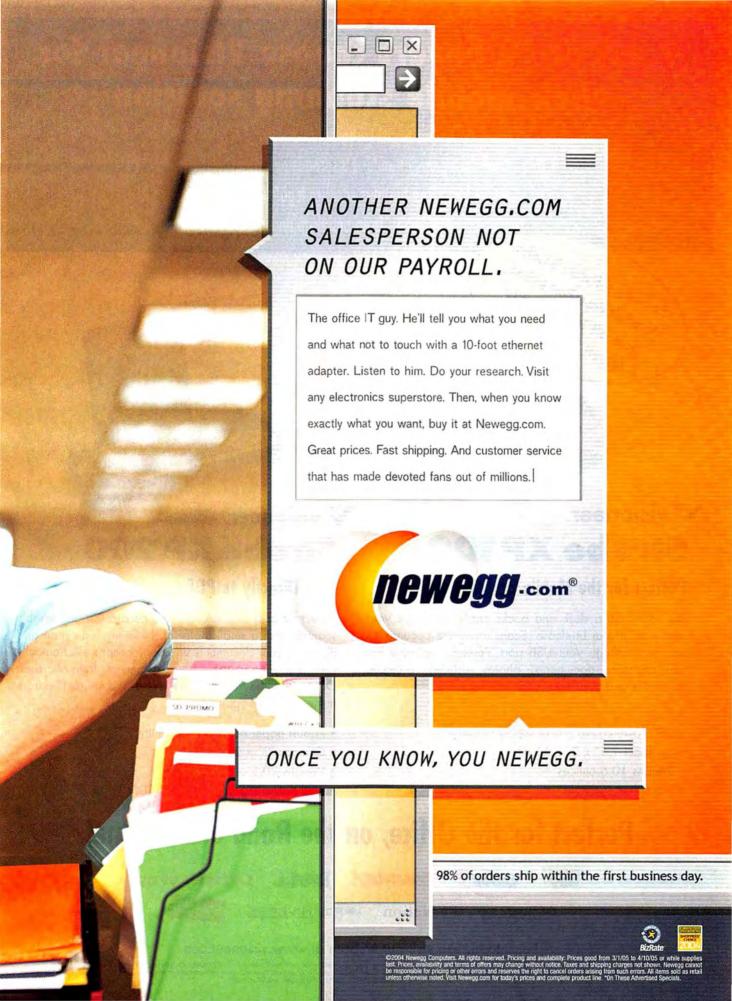## (Do you want to bet your data on it?)

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DON'T LOOK NOW, but some of *PC World*'s top columns are missing from this issue. There's no cause for panic, though. Truth to tell, they're missing from every issue—because they reside online at our Web site.

Original Web columns aren't a startling new development: As long as we've had a site, we've had some. But the modern era of PCWorld.com columns began one year ago, when Ramon G. McLeod, the site's editor, asked staffers to propose subjects they'd like to write about. Folks responded in force, pitching columns ideas about their passions. Suddenly, we jumped from a smattering of columns to a veritable smorgasbord.

The sheer variety is part of the fun. Topics range from shareware and freeware (Staff Editor Laura Blackwell's *Download This*, find.pcworld.com/46930) to optical storage (Associate Editor Melissa J. Perenson's *Burning Questions*, find.pcworld.com/46932) to Linux and other open-source software (Technical Project Manager Matthew Newton's *Free Agent*, find.pcworld.com/46934). And PCWorld.com columns are about more than products and platforms: In *Tech.gov* (find.pcworld.com/46936), for instance, Senior Editor Anush Yegyazarian reports

PCW SCRIBES (from left): VoIP veteran Aoife McEvoy, printer geek Eric Butterfield, Linuxhead Matthew Newton, and file diva Laura Blackwell.

regularly on how Uncle Sam's doings influence the way we use technology.

Among our newest columns are *The Print Shop* (find.pcworld.com/46938), Associate Editor Eric Butterfield's look at all things printer-related, and *Net Phone Zone* (find.pcworld.com/47084), a Voice-over-IP column by Senior Editor Aoife M. McEvoy. (Aoife's been using Internet telephones since they were...well, unusable.)

If I were to give you a guided tour of

every column on the site, *this* column would run to three or four pages. Fortunately, I don't need to. Head to www.pcworld.com/resource/allcolumns/0,00.asp, and you'll find links to all of our columns, including online originals and such print mainstays as *Bugs and Fixes* and *Consumer Watch*.

When a *PCW* staffer is passionate about a topic, odds are that plenty of *PCW* readers are, too. Happy end result: Many of these columns rank among the site's biggest hits, and all of them are shaped by a dialogue between columnist and column readers. "The interaction is wonderful," reports shareware expert Laura Blackwell. "I get e-mail from folks who download programs and share their experiences, give tips, and tell me about new programs."

"I feel privileged to be able to write about something I'm so interested in," says Laura. To which I can only add that we feel privileged to bring PCWorld.com visitors the work of such dedicated and talented online columnists.

Could one or more of them work their way into the dead-tree version of *PC World*? It wouldn't be a first: Senior Associate Editor Andrew Brandt's *Privacy Watch* was an award-winning part of our site before it found a home in the print magazine. If you have thoughts on these columns, or other feedback, drop me a line at mageditor@pcworld.com. ∎

THIS MONTH IN DIGITAL WORLD

BEST WAYS TO GET HDTV: Ready to make the leap to high-definition television? We'll tell you how to tune in—via cable, satellite, or plain old rabbit ears. That's only one of the stories in the April *Digital World*. If you're a *PC World* sub-

scriber, you can download this issue as a PDF at find.pcworld.com/43830. Copies of *PC World* that are sold at newsstands and other retailers include the print version of *Digital World*. For more information, check out www.digital-world.com.

Read Editor in Chief Harry McCracken's Weblog at blogs.pcworld.com/techlog.

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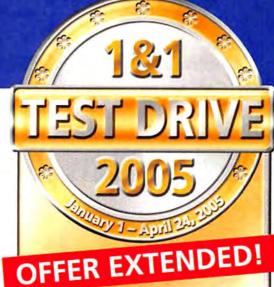
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NEWS & TRENDS

EDITED BY EDWARD N. ALBRO

Stretching Wi-Fi

NEW WI-FI PRODUCTS USE SMART ANTENNAS TO BOOST THE RANGE OF 802.11B AND 802.11G WIRELESS NETWORKS—EVEN IF YOU UPGRADE ONLY YOUR ROUTER. BY BECKY WARING

DO YOU HAVE a love/hate relationship with your home Wi-Fi network? One reason might be that the network is unable to reach every spot you want it to—the sunny patio, the upstairs bedroom, or the kitchen, perhaps. Now, new routers and adapters labeled "Pre-N" or "MIMO" promise to address the dreaded dead-spot dilemma while doubling or tripling the range of standard 802.11b and g devices.

Do these new products live up to their billing? Yes, but you'll pay for the improvement. The routers we tested—shipping versions of D-Link's Super G with MIMO and Linksys's Wireless-G with SRX, and a preproduction Netgear RangeMax—range in price from $150 to $199, compared with about $59 for a standard 54-mbps 802.11g router. Client PC Cards in the new product lines cost $99 to $129, versus approximately $39 for plain-vanilla 802.11g adapters.

Still, people who want their Wi-Fi to go where no wireless has gone before may decide that paying the price premium is preferable to undertaking a complex setup of secondary access points or purchasing a costly high-power antenna.

With the new equipment, you don't have to upgrade your entire network to get the benefits of the technology. Though our tests produced optimum results (including increased throughput) when the router and the client card belonged to the same product line, we

INSTANT CURE for dead spots: Netgear's RangeMax router (left) and Linksys's Wireless-G Router with SRX use different antenna technologies.

PHOTOGRAPHS: MARC SIMON

REACH ON A BUDGET

THE NEW RANGE-EXTENDING routers aren't cheap. For a low-budget alternative, consider Hawking Technology's new Hi-Gain Wireless-G Laptop Card (HWC54D), a $45 adapter that maximizes the range and dead-spot coverage of an 802.11b or g gateway.

Basically, the HWC54D is a standard 802.11g card with a pop-up directional antenna that you twist to get the best signal. Tested with a plain 802.11g router, the Hawking card gave us almost as much extra range as did the new routers we tested with their respective cards—though at the outer edge of a garden (roughly 70 feet from the router), the Hawking card was about two times as slow. More pluses: The card connected on the first try to each of the routers we tested, and it costs only about half as much as the new cards we tested.

FAR OUT: Hawking's Hi-Gain 802.11g PC Card has an antenna you can twist to optimize range.

Since it has no proprietary performance enhancements, the Hi-Gain card is perfect for connecting at hotspots. Our one concern: The antenna looks as though it could snap off pretty easily. But that's a risk we're willing to take for such a big reward.

—Becky Waring

found that just using one of the new routers significantly improved the performance of legacy gear. And finally, if you need added range for only a single notebook and you want to save money, consider buying a better Wi-Fi card: Hawking Technology's Hi-Gain Wireless-G Laptop Card (see "Reach on a Budget," above).

REACHING OUT

OUR TESTING focused on replacing an old 802.11b or g router in a home network without buying new adapter cards for every device (which would multiply the cost).

To this end, we tested the D-Link, Linksys, and Netgear routers with a regular 54-mbps card from Motorola, as well as with their respective matching cards. Ideally Wi-Fi tests would be conducted in a controlled, interference-free environment that enabled testers to produce repeatable results, but real-world conditions are rarely so pristine. Instead, we opted to conduct our tests in a private home, using several tools to measure the time that each of the setups took to transfer data to a notebook with the client card at varying distances away.

All three routers did a great

job of extending our Motorola card's range, nearly doubling the coverage area of our plain 802.11g router while speeding up performance. With a regular router, we couldn't use the notebook any farther away than about 50 feet (and two rooms) from the base station. In contrast, each of the three test routers gave us whole-house coverage with very little drop-off in performance. We could even connect in the garden, which was 70 feet away. Though throughput there was clearly lower, the performance difference would matter only if you were transferring large files across your local network; and bandwidth still exceeded the 1MB-to-1.5MB maximum of most broadband Internet hookups. We lost a usable signal only when in the street, some 150 feet away.

The star in our tests with the Motorola card was the Linksys SRX, which delivered the best overall combination of range and speed. Its performance was similar to that of Belkin's less expensive Wireless Pre-N Router, which we originally tested back in January (see)—not surprising since both are based on the same Airgo True MIMO chip set, which sends multiple unique data streams over a single channel.

Unlike the other routers in our test, these Airgo-based routers can switch to whatever channel has the least interference, giving them great flexibility in environments that are subject to interference from neighboring networks, cordless phones, microwaves, or any other 2.4-GHz radios. ▶

The D-Link Super G with MIMO relies on a new Atheros chip set that combines D-Link's Turbo beam-forming and compression with two internal and two external antennas in the router. Though the Super G was speedy, it could not match the range of the two Airgo-based routers.

The Netgear RangeMax uses Atheros's non-MIMO Super G chip and Video54's Beam-Flex smart-antenna technology, which works with seven antennas on the circuit board (there's no external antenna) and optimizes on the fly in response to changes in the environment by using different combinations of antennas.

The Netgear's range was on a par with that of the Linksys, but its speed fell short of the latter—likely because the Netgear must use channel 6 in a mixed-mode environment.

MIMO VS. MIMO

A CAUTION about jargon: Pre-N (on some product labels) refers to the coming superfast IEEE 802.11n standard (products meeting this spec aren't expected until late 2006). Pre-N products use MIMO (multiple-in, multiple-out) antenna technology, supposedly.

But don't make a buying decision based on these labels. MIMO isn't an industry standard or a trademark, and companies use it to mean different things. Also, the technology in various Pre-N products is proprietary: You won't be able to upgrade them to the final Wi-Fi–certified 802.11n standard, and they won't be interoperable with certified N products in high-performance mode.

Still, these issues shouldn't keep you from buying MIMO products. "What [consumers] should be concerned about is performance and backward compatibility," observes Kurt Scherf, vice president and principal analyst with Parks Associates.

Any of these routers will improve coverage, but the Linksys (or the cheaper Belkin) would get our nod for its winning range-speed combination. Don't bother buying the matching adapters unless you routinely transfer large files within your network (the extra bandwidth won't impact Internet speeds).

And don't worry too much about issues of future compatibility with 802.11n products: Two years is too long to wait to cover those dead spots.

D-LINK'S SUPER G with MIMO router has two internal and two external antennas.

HOME NETWORKS

NEW TECHNOLOGIES VIE TO CARRY VIDEO

THE NEW MIMO ROUTERS may do a great job of increasing the range of a Wi-Fi network, but they won't necessarily solve the next big challenge for home networking: streaming high-definition video.

For that job, you need both adequate range and high throughput (at least 20 megabits per second for HD video)—a combination that may require a network built on wires that already exist in your house (namely, power lines or coaxial cables).

Products based on the HomePlug 1.0 standard for transmitting data over power lines have been around for three years or so and performed at least as well as 802.11b Wi-Fi gear in our tests (see find.pcworld.com/46760). But HomePlug 1.0 seems to have lost the network wars to Wi-Fi.

HomePlug advocates believe the technology's next generation may do better, however. Called HomePlug AV, it will theoretically provide a throughput of 200 mbps, which translates into real-world speeds of 70 to 120 mbps, says Andy Melder, senior vice president of HomePlug chip maker Intellon. The HomePlug AV spec should be ratified in the first quarter of this year, with products expected in early 2006. Principal backers, aside from Intellon, include Comcast, EarthLink, RadioShack, and Sharp.

Another camp argues that the best wire for moving video around your house is the one that already does it: the coaxial cable used by cable TV. The Multimedia over Coax Alliance, whose members include Cisco Systems, Comcast, EchoStar (owner of Dish Network), Panasonic, RadioShack, and Toshiba, expects to complete a spec by midyear, with products due by fall, says MoCA president Ladd Wardani. Theoretical maximum throughput will be 270 mbps; actual throughput, about 100 to 135 mbps.

Both power-line and coaxial networks would be immune to the cordless phone or microwave interference that can cripple Wi-Fi. But devices on the same circuit—a vacuum cleaner or a halogen lamp, for example—can interfere. HomePlug backers say they've found workarounds.

Coaxial networks are the least susceptible to interference, Wardani says, because the wires involved are available only for TV.

Intellon's Melder says that no single network standard is likely to emerge victorious from this competition. "The network of the future in the home is going to be a hybrid network," he says, with one or two systems for video and another for data.

–Edward N. Albro

PHOTOGRAPH: MARC SIMON; ILLUSTRATION: RANDY LYHUS

FINANCIAL SOFTWARE

Intuit Cripples Older Quicken Versions

USERS BEMOAN FORCED UPGRADES AND DIMINISHED FUNCTIONALITY.

PEOPLE WHO RELY on older versions of Quicken to download their financial data from banks and brokerages must upgrade to Quicken 2005 or lose this time-saving feature, says the publisher of the popular personal finance package.

In letters and e-mail messages sent to its customers in late January, Intuit said it was ending online services and tech support for Quicken 2001 and 2002 as of April 19 "to focus resources on enhancing our products and providing support for more current versions, which are used by the vast majority of Quicken customers." Intuit estimates that less than 2 percent of Quicken's over 15 million users still run the 2001–2002 versions. But some users are complaining bitterly about having to upgrade just to maintain the functionality they now have.

UPSET OVER UPGRADE

"I HAVE 13 YEARS' worth of data in Quicken, and now they are telling me, 'You have to upgrade to a new version that has limitations you don't like and a user interface you don't like, or move to something that isn't as good,'" says Vic Roberts, a Burnt Hills, New York, lighting technology consultant.

He is unhappy that Quicken 2005 permits users to import transaction data, such as bank statements, only if their finan-

VIC ROBERTS, lighting technology consultant, has dropped Quicken rather than upgrade to a version without the online features he needs.

cial institutions offer support for Quicken's WebConnect or DirectConnect features, which use the .ofx format. Quicken 2005 has dropped most of the product's long-standing ability to import transaction data in the .qif file format (the program can still import credit card data, but next year's version will eliminate that feature, as well). Banks must pay Intuit to be certified for .ofx downloads into Quicken; Intuit says that almost 2300 financial institutions, including most major banks and brokerages, support .ofx.

Roberts says that he would have been glad to pay Intuit a monthly fee to help maintain the servers that the company uses to support its online services. He has now switched to Moneydance (find.pcworld.com/46756) personal finance

shareware ($30). Prices for Quicken 2005 range from $30 to $90, depending on version.

MONEY'S MOVE

INTUIT IS NOT ALONE in cutting back online services for older versions of its products: The 2005 edition of Quicken's principal competitor, Microsoft Money, will support online services for just two years, after which customers must upgrade to download financial transaction data. Quicken's changes affect far more people, however—over 70 percent of people who run personal finance software use the Intuit product, according to research firm NPD Group.

Intuit spokesperson Chris Repetto says the company's decision to end .qif support was unrelated to its decision to end online services for the

2001–2002 versions of Quicken. He says the .qif format was abandoned because it was old technology that required a lot of costly customer support by both banks and Intuit, and because DirectConnect and WebConnect (which import data with one button instead of in a multistep process with a greater chance of error) provide a superior user experience.

Susan Feinberg, a Quicken user who analyzes wholesale banking for the research firm TowerGroup, disagrees. She says both actions appear to be part of an effort by Intuit "to control its own expenses and to get customers to upgrade."

Feinberg questions Intuit's assertion that banks were happy to stop supporting .qif because it produced a lot of tech support calls: "There are issues with .qif, but it has been around longer, so the banks know how to deal with them. I suspect those banks have far more issues with the online functionality [to support .ofx]."

Despite Intuit's contention that .qif was inferior, Feinberg never had a problem using it to import data—and in fact she had switched back to it after trying WebConnect.

But Repetto maintains that the people who are complaining in forums and newsgroups about either the end of support for Quicken 2001–2002 or the end of .qif import capability are a small minority. "At the end of the day, we are solving problems for millions and not a couple of people in a chat room," he says.

—*Yardena Arar*

PHOTOGRAPH: JOHN ABBOTT

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FileMaker Pro 7

DISPLAY TECHNOLOGY

OLED: New Star of the Small Screen

A RAFT OF SHARP, BRIGHT, AND POWER-THRIFTY DISPLAYS FOR NEW SMALL DEVICES ARRIVE.

IF YOU'RE FED up with fuzzy, low-resolution screens on your cell phone, digital camera, or portable music player, get ready for some relief. The first generation of handheld consumer electronics devices that use an innovative new display technology are on store shelves, with more on the way.

The main benefit of new Organic Light-Emitting Diode (OLED) screens is the bright, clear images they produce. OLED screens refresh faster, so they're better at displaying video. And the best active-matrix models can display nearly four times as many colors as equivalent-size LCDs can reproduce.

"The benefits of OLED are obvious," says Lisa O'Malley, senior brand manager for

CRISP VIDEO is the norm with Ovideon's $600 Aviah.

portable devices at Creative, which will use an OLED display in its upcoming Zen Micro Photo. "When people see the difference in the contrast, the bright color, and the phenomenal viewing angle, they are blown away by it."

Unlike LCDs, OLEDs emit their own light in the form of electroluminescence. As a result, OLED displays appear brighter and sharper than LCDs, even when viewed at an angle. And as a side benefit of ditching the LCD backlight, OLEDs are battery thrifty.

"Power consumption is a critical element in phones," says Muzib Khan of Samsung. "Phones will be multimedia devices, and when you use

CREATIVE'S NEW Zen Micro Photo media player shows off striking color images.

OLED, you can come down on the battery size, or keep the battery and get more performance."

Samsung already uses monochrome OLED displays for the small outer screen on its E715 and P735 cell phones. It expects to begin selling new phones with full-color OLEDs by this summer.

But OLEDs won't supplant LCDs anytime soon. They're difficult to make, increasing the cost of any device that uses an OLED screen. The majority of the 264,000 active-matrix color OLED displays that will be manufactured this year will be installed in high-end handheld consumer electronics devices such as cameras and mobile phones.

MAINSTREAM OLEDs

BUT BY 2010, display technology analyst Paul Semenza of ISuppli forecasts, factories will be churning out 289 million active-matrix OLED displays annually. He estimates about 88 percent of those will end up in mobile phones.

OLED displays will crop up in several other places, too: In certain high-end 2005-model-year cars (such as Aston Martin's DB9), the dashboard offers an active-matrix color OLED information display. A few Pioneer car stereos

SAMSUNG'S P735 has an OLED clock.

are available that already use monochrome OLED displays.
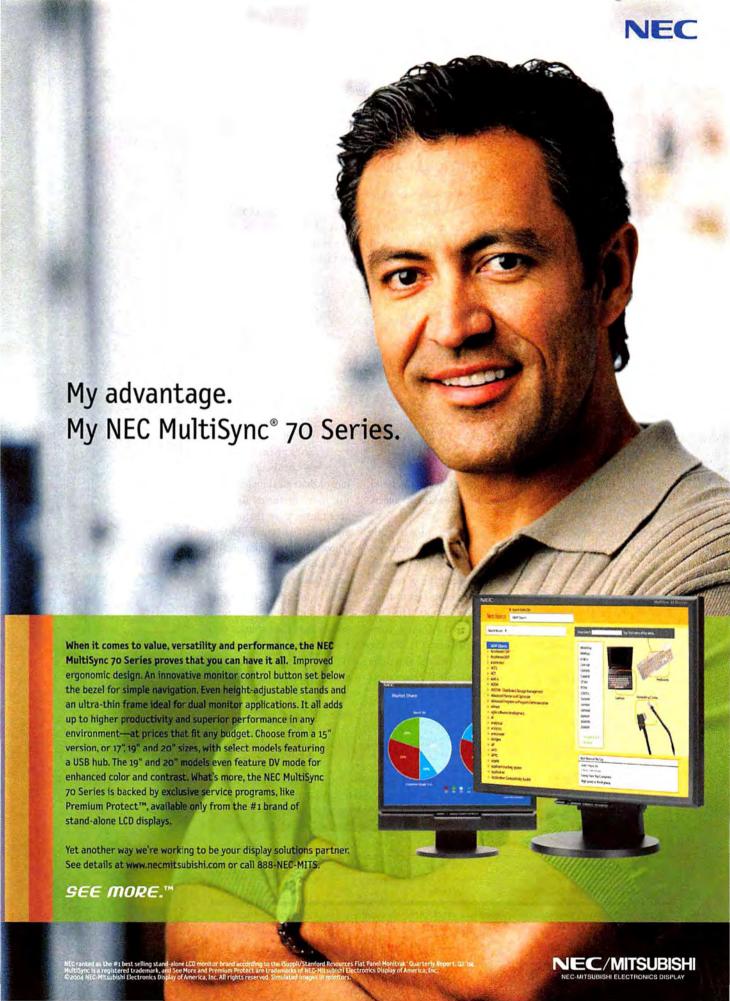
And OLED televisions are coming, says Jim Sandufski, Samsung's vice president of marketing for visual displays; but don't start salivating yet. Sandufski says that Samsung, which showed off a prototype 21-inch display in January at the annual Consumer Electronics Show in Las Vegas, is several years away from mass-producing OLED TVs.

—*Melissa J. Perenson*

OLED MINI MP3 players, like MobiBlu's DAH-1400, look sharp.

PHOTOGRAPHS: MARC SIMON

PORTABLES

New Batteries: Twice the Life

NEW TECHNOLOGY LEAVES TRADITIONAL ALKALINES IN THE DUST.

MOVE OVER, alkalines: In *PC World* tests, new Panasonic Oxyride disposable batteries delivered more than twice the performance of high-end alkalines for the same price.

That's welcome news given the proliferation of high-drain battery-powered devices these days, such as digital cameras, MP3 players, and portable game consoles. AA and AAA rechargeables are still the most cost-effective way to power many such devices, but lots of people use disposables anyway, perhaps because they forget to charge the batteries they own or because they never buy rechargeables in the first place.

POWER WELL

USING A CANON PowerShot A400 digital camera, we compared the new Oxyride AAs ($4 for four) with Duracell Ultra alkalines (also $4 for four) and with 1800-mAh Rayovac nickel metal hydride recharge-

ables (about $12 per four without charger). Panasonic says that its new cells last up to twice as long as alkalines, but in our tests the Oxyrides ex-

PANASONIC'S Oxyride batteries deliver a long-lived power punch.

ceeded those claims and nearly matched our NiMH rechargeables. After loading the camera with each type of battery, we took an even mix of flash and nonflash shots. The Oxyrides powered 290 shots, compared with just 131 for the Duracells. And the Oxyrides completed only 10 fewer shots than the NiMH cells did.

Panasonic says it uses a patented process and a combination of new and improved electrolytes to manufacture the new AA and AAA cells. After eight years in development, they finally reached store shelves in Japan last year.

UPSHOT

OXYRIDES FACE some competition in the disposable arena from long-lived AA and AAA lithium disposable batteries, which makers say last about five times longer than alkaline batteries. But these batteries also cost about three times as much as alkalines. Given their relatively low price and their sizable power boost, Oxyrides should hold greater appeal for many battery buyers. There's one slight catch: At least for now, you can get the batteries only from Panasonic; the company has no plans at present to license its technology to others.

—*Rex Farrance*

TEST REPORT

BETTER FUEL FOR POWER-HUNGRY DEVICES

IN *PC WORLD* TESTS, Panasonic's new Oxyride disposable batteries proved they can keep your favorite portables going significantly longer than top-of-the-line alkaline batteries.

BATTERY	Price [1]	Flash shots	Nonflash shots
Duracell Ultra Alkaline (disposable)	$4 for four	66	65
Panasonic Oxyride ZR6XT (disposable)	$4 for four	145	145
Rayovac NiMH 1800mAh (rechargeable)	$12 for four [2]	150	150

TEST Center All batteries were tested on a Canon A400 digital camera. **FOOTNOTES:** [1] Approximate retail price. [2] Battery charger not included.

PHOTOGRAPH: MARC SIMON

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PLUGGED IN

STEVE FOX

Apps to Go on Keychain Storage

PLUS: VIDEO SEARCH ENGINES; PORTABLE VOIP FOR SMALL BUSINESS.

TAKE YOUR SOFTWARE ANYWHERE

The Buzz: I love my USB keychain drive—I plug it in, and my data tags along wherever I go. Of course, if the host PC doesn't have the apps I need, I'm hosed. But now M-Systems and SanDisk have a solution. Dubbed U3, this hardware and software spec allows users to install common apps on a flash device and then use them anywhere. U3-compatible apps are self-launching, don't leave a telltale trace, and maintain users' personalized settings. Six partners—including ICQ and Mozilla—had jumped aboard the U3 bandwagon at press time, with more on the way. Fully loaded flash drives and downloadable U3 apps from a U3 Web portal should show up around midyear.

Bottom Line: Could flash keychains replace the ubiquitous AOL CD/coaster? Waste management specialists are bracing for the onslaught.

IN SEARCH OF VIDEO SEARCH

The Buzz: If a picture is worth a thousand words, imagine what video—running at 30 frames a second—must be worth. Plenty, evidently, which is why Google, Yahoo, and others are now offering video search capabilities. Google's modest offering (video.google.com) picks up feeds and closed-captioning from selected TV stations. Yahoo casts a wider net, supplementing TV broadcasts with videos culled from Net crawls; and feisty Blinkx (blinkx.tv) offers the basics, plus sophisticated contextual searches.

Bottom Line: What a great idea. Now if only there were video content worth watching.

VOIP THAT FOLLOWS YOU AROUND

The Buzz: VoIP saves bucks, but the funky setup and complex infrastructure requirements spook some potential customers. A new service/software combo from Teleo (teleo.com) could prove less scary. Teleo integrates with your PC (using either a regular phone or a headset) and can seamlessly route incoming calls between a cell phone, a standard telephone, and a computer, with no additional equipment required. It even works when you're traveling. And more impressive still, Teleo's $5-per-month service can find its way past pesky firewalls at hotels, Wi-Fi hotspots, and elsewhere.
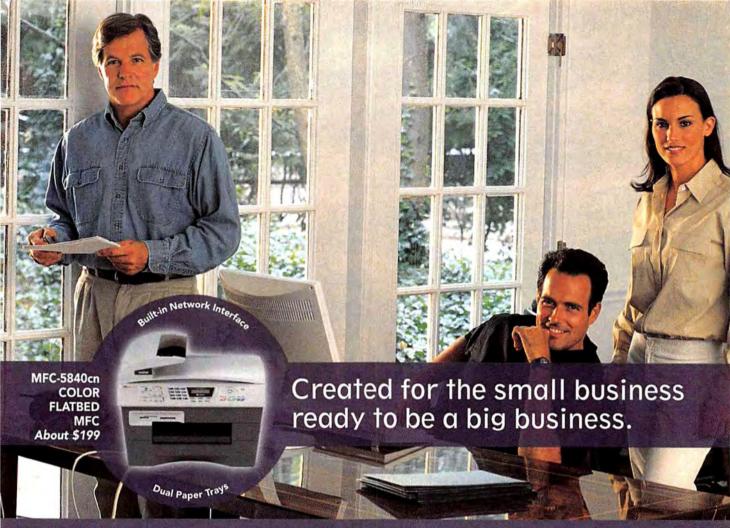
Bottom Line: Teleo just might do for small-business VoIP service what the crowd-pleasing Skype did for consumers. ■

Contact PC World *Contributing Editor Steve Fox at steve_fox@pcworld.com. Visit* find.pcworld.com/31643 *to read additional* Plugged In *columns.*

FUTURE TECH

Keyboards in the Air

IMAGINE BEING ABLE TO project a full-size, usable keyboard from your cell phone onto any flat surface. A chip set from Canesta will make that possible by letting electronic devices perceive their surroundings in 3D so they can capture data like hand gestures or typing on a virtual keyboard. NEC has shown tablet PC prototypes incorporating the technology, and several cell phone makers are reportedly on the case.

ILLUSTRATIONS: GORDON STUDER

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LETTERS

FIREFOX KINDLES ENTHUSIASM **NO JUSTICE IN P-TO-P QUACKERY** **ERROR MESSAGES FLUNK ENGLISH**

CHEERS (MOSTLY) FOR BROWSER ALTERNATIVES

I THOUGHT your article "The New Web Challengers" [February] was very appropriate. Firefox is a real pleasure to use, and it illustrates just how simple and efficient well-designed software can be.

Joe Nowicki, via the Internet

I HAVE USED several browsers and "Yeah, okay" was the strongest response I could muster. But Firefox—oh WOW. When I installed Mozilla's Firefox, my PC sat up and took notice. It shook off its own dust, and I'd swear I hear a snap when I click the "go" button. Thanks for the article, fellows, I gotta send Mozilla an e-mail now.

Jim Potter, via the Internet

I PLAYED browser roulette for years; then I loaded Firefox. What a difference in the download time! I am a pilot and download weather radar and map forecasts. Until Firefox, the map downloads had not been instantaneous. I'd never realized that the browser and not the connection had been slowing down my Web access.

Joseph Fischetti, Southold, New York

TELL US WHAT YOU THINK

VISIT www.pcworld.com/pcwinput and rate this issue—you could win a $500 gift certificate from Amazon.com. You'll need to provide the subscriber number from your mailing label to take this survey online. The site explains the official rules and also describes how you can participate in the drawing if you're not a *PC World* subscriber.

FIREFOX IS no doubt faster than Internet Explorer—but that same speed can also quickly whisk kids off to Web sites where they do not belong. One of the features that contributes to Internet Explorer's supposedly bloated size is Internet content control, which allows parents or teachers to restrict Internet access to specific Web sites. I've heard that Firefox lacks this critical plug-in. Although nothing can substitute for direct adult supervision, having extra barriers between children and the free-flowing world of potentially inappropriate Internet information is a necessity.

John Oathout, Technology Coordinator
Kendall-Whittier Elementary School
Tulsa

GIVEN THE COVERAGE of Firefox in your February issue, I was a little surprised that the sidebar "RSS Made Simpler" did not mention this state-of-the-art browser. When you use Firefox, if you arrive at a site that offers an RSS feed, an RSS button will appear in your status bar. With two clicks, you can add the site's RSS feed to your bookmarks in Firefox. That's what I call simple.

Jennifer Turner, via the Internet

THANK YOU FOR the tip on Firefox! The best browser by far! But watch out: The Gates machine will buy it out and ruin it.

Dave Grant, via the Internet

VIGILANTES FOR A SONG

EXCELLENT ARTICLE and commendable sleuthing in "New Ad Attacks" [*News and Trends,* February] and the online version "Risk Your PC's Health for a Song?" [at find.pcworld.com/46910].

I spoke on consumer peer-to-peer file-sharing risks at the December United States Federal Trade Commission conference. Harmful files—from empty files to those with ads, adware, spyware, and viruses—are a significant concern. You nicely cover many of these risks in your article.

However, you gave Loudeye a free pass for this harmful activity, which is inexcusable. I wrote an article on such vigilante justice that is on file with the FTC. [Please see find.pcworld.com/46912.]

Vigilante justice is never acceptable. Such activity is unethical and illegal. It is not just annoying. It causes harm to innocent users. The vigilante party is guilty of entrapment, fraud, unauthorized use of private property, and restraint of trade.

It is especially troubling that the vigilantist in this case is intentionally spreading harmful files and is a public U.S. company. Even the RIAA (the Recording Industry Association of America) in its interdiction program had the good sense not to publicly support such damage to a user's PC.

Marc Freedman, CEO, RazorPop
Dallas

STUPID ERROR MESSAGES

WHAT A dead-on right article regarding "Stupid PC Error Messages: Fatal!" in February's *Full Disclosure.* Like Stephen Manes, I remember very well wondering whether to "save the file" in TurboTax. I firmly believe that all dialog boxes should have to undergo some sort of quality control process performed by someone who talks something other than "nerd- ▶

ish." You can be an expert in computers and still not understand what some of the dialog boxes are intended to convey.

L. Steve Varnum, via the Internet

SAFER ONLINE TRANSACTIONS

I LIKED YOUR article on PayPal ["The Problem With PayPal," *Consumer Watch*, February] and would like to add a suggestion for users: Besides not keeping large sums in your PayPal account, consider setting up a bank account to use exclusively to transfer money into and out of the PayPal account, and keep only a nominal amount in it when you're not conducting transactions. This offers a layer of protection against would-be hackers.

Ana Madani, via the Internet

LINUX TIPS

THANK YOU FOR beginning, in the February issue, a *Linux Tips* column in *Here's How*. It is good to see a major publication acknowledging a viable alternative to the Microsoft-centered technology world. Though the average person has to learn some new ways of doing things and some new terms, it is worth it when you consider not having to deal with security issues, viruses, spyware, and companies that think you are a captive market for their products.

Leo Bass, Marshall, Minnesota

TOP 15 DESKTOPS

REGARDING February's *Top 15 Desktops*: And everyone says Apple computers are expensive! Your lineup demonstrates that prices are pretty darn high on the PC side of things, too. A quick comparison of components on various machines indicates parity between the two platforms.

B.L. Pierce, via the Internet

SATELLITE RADIO

I HAD BEEN wondering when *PC World* would do an in-depth review of satellite radio ["Radio, Reinvented," *Next Gear*, February]. I have subscribed to the XM service since summer 2002. The demise of my car's factory radio was the only excuse I needed. I have been a proud member of the XM nation since and have no regrets.

Though I live in a rural area, dead spots are few and short-lived. Sound is CD quality, with no noise or static. There is programming for any taste, mood, or occasion, and coverage of virtually every genre of music. In my opinion, few people who try satellite radio will be disappointed.

Billy Lewallen, via the Internet

'PROVIDING WHAT CONSUMERS NEED TO KNOW'

SINCE MY EARLY DAYS as a PC novice, I have earned several networking and IT security certifications. Throughout my learning process, *PC World* has continued to be informative, fresh, and relevant.

> "There is programming [on satellite radio] for any taste, mood, or occasion, and coverage of virtually every genre of music."

I'm particularly grateful for the article "Biography of a Worm" [November]. It is very insightful and well written. One does not have to be a computer scientist to read, appreciate, and understand the message. As my employer's chief information security officer, I plan to share this article with our staff as part of our continuing computer security awareness program.

Ty Cooper, Chief Information Security Officer
Information Resources Management Division
U.S. Office of Government Ethics
Washington, D.C.

PC World welcomes letters to the editor. We reserve the right to edit for length and clarity. Send e-mail to letters@pcworld.com. ∎

CORRECTIONS

THE CAMERA pictured in February's *Top 10 Digital Cameras* should have been identified as the Sony DSC-V3.

January's *Plugged In* should have said that the zooming capability of the Map24.com Web site is vector-based.

PC World regrets the errors.

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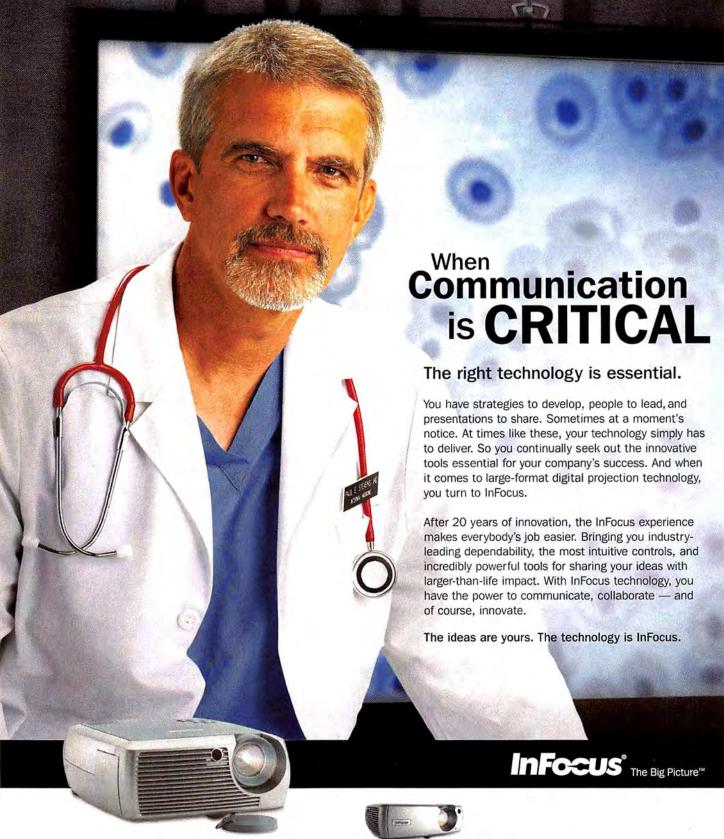
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WHEN SEEMINGLY GOOD TOOLS DO BAD THINGS　　**PRIVACY WATCH: WI-FI SECURITY MADE EASY**　　**ON YOUR SIDE: DELL SUPPORT CONFUSION**

Watch Out for Spies With Friendly Faces

Otherwise benign hardware and software can be used to track your behavior.

ILLUSTRATION: BILL DUKE

AS TECH-SAVVY people, we know by now that we have to worry about technology being used to invade our privacy. But we tend to focus on the stuff that's deliberately snooping on us: spyware, keyloggers, Trojan horses, and other software and hardware designed with malicious intent. An even bigger risk, though, can come from the tools we usually trust—helpful gadgets and programs that weren't built to spy on us but can be used that way.

Most new cell phones can allow police to find you in an accident or permit the local mall to send you phone spam. Desk-top search tools can help you locate a long-lost spreadsheet or provide one-stop shopping for hackers looking for your Web passwords. Error messages can help developers improve their software or send strangers personal data from your PC.

You don't have to be paranoid, but do be careful. "It's a balancing act," says Eric Gertler, privacy expert and author of *Prying Eyes*, a book on protecting your privacy (Random House, 2004). "Each individual needs to weigh the advantage of the tool or technology against the information [it's] providing." Fortunately, in some cases it takes only a few clicks to prevent your conveniences from turning creepy.

The most common digital tattletales are cell phones. Imagine this scenario: It's Saturday morning, and you're out running errands. As you pass a nearby megastore, your phone bleats. It's the megastore calling. You haven't been in recently, so it's offering a discount coupon you can use right now, while you're in the area.

GPS ABUSE?

MAYBE WE DON'T have to worry about retail giants pelting us with ads just yet. But such a scenario is possible with the E911 chip, a potentially life-saving GPS technology that's built into most current cell phones to help emergency services locate wireless callers more efficiently.

Wireless carriers are just starting to deploy E911 service for consumers, and companies and lawmakers are somewhat vague about how the technology will be regulated, hazily referring to opt-out opportunities and consumer consent. But the potential for privacy abuse inherent in any technology that reports users' physical locations at any given time is frightening.

Several services, including AccuTracking (www.accutracking.com) and Ulocate (www.ulocate.com) allow individuals to track movements of certain GPS-enabled cell phones. Once someone with access to a particular cell phone loads the companies' software on it, that phone's movements can be tracked on the Web. Some privacy safeguards will be in place, and not just anybody can sign up to find out where you go. But if you have a boss or a spouse who shares your wireless phone account, that person may be able to. ▶

The best defense is to look for a way to turn off your phone's GPS for everything but emergency uses. If you can't find the right combination of keys to accomplish this, ask your service provider for help.

The next time you rent a car, you might want to check for stowaways. A few years ago, a Connecticut rental car company fined a customer $450 when the GPS device in his car indicated that he had been speeding. And there have been other reported instances in which companies have monitored the locations and driving practices of their clients. A British insurance company, for instance, has even experimented with installing the devices in its clients' own cars—the idea being that the company could offer lower premiums for proven safe drivers.

The practice of installing GPS devices in rental cars is quite common, and it can be a great service for consumers who become lost or have an accident. But what if you don't know that the device is in the car and that you're being monitored?

When it comes to location tracking services, the legal parameters of privacy protection are fuzzy, but you can protect yourself by understanding the terms of service before you enter into a contract with a company that might use such technology. Whether you're buying a wireless service plan or renting a car, it's important to understand the implications of the contract before you sign on. Find out whether you can opt out or disable track-

> You don't have to be paranoid, but you should try to be careful.

ing, and ask what information will be collected and how it may be used. If you're not comfortable with the answer, let the company know and move on.

Speaking of moving on, if you spend any time behind the wheel, you might be using one of those automatic toll collectors that let you breeze through the allotted lane, blithely bypassing us schlubs as we frantically grope under the seats for loose change. Such systems use an RFID chip, usually attached to the vehicle's wind- shield, that responds to a radio signal as you pass through the toll plaza. The data that the chip broadcasts is then matched with your account, and the appropriate amount is debited electronically.

It's all very convenient and efficient, but remember that every time you pass the reader, it creates a record of your whereabouts. That might not seem too troubling to folks who are just trying to get to work on time, but consider the potential for misuse by law enforcement officials.

Chris Hoofnagle, associate director of EPIC (the Electronic Privacy Information Center), explains, "The general problem is that these [tracking] products were developed without privacy in mind, and as a result they create digital trails. Any service that tracks who and where you are becomes a honeypot for anyone who's interested in tracking you down." The information attracts hackers, and without legal protections it also becomes a rich source of private data for law enforcement and other government officials.

Even if you rarely venture beyond your home office, your personal information could be at risk, depending on who else has access to your computer. Goo- ►

Easy VPNs Secure Wi-Fi at Home and on the Road

MILLIONS OF PC users today are living dangerously—and I'm not talking about using their laptops in the tub. The risky behavior I have in mind involves using an unsecured Wi-Fi network.

Lots of people forgo security because they think it's too complicated or they fear performance problems. But now you can get the strong security that enterprises use, without encountering a lot of hassles.

Using an unsecured network at home or at a public hotspot is unquestionably dangerous: It's not hard for someone to grab your passwords or other data under those circumstances.

Many business travelers and remote workers use a virtual private network to connect to their offices. A VPN shields the contents of any Wi-Fi connection by encrypting the communication and routing it through a trusted network. Traditionally, setting up a VPN server on a home PC has been about as easy for most people as building a nuclear reactor in the basement. But new VPN tools now make this robust technology available to the masses.

If you frequently use public hotspots, VPN service from Mega-Proxy (www.megaproxy.com) is a good security choice. It costs $10 for three months (a free version with restrictions is also available). MegaProxy's one weakness is that it protects only your Web browsing traffic and not other forms of communication, such as instant messages or POP3 e-mail exchanges.

Home users can transform certain models of routers into powerhouse VPN servers by upgrading the router's firmware. Sveasoft's Alchemy software (find.pcworld.com/46582), for example, replaces the original firmware in several models of Linksys home or small-office Wi-Fi routers. The company charges $20 for a year.

Updating firmware is always slightly risky, because a botched upgrade can turn your gateway into a doorstop; and installing Sveasoft's firmware will void the warranty on your gateway. But Alchemy can turn a plain-vanilla Linksys WRT-54G gateway, for example, into a truly robust security device.

Whatever else you do, take steps to secure your network. Save your risky behavior for something more fun, like skydiving.

—Andrew Brandt

ILLUSTRATION: MARK MATCHO

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ON YOUR SIDE

Dell's Confusing Tech Support

MY DELL 2400 desktop PC came with a one-year hardware warranty and free lifetime technical support. Two months after the hardware warranty expired, my PC wouldn't turn on. I called tech support. After I spent almost an hour taking my PC apart, the tech decided that I needed a new motherboard and transferred me to sales. The Dell sales rep, however, told me that the problem was with the power supply. So I ordered a new $43 power supply, only to receive a call from tech support 3 hours later insisting that I needed a new motherboard. How can I get Dell to figure out what's wrong?

Tammy McNeal, Encinitas, California

On Your Side responds: I asked Dell to investigate the problem. McNeal, however, gave up on Dell and had her PC problem fixed by CompUSA for $130 instead. The culprit was indeed the power supply. Our advice: A faulty power supply can often make the motherboard appear dead, so be sure to check yours first. Dell did issue McNeal a full refund for the $43 power supply.

–Stephanie Layton

gle's Desktop Search application, released last year, provoked a flood of warnings to users about possible privacy breaches (for more about those GDS concerns, go to find.pcworld.com/46310).

And you have good reason to be concerned, particularly if there's any chance that your computer could be used—even for a short time—by someone other than you. GDS creates an index of every file, Web site, e-mail, and IM session you have ever seen. The index includes secure Web sites, too, which means that, for anyone on your machine, getting hold of your bank account numbers or other sensitive information is a simple matter of typing the right search phrase.

Even if you don't share your computer with anyone else, the GDS index provides hackers a convenient place to find sensitive documents. The hacker no longer has to install a keylogger to see what you do on the Internet because GDS maintains a thorough history of your Web activity.

Also, GDS keeps a copy of everything—even files or e-mail messages you've deleted (though the tool does let you delete the cached version of the deleted item).

My advice? GDS can be a handy tool, but don't even consider installing it if your computer could be used by others (unless you're willing to accept the risk that someone may access your personal data). If you do install it (find it at desktop.google.com), get familiar with the program's settings and preferences; you can, for example, set it so that it won't index secure Web sites or IM chat sessions, and you can customize it in other ways to make it more secure.

Sometimes you shouldn't even trust people who say they want to help you (especially if the helper's track record on security falls somewhere between abysmal and tragic). I'm talking, of course, about Microsoft's earnest invitations to "send an error report" whenever you hit a brick wall in Windows XP.

The Windows Error Report is Microsoft's way of collecting details on users' problems and conflicts so that it—and a long list of other participating software vendors—can offer fixes. Error report details are encrypted and generally anonymous, but in some cases identifying information may be included; for example, a report could contain part of a document with your name or with confidential information you recently sent to a Web site.

If you have doubts, don't send the report. Instead, check the company's Web site for fixes, or reboot. Microsoft has enough problems of its own to deal with. ∎

Anne Kandra is a contributing editor, Andrew Brandt is a senior associate editor, and Stephanie Layton is an editorial assistant for PC World. You can send e-mail to them at consumerwatch@pcworld.com. To read previously published Consumer Watch, Privacy Watch, or On Your Side columns, visit find. pcworld.com/31703, find.pcworld.com/31706, or find.pcworld.com/31709, respectively.
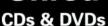
Celebrate the first plasma TV with a built-in High-Definition Digital Video Recorder.

WITH THE LG INTEGRATED PLASMA HDTV, LIFE'S MORE EASILY PAUSED.

Or played - stopped - replayed - saved! LG once again re-writes the rules with the world's first plasma HDTV to feature a built-in High-Definition HDD Digital Video Recorder. Now you'll never miss out on a moment again.

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Built-in Program Guide

Life's Good

LG

Four Fixes for the Most Annoying E-Mail

Existing tools not protecting your inbox? Time to quit messing around.

HOME OFFICE looks different, right? Don't worry, it's still me. You probably noticed that I spend most of my time kvetching about computers. So I'm now writing about PC annoyances, those thorny problems that waste your time, hose your PC, and make you want to switch to a Mac (heaven forbid).

In this column, I'm tackling tricky unwanted e-mail, which has turned my day into a regular battle with bogus, virus-infested messages from unknown dirtballs and perky notes from legit companies who think I want their junk.

I DIDN'T SEND THAT VIRUS!

The Annoyance: I get e-mail messages with viruses and worms attached. What's weird is, they're from me. Friends—and even strangers—are complaining about getting them from me, too.

The Fix: Relax—you're not to blame. (I feel a little like Dr. Phil.) You didn't send mail to yourself, and that's what makes the thing so confusing. A buddy of yours—or even someone who knows your buddy—is infected with a worm, or maybe a Trojan horse.

A worm attempts to send an infected message to everyone in the address book of some e-mail programs, primarily Microsoft Outlook and Outlook Express. Some worms also look in a browser's temporary cache for addresses from Web-based e-mail services. But other worms (and virus variants) take it a step further. Say you're listed in the address book of another person's infected PC. The worm takes your address from there (or from the cache) and "spoofs" the header of the infected message so it appears to be coming from you. That's how you get e-mail that seems to be coming from yourself.

I gave up trying to decipher the header to track down and warn the real victim. Though I don't have a cure, here are three steps for managing the problem.

• Protect your inbox: The first step is to create a filter that sends such e-mail directly to the trash, so you can get back to work. The filter doesn't need to be complicated—it just has to look for any e-mail that shows your address in the From field and carries an attachment. For instructions on creating filters in common e-mail programs, be sure to see my newsletters at find.pcworld.com/46374 and find.pcworld.com/46646.

• Stop spamming yourself and your friends: Use ZoneAlarm Pro's Outbound MailSafe feature. It blocks outgoing mail if any of three viruslike conditions are met: Too many messages are sent at once, a message has too many recipients, or the sender of the e-mail isn't you. Grab a 15-day trial at find.pcworld.com/46308.

• Prevent future problems for free: You know that I use an antivirus program to prevent getting infected. The one I like, Grisoft's AVG, is free. Get it at find.pcworld.com/46224. Now let others, especially your novice friends, know how critical it is that they use antivirus software.

ZAP LEGIT BUT PESKY E-MAIL

The Annoyance: I get e-mail from a handful of companies because I once ordered from them. Even though I've asked to be removed from their lists, I still get e-mail. Isn't there a way to make them stop?

The Fix: Instead of hassling with each company's opt-out mechanism, I blast it with my ISP's blacklist.

On EarthLink's site, in my account's e-mail preferences, is the magic Blocked Sender List. This blacklist blocks individuals or even an entire domain, like the fictitious "@vitaminsrus.com". I have EarthLink e-mail me a report of mail it has blocked in the past week. Most ISPs and Web-mail services offer a similar blacklist feature—for example, MSN Hotmail calls it Block Senders and AOL has Block Unwanted Mail. Be careful, though, because some ISPs limit the number of entries (Yahoo Mail, for instance, allows 100 addresses in its Blocked Addresses blacklist). So don't waste it by adding run-of-the-mill spam, such as Viagra and Rolex come-ons. By the way, this trick also works for e-mail lists that you've subscribed to and no longer want, or for people you're tired of hearing from. ■

Contributing Editor Steve Bass is the author of PC Annoyances, *published by O'Reilly (find.pcworld.com/43818).*

ILLUSTRATION: ROBERT NEUBECKER
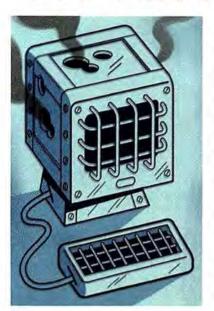
Patch Serious Leaks in Windows

Block tarnished pop-ups in Windows Media Player and fix glitches in Outlook.

AS REPORTED back in the February issue, the *PC World* staff discovered a security glitch in Windows Media Player 9 and 10 that could cause you to unwittingly download adware, spyware, and other malware instead of opening copy-protected files (see find. pcworld.com/46738).

If WMP doesn't locate a license to play copy-protected files on your PC, the program will go online to obtain usage licenses from a valid Windows Media Digital Rights Management server. That process has let some adware purveyors push spyware and adware onto users' PCs, especially those on peer-to-peer file-sharing networks like Kazaa. Crackers could employ the same mechanism to install viruses or other attack programs.

You can see a few workarounds at find. pcworld.com/46700. At press time, Microsoft said that it is updating WMP to stop adware and hack attacks. An updated version of the app should be available from Microsoft's site (find. pcworld.com/46702) now.

You might run afoul of WMP's Digital Rights Management in a different way— by changing your PC's hardware configuration. If you then attempt to play a copy-protected file, Windows' DRM system may sense, by mistake, that you're trying to pirate copies of licensed content onto another PC and refuse to play the files. The easiest fix is to change everything back. The other workaround is complex and involves deleting the licenses you paid for. So back up your licenses before you reconfigure hardware or change settings. For details on Microsoft's workarounds, hop to find.pcworld.com/46674.

PLUG MORE HOLES

MICROSOFT fixed a hole in Windows Help that could let a bad guy control your machine if you click a malicious link on a Web page or in an HTML-based e-mail. You don't have to use the Windows Help system to be attacked, either.

The vulnerability affects Windows 98 through XP Service Pack 2. However, Outlook Express 6 and Outlook 2002 and 2003 users are protected. To be safe, download the fix at find.pcworld.com/46662.

Microsoft patched another vulnerability that's almost as dangerous as the Help issue, except that XP SP2 will protect you. The hole is in the part of Windows 98 through XP SP1 that displays cursors, bitmap images, and icons. For example, an attack program could appear as an animated cursor. The instant you click, a cracker could take over your PC. You're protected from e-mail attacks if you have the versions of OE and Outlook listed above. But you're still vulnerable to a Web-based attack, so go to find.pcworld.com/46664 to grab the patch.

Finally, if you install XP SP2, Outlook 97 through 2003 may no longer prompt you when new e-mail arrives or automatically display new messages in your inbox. Plus, Outlook may freeze if you try to use the Find feature. These e-mail problems are caused by SP2's Windows Firewall. Go to find.pcworld.com/46666 for Microsoft's workaround. ∎

Stuart J. Johnston is a contributing editor for PC World. *Visit* find. pcworld.com/31580 *to see more* Bugs and Fixes *columns.*

IN BRIEF

Flaws in Eudora

QUALCOMM patched several security holes in Eudora and has released a new version. Security firm Secunia rates these holes as highly critical. All versions of Eudora (6.2.0 and earlier) are vulnerable. Head to find.pcworld.com/46920 to grab version 6.2.1.

BUGGED?

FOUND A hardware or software bug? Tell us about it via e-mail at bugs@pcworld.com.

BIG BATCH OF PATCHES FROM MICROSOFT

AS WE WENT to press, Microsoft released its monthly collection of security updates. This monster set of 12 patches fixes 16 weaknesses in Windows, Internet Explorer, Microsoft Office, and other programs. For links to the patches and security bulletins, visit find.pcworld.com/46926 (for the slew of Windows and IE updates) and head to find.pcworld.com/46924 (for the Office updates). And go to find.pcworld.com/46928 for *PC World*'s news story.

ILLUSTRATION: HARRY CAMPBELL

IBM rated #1 in tech support for desktops
and notebooks by PC Magazine readers.
PC Magazine 17th Annual Reader
Satisfaction Survey – July 14, 2004

IBM recommends Microsoft® Windows® XP Professional.

(Monitor not included)

(Monitor not included)

(Monitor not included)

intel inside

centrino™

MOBILE TECHNOLOGY

ThinkExpress:
IBM ThinkExpress PCs are priced specifically for small and medium businesses.

ThinkVantage Design:
IBM ThinkCentre® desktops offer an easy-to-service chassis design to help increase uptime. And it's made from durable steel to protect the contents of your system.

Rescue and Recovery:
Lost your data because of a software crash or virus? Recover previously saved data in minutes with our one-button solution.

Access IBM:
Get the help you need, when you need it. One button on your ThinkCentre desktop brings you a world of IBM resources and assistance.

IBM ThinkCentre A50
Ultra Small Form Factor
System Features
- Intel® Pentium® 4 Processor with HT Technology 3GHz
- Microsoft® Windows® XP Professional
- Intel® Extreme Graphics 2
- Ultra small form factor – 74% smaller than a standard IBM desktop
- 256MB DDR PC3200
- 40GB hard drive and CD-ROM
- Gigabit Ethernet Integrated
- Norton Anti-Virus with 90 days of virus definition updates
- Lotus SmartSuite Millennium License
- 1-yr limited warranty with 1-yr limited onsite service[10]

Express Price **$659** NavCode 809021U-M553

Upgrade — IBM ServicePac® service upgrade
3-year Onsite/9x5/Next Business Day Response #54P1861 $132.00

IBM ThinkCentre A51p
Tower Form Factor
System Features
- Intel® Pentium® 4 Processor 530 with HT Technology
  - Processor speed 3GHz
  - 800MHz FSB
- Microsoft® Windows® XP Professional
- Intel® Graphics Media Accelerator 9000
- 256MB DDR2 PC2-3200
- 40GB hard drive and CD-RW
- Gigabit Ethernet Integrated
- Norton Anti-Virus with 90 days of virus definition updates
- IBM Embedded Security Subsystem 2.0
- 1-yr limited warranty with 1-yr limited onsite service[10]

Express Price **$799** NavCode 842721U-M553

Upgrade — IBM ServicePac® service upgrade
3-year Onsite/9x5/4-hr Response #54P1862 $239.00

IBM ThinkCentre A50
Tower Form Factor
System Features
- Intel® Pentium® 4 Processor with HT Technology 3GHz
- Microsoft® Windows® XP Professional
- Intel® Extreme Graphics 2
- 256MB[5] DDR PC3200
- 40GB hard drive and CD-ROM
- 6 USB 2.0 Ports (2 on front)
- IBM Preferred Pro Keyboard
- Integrated Sound MAX Cadenza audio solution
- Integrated 10/100 Ethernet
- Norton AntiVirus™ with 90 days of virus definition updates
- Lotus® SmartSuite® Millennium License
- 1-yr parts limited warranty with 1-yr limited onsite service[10]

Express Price **$639** NavCode 814821U-M553

IBM ThinkCentre A50
Tower Form Factor
System Features
- Intel® Pentium® 4 Processor with HT Technology 3GHz
- Microsoft® Windows® XP Professional
- Intel® Extreme Graphics 2
- 256MB DDR PC3200
- 40GB hard drive and CD-RW
- 6 USB 2.0 Ports (2 on front)
- IBM ThinkVantage Design
- Integrated Sound MAX Cadenza audio solution
- Integrated 10/100 Ethernet
- Norton AntiVirus™ with 90 days of virus definition updates
- Lotus® SmartSuite® Millennium License
- 1-yr limited warranty with 1-yr limited onsite service[10]

Express Price **$669** NavCode 814822U-M553

IBM ThinkCentre A50
Tower Form Factor
System Features
- Intel® Pentium® 4 Processor with HT Technology 3GHz
- Microsoft® Windows® XP Professional
- 64MB nVIDIA GeForce MX 440
- 512MB DDR PC3200
- 80GB hard drive • CD-RW/DVD-ROM
- 6 USB 2.0 Ports (2 on front)
- Integrated 10/100 Ethernet
- Norton AntiVirus™ with 90 days of virus definition updates
- Lotus® SmartSuite® Millennium License
- 3-yr parts limited warranty with 3-yr limited onsite service[10]

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NEW PRODUCTS

Intel Revs Centrino Notebooks

Platform enhancements don't drastically boost performance, but we still like what we see.

NOTEBOOKS

NOTEBOOK VENDORS are launching a new crop of products to take advantage of Intel's updated Centrino wireless platform. We tested laptops from Dell, Gateway, and HP that are among the first to offer the new technology.

The boost in basic features comes from the new 915PM/GM chip set and platform (a combination previously code-named Sonoma). Upgrades include a 533-MHz frontside bus (up from 400 MHz), support for speedy DDR2 memory (as well as standard DDR), high-end audio, Intel's optional 802.11a/b/g Wi-Fi, and—for the first time in notebooks—the fast PCI Express bus.

Even though these systems utilize a faster platform than previous notebooks, we didn't

GATEWAY'S M460 (left) offers a spacious screen, while the Compaq Nc6230 travels well.

expect to see a dramatic increase in performance—and we didn't get one. This update is more about setting the stage for future improvements than

setting the world on fire with faster run times today. Happily, these systems don't carry a sizable price premium over non-Sonoma notebooks.

ROOM TO VIEW

WE TESTED A preproduction model of Dell's $2564 Inspiron 6000 and a shipping unit of Gateway's $2184 M460; both

offer 15.4-inch wide-screen displays. The Dell's was particularly impressive. Its native resolution of 1920 by 1200 pixels, powered by ATI Mobility Radeon X300 PCI Express graphics and 128MB of RAM, lets you pack more into the screen. Our test DVD appeared bright and sharp, although we saw tiny freezes in movie playback when the notebook was running on battery power. Dell is working on a fix for this problem; in the meantime, adjusting the settings from "optimal" battery life to "balanced" should help. Audio sounded clear and powerful.

The Gateway M460's screen has a resolution of 1280 by 800, driven by ATI's Mobility Radeon X600 PCI Express graphics with 128MB of RAM. DVD movie playback was smooth and clear. Audio also was good, though not as powerful as the Dell's.

Each notebook came with an 80GB hard drive, though

Compaq Nc6230

HP

Preproduction, not rated

Pricey mainstream notebook offers good features for frequent business travelers.

Street: $2199

find.pcworld.com/46754

Inspiron 6000

Dell

★★★★☆

Fully packed desktop replacement includes a great wide-screen display.

Street: $2564

find.pcworld.com/46750

M460

Gateway

★★★☆☆

Attractively priced desktop replacement system offers a handsome wide-screen display.

Street: $2184

find.pcworld.com/46752

58

TEST REPORT

SONOMA LAPTOPS FACE OFF

SYSTEMS WITH INTEL'S upgraded Centrino platform show few gains now, but the tech sets the stage for future improvements.

NOTEBOOK	Price	WorldBench 5 score (Faster)	Battery life (hours:min)
Dell Inspiron 6000	$2564	89	5:01'
Gateway M460	$2184	87	3:17
HP Compaq Nc6230	$2199	77	4:27

TEST Center **FOOTNOTE:** ¹Dell has changed battery suppliers since our tests. **CHART NOTE:** All tests designed and conducted by the PC World Test Center. All rights reserved.

the Dell had 1GB of DDR2 400 DRAM, while the Gateway had 512MB of faster, 533-MHz DDR2. The Gateway contains a slightly speedier processor, too—a 2.13-GHz Pentium M 770 versus the Dell's 2-GHz Pentium M 760. Both include rewritable DVD drives, though Dell's handles DVD±RW, while Gateway's supports DVD-RW only.

Both laptops come with all the expected ports—S-Video-out, FireWire (1394), multiple USB 2.0 ports, and external monitor—but no legacy ports such as serial or parallel ports. The Gateway has built-in gigabit ethernet, while the Dell features 10/100 ethernet. The Dell included its own 802.11 a/b/g Wi-Fi version, while the Gateway offers Intel's version.

Both systems offer flash memory ports: an SD Card slot on the Dell, and a four-in-one reader (SD, MultiMedia-Card, and Memory Stick) on the Gateway. Both systems also feature full-size keyboards, save for some of the function and directional keys.

Both performed well compared with non-Sonoma notebooks in the same CPU class, though the Dell slightly outscored the Gateway on World-Bench 5—89 versus 87.

Overall, the Dell was more impressive, but it costs nearly

$400 more, making the Gateway a better deal. (The Dell comes with Windows XP Pro, as does the HP unit we tested; the Gateway uses XP Home.)

BACK TO BUSINESS

IF YOU'RE LOOKING for a full-featured laptop for business travel, consider the $2199 HP Compaq Nc6230.

DELL'S INSPIRON 6000 offers an impressive wide-screen display.

It offers all the functionality you need, including a 1.7-GHz Pentium M 735 processor, 60GB of storage, and a bright 14-inch display with a resolution of 1024 by 768, driven by ATI's Radeon X300 graphics chip set with 64MB

of RAM. Our preproduction unit came with 512MB of 400-MHz DDR2 memory. The unit has no rewritable DVD drive, but it includes a combination DVD-ROM/CD-RW drive, which should be sufficient for most business users.

You get the usual complement of ports, save for parallel and FireWire ports, as well as gigabit ethernet and an SD Card slot. One convenience for travelers is the easy on/off wireless button. Our unit featured Broadcomm 802.11b/g and Bluetooth support.

Video and audio played back nicely, and the system performed well for its processor class, earning a WorldBench 5 score of 77. Though this model slightly outperforms the Best Buy–winning unit in this month's *Top 15 Notebook PCs* chart—the Compaq Business Nc6000 with the older Centrino platform (see page 129)—its battery life is shorter, and it costs a few hundred dollars more. Therefore, you may be better off opting for the older model.

Overall, though, if you're buying a notebook, look for one with the upgraded Centrino platform—the price difference is small and the system should last you a bit longer.

—*Anush Yegyazarian*

Acrobat 7 Pro Lets Readers Chime In

IF YOU NEED an easier way to share and comment on documents, take a look at Adobe's **Acrobat 7 Professional**. The $449 program lets you create Portable Document Format files that users of Adobe's free Reader 7 can annotate—but only if you let them.

Once you enable commenting, you'll be warned that you will lose some Acrobat functions, such as the ability to delete pages and fill out form fields. To preserve this functionality, you must save a version of the document without commenting enabled. (Note: The $299 Standard version of Acrobat 7 doesn't include the markup and comment tools.)

Version 7 enhances Acrobat's links to Microsoft Office applications, including the ability to convert Outlook e-mail messages or entire Outlook folders into PDFs.

Adobe claims that version 7 is 50 percent faster than version 6 at creating PDF files from Office apps. I can't substantiate this, but the process did seem faster. I created a 500KB PDF in about 90 seconds on an older 1-GHz Pentium III machine configured with only 256MB of RAM.

Adobe also promises launch times for Acrobat and Reader that are up to four times faster than with previous versions. I didn't notice a much speedier startup with either app on my test machine, however.

Acrobat 7 Professional

Adobe Systems

★★★★☆
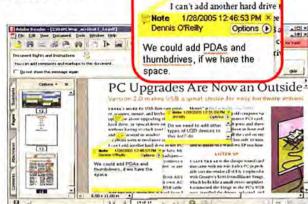
New annotation features make Acrobat 7 Pro a more collaboration-friendly tool.

Street: $449

find.pcworld.com/46746

ADOBE'S ACROBAT 7 Professional allows readers to collaborate by inserting their own comments to be shared with other users.

Once it gets going, the application gives you a handy way to share files. The ability to allow comments and markup in Adobe Reader 7 also makes it easier than ever to get everybody's two cents' worth.

—Dennis O'Reilly

LG Monitor Always Lands on Its Feet

WHEN WAS THE last time technology did backbends for you? LG Electronics' dual-hinged **Flatron L1980U** 19-inch LCD monitor can both bend backward and rotate up to 270 degrees, all while keeping the image right side up. The Flatron L1980U includes Portrait Displays' ForteManager software, which uses Auto Pivot and the innovative Auto Mirror feature to rotate or flip the image on the screen.

LG'S L1980U can rotate 270 degrees and bend over backwards.

This improved ease of use lets you pivot at your whim—to see more of a document, perhaps, or to read a Web page without having to scroll excessively. Previous pivoting software, such as Pivot-Pro, required you to rotate the screen and then dive into the software menus for settings to instruct the image to catch up with the changes.

The L1980U has a streamlined appearance, and all of the cords plug in at the back of the bright-silver, ring-shaped stand. The position of the power button is awkward and took some getting used to: I inadvertently turned off the L1980U several times while flipping the screen. In addition, the display lacks a ruler-straight edge, which would allow dual-monitor aficionados to line up two pivoted monitors side-by-side.

Although the L1980U's screen looks pleasing, we've seen sharper text and more realistic flesh tones on other comparably priced LCDs. Still, the reasonable $549 price is nothing to complain about; and if you're itching to get your hands on a monitor with Auto Pivot and Auto Mirror functions, the L1980U may be just what you need. For my part, I'm willing to hold out for a monitor with all these bonuses, as well as a klutz-proof "on" button.

—Laura Blackwell

Flatron L1980U

LG Electronics

★★★☆☆

If you need a monitor that keeps up with your every move, give this sleek stunner a whirl.

Street: $549

find.pcworld.com/46556

Meet baby NAS

The perfect little addition to your small network.

The new Maxtor Shared Storage Drive is simply the easiest way to share up to 300GBs of photos, music and work files across your small office or home network. You can share printers and additional drives, too. Our easy-to-use software automates setup and lets you set access privileges to keep personal folders private. And our exclusive Drag and Sort™ technology instantly organizes all your files. Meet the ideal playmate for your small network at maxtor.com/sharedstorage

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Maxtor®

What drives you.®

Apple's Diminutive Mac Mini Seems Pretty Mighty

THOUGH SMALLER than a lunch box, Apple's Mac Mini doesn't want for computing power. In my tests of a $673 shipping unit equipped with a 1.25-GHz G4 processor, 512MB of RAM, a combination CD-RW/DVD-ROM drive, and built-in 802.11g Wi-Fi and Bluetooth, it handled most tasks gracefully, without hesitating or freezing. I even opened and switched among a half-dozen applications without any system slowness.

But I'm not convinced that Apple's $499 base configuration model, which includes just 256MB of RAM, would manage task switching or large files as nimbly as my test system. The base model lacks built-in wireless, too. For my money, the upgrades are

worth the extra $174. It is possible to upgrade the Mini later, but it can be a tricky job.

My test machine played a DVD movie at full screen size without a hitch, though you'll certainly want to spring for a set of good speakers or headphones to use with it—the sound through the unit's single built-in speaker was way too low. When piped through a decent pair of headphones connected to the audio port, the audio was great. To bring such improved audio into the Mac Mini, you will need to spring for something like Griffin Technologies' IMic, which connects to a USB port.

PUT TO THE TEST

THE ONLY TIME the Mac Mini hiccupped was when I opened

THE MAC MINI will fit in small spaces, but may be difficult to upgrade.

two large (15MB and 111MB) pictures in IPhoto. I watched the "processing" icon for a good 10 seconds before either image would open, and switching among photos was a little sluggish.

The unit ran about as hot as a typical notebook. I could feel heat coming from the back vents and from the bottom after about 2 hours of use. Despite its onboard fans, the unit is surprisingly quiet. I did hear a little drive noise when the CD-RW/DVD-ROM drive was spinning, as well as some fan noise when I was very close to the unit, but nothing like the droning system noise my PC can pump out.

TRULY TINY

THE MINI HAS the same advantages and drawbacks as most notebooks, except that it doesn't come with a screen. On the plus side, the unit is extremely light and portable and fits unobtrusively into lots of different environments. On the minus side you can quickly clutter up your workspace with external peripherals. Also, its external power brick is about a quarter the size of the computer itself.

No mainstream Windows-based system is this small—about the only ones that come close are "cube-size" systems like those from Shuttle Computer. These Windows cubes have more flexibility in configuration, but they're also quite a bit bigger than the Mini.

After providing your own monitor, USB keyboard, and mouse, you'll want to add a powered USB hub. Since the Mac Mini has only two USB 2.0 ports—one of which must be used for the keyboard—you'll have exactly one port left for connecting peripherals. And if you can't plug your mouse into your keyboard, you'll have none. The Mac aftermarket probably will soon offer "Mini-look" accessories—including USB hubs and KVM switches.

For Windows users who want to experiment with a Mac on the side, the Mini is a great way to get started.

—*Rebecca Freed*

Mac Mini
Apple
★★★★☆
Plenty powerful for home and light business use; a great option for curious PC users.
Street: $673 as configured
find.pcworld.com/46748

QUICK TAKES

Do the IPod Shuffle

APPLE'S ECONOMICAL IPod Shuffle differs from the pricier IPods in two major ways: It stores music on flash memory rather than on a hard drive, and it dispenses with an LCD display, an omission Apple is spinning as a virtue. Adding track randomization—or "shuffle"—to the petite player, the company is marketing the device's lack of track information as an experience in aural spontaneity. If you can live without track navigation, you'll find that the IPod Shuffle sounds terrific, and—at $99 for a 512MB player and $149 for a 1GB player—it comes with a very appealing price. find. pcworld.com/46922

–Narasu Rebbapragada

So many performance-hungry applications. So little waiting.

ZT PRO X6000 series systems featuring the Intel® Pentium® 4 Processor with HT Technology deliver advanced performance so you can do more with exciting digital content – like watching a movie while converting music in the background.

ZT PRO Media Center PC X6640

- Intel® Pentium® 4 Processor 540 with HT Technology (3.20 GHz, 1MB L2 Cache, 800MHz)
- Microsoft® Windows® XP Media Center Edition 2005
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Fastest Media Center PC on PC Magazine's first glance of MCE 2004

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Buffalo Offers Affordable Remote Access

NETWORKING

PEOPLE WHO WANT secure remote access to PCs at their home or small business while on the road typically turn to services such as GoToMyPC and PCAnywhere, but those options can get expensive with multiple users and PCs. Buffalo Technology offers an economical alternative: a Wi-Fi router that accepts VPN (virtual private network) connections and provides file access and even remote PC control.

Like other 802.11g Wi-Fi routers, Buffalo's $190 **AirStation 125 High-Speed Mode Wireless Secure Remote Gateway (WZR-RS-G54)** lets networked PCs share broadband Internet access and community files and printers. You can also configure it as a Point-to-Point Tunneling Protocol server that lets you log in remotely using most standard VPN clients (including Windows XP's).

Once remotely connected, you launch a standard browser to view available networked devices and to access files. In addition, if you have installed the supplied Virtual Network Computing software on a connected PC, you can view and control the desktop.

In my tests with a shipping version, the scheme worked well from most locations—once Buffalo's support technicians helped me change some obscure settings in the Windows Firewall of Windows XP Service Pack 2.

More seriously, I wasn't able to make the VPN connection to my home network from my workplace, apparently because of the *PC World* office's corporate security provisions. This sort of snafu wouldn't arise with the $20-per-month GoToMyPC service, which makes the secure connection to a single computer from its own servers.

AirStation 125 High-Speed Mode Wireless Secure Remote Gateway (WZR-RS-G54)

Buffalo Technology

★★★⯨☆

Economical remote access if you can survive setup and corporate-security blocks.

Street: $190

find.pcworld.com/46690

BUFFALO TECHNOLOGY'S economical WZR-RS-G54.

Buffalo's router lets up to 100 users connect to multiple PCs, so if you can make the VPN connection when you need to, this AirStation can save you a bundle.

—*Yardena Arar*

IRiver Scores With Latest MP3 Player

PORTABLE AUDIO

APPLE'S IPOD USED to be the benchmark for portable MP3 players, but now everyone appears to be gunning for the IPod Mini. Joining competitors like the Rio Carbon and the Creative Zen Micro is IRiver's $280 **H10**. I tested a shipping version of the 5GB player, and its versatility and quality won me over.

The highlight of the H10 is an attractive 1.5-inch display that, along with an improved hardware-and-software interface, makes the player a joy to use. Navigating your music library is easy with the touch-sensitive slider control, and

IRiver has dropped its oversimplified folder-structure interface for one that allows you to browse by genre, artist, album, or song title.

Music sounds good on the device—provided you upgrade to a better set of headphones than the included earbuds. You can add individual songs, but not albums or artists, to an on-the-fly playlist called QuickList. The player does more than just play music: You can listen to and record FM radio, record audio with a built-in mike, and display text files. The unit also stores and shows photos, but because it offers no easy way to output those photos to a TV or PC, that ability is more a novelty than a useful feature.

Included is a replaceable, rechargeable battery that ran about 10.5 hours between charges. Rounding out the package is an exceptionally useful, protective rubber-skin case that allows full access to the device's navigation controls.

So how does the H10 match up to the $250 IPod Mini? Though it's a hair larger, it offers an additional 1GB of storage. The touch-sensitive controls aren't quite as slick as the Mini's, but they're intuitive. Finally, the H10 has features—including the radio, recorder, and color screen—that the Mini lacks. If these features are worth an extra $30 to you, consider the H10.

—*Eric Dahl*

IRIVER'S 5GB H10 PLAYER includes a 1.5-inch color display.

H10

IRiver

★★★★☆

Versatile audio player's friendly interface and color display should make the unit a stiff competitor to Apple's IPod Mini.

List: $280

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Intel® E7520 chipset Server Board
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Call-Screening Headset Disappoints

CELL PHONE

OKAY, I'LL ADMIT that picking up the phone to take a call from my husband in stop-and-go traffic to discuss what's for dinner isn't too smart. But if the alternative is using Jabra's **BT800**—the first Bluetooth headset with a caller ID display—I think I'll have to remain a danger to society.

The $149 BT800's standout feature is its LCD, which displays either the name or the number of the person who's trying to reach you. This is hugely convenient if you keep your phone out of sight, but if you're wearing the BT800, you do have to take the device off your ear to see who's calling.

The BT800 also stores received calls so that you can ring someone back straight from the headset. Unfortunately, the call list shows only a person's telephone number and not their name, even if that person's information is in your phone's address book.

I tested a preproduction unit with two Bluetooth-equipped phones: a Sony Ericsson and a

BT800

Jabra

★★⯪☆☆

Unit's display doesn't compensate for poor comfort and sound quality.

List: $149

find.pcworld.com/46658

Motorola. Connecting to the phones was a breeze, but getting used to wearing the BT800 was a little more difficult. I discovered that getting the 0.8-ounce BT800 to sit correctly on my ear was tricky, and it soon became uncomfortable.

In my tests the battery lasted for about three and a half days between charges. Sound quality was adequate, but not awesome. The built-in digital signal processor, which is designed to perform automatic volume compensation and noise cancellation in loud environments, didn't seem to

JABRA'S BT800 headset has a caller ID screen, but the unit isn't very comfortable to wear.

help much as I traversed well-trafficked Seattle streets.

The BT800 headset offers several unique features, but until it delivers better sound quality and comfort, it's not ready for prime time.

—*Cathy Lu*

Dantz Retrospect Professional 7: Off to See the Wizard

BACKUP SOFTWARE
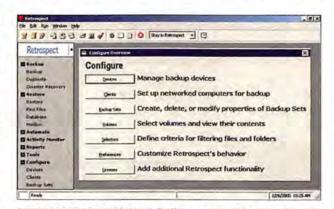
I'VE BEEN USING Dantz's Retrospect backup software for years, and while I've always prized the app's wonderfully powerful backup capabilities, the program's interface has long been a stumbling block. I had high hopes when Dantz said **Retrospect Professional 7** would be easier to use.

Regrettably, the sweeping overhaul that I'd envisioned didn't materialize in the shipping version of the $129 pro-

Retrospect Professional 7

Dantz

★★★★☆

Pricey, powerful backup program is slightly easier to use, but its interface still needs a tune-up.

Street: $129 ($45 download upgrade, $50 boxed upgrade)

find.pcworld.com/46688

RETROSPECT PROFESSIONAL 7 offers a wealth of features, but new wizards don't compensate for its overly complicated interface.

gram. Instead, I found a new set of wizards that step users through basic chores such as backing up, restoring data, and duplicating a partition. Though the wizards are nice, they don't make up for the application's continued use of arcane terminology such as "sets" and "volumes," or its

odd workflow decisions such as splitting file selection into three nonconsecutive steps.

Experienced users of Retrospect will be more interested in the new ability to launch backups using a single hot-key combination, or the predefined filters that let you easily skip backing up nonessential

files such as MP3s. There's also more power under the hood: 128-bit Advanced Encryption Standard capabilities, support for WORM (Write-Once Read-Many) tape backup for government and industry data-preservation standards compliance, and the ability to archive to 8.5GB double-layer DVD+R discs.

Retrospect Professional remains the cream of the crop in desktop backup software. If you're a newcomer to this application, sample the trial version before you purchase the pricey full version.

As an existing user, I didn't find the new features worth the $45 upgrade fee. Before I spring for such an update, I want Dantz to make the program truly easier to use.

—*Jon L. Jacobi*

The first 64-bit PC processor in a class by itself designed specifically for cinematic computing

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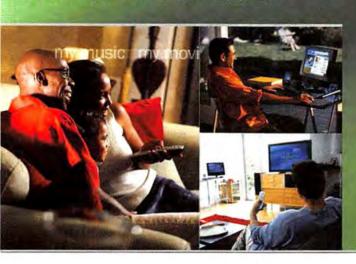
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ZT GROUP recommends Microsoft® Windows® XP Media Center Edition 2005

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AMD Athlon 64 3200+	107 %
Intel Pentium® 4 3.2GHz	100 %

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Canon's Speedy Mobile Printer

PRINTING

TEST Center CANON'S $250 Pixma IP90 portable photo printer offers good prints for mobile users. The 4-pound unit prints better and faster than does its predecessor, the Canon I80, and even competes with full-size rivals.

The PC World Test Center clocked the IP90 printing text at 6.3 pages per minute—faster than many desktop inkjet printers and 10 percent

Pixma IP90

Canon

★★★½☆

A speedy portable printer, but beware the rising price when adding optional equipment.

Street: $250

find.pcworld.com/46660

quicker than the I80. Color graphics came at a relatively slow 1.4 ppm, but our test photo printed in a reasonable 2 minutes, 33 seconds, nearly a minute faster than the I80.

In our quality tests, the IP90 produced text documents full of finely formed characters. The print was dark and very readable, although on several occasions we noticed slightly misaligned characters. There was also a moderate amount of banding in our plain-paper line art and color graphics samples, but overall the clarity of the prints impressed us.

On photo paper, color and grayscale images looked a little light; and compared with prints from full-size inkjets, the images lacked some con-

CANON'S PIXMA IP90 offers fast printing and outputs decent-quality documents and photos.

trast, which made them look slightly blurry. That said, the unit produced very crisp photos for a portable printer.

The IP90 comes equipped with a 7-ounce universal power adapter, but to get the most on your travels, you'll have to spring for the optional $100 battery and charging kit. A car power adapter costs $90.

The IP90 offers plenty of connectivity options but lacks

the memory card slots available on some portable printers. In addition to a USB port, there's a built-in infrared port (useful with cell-phone cameras), a PictBridge port for compatible cameras, and an $80 Bluetooth option.

The IP90 represents a solid traveling companion for anyone who finds that they often need to print on the go.

—*Paul Jasper*

HP's LightScribe Etches DVD Labels

OPTICAL DRIVE

IF YOU'RE LIKE me, labeling your freshly burned discs is usually a matter of pulling out a marker and scribbling. It works—but with my chicken scratch, it ain't pretty. Unfortunately, other options haven't worked for me: I've tried stick-on labels, but they can unbalance discs; and inkjet disc printers are too pricey.

When I heard about HP's new LightScribe technology—used first in the company's $130 DVD Writer 640i, a 16X recordable/4X rewritable/2.4X double-layer burner—I was all ears. Use a DVD burner's laser to etch labels on specially coated discs? Sounded perfect to me—and, in fact, it comes pretty darn close.

HP'S DVD WRITER 640i uses LightScribe technology to burn custom labels onto discs.

Here's how it works: First you burn the disc, then you flip the disc over, fire up your favorite labeling program, and let LightScribe do its thing.

My shipping model burned discs well (to see how it fared against other drives, turn to "DVD on the Edge," page 120). And creating LightScribe labels with the bundled Sonic Express Labeling program was a simple operation.

LightScribe currently etches at a sluggish, 1X speed (a firmware update to 2X is in the works), so it can take upward of 30 minutes to produce a disc label with complex graphics. However, simple titles and track lists take only about 5 minutes—a wait I can easily live with. I'm not partial to the dirty-gold surface color, but that's a minor quibble.

All of HP's future drives will have LightScribe technology, and the company says the drive will work with most existing labeling programs. Plenty of other vendors are on board, too: Imation, Memorex, TDK, and Verbatim say they'll offer media (expect to pay an extra few pennies per disc); and BenQ, Hitachi, Lite-On, Philips, and Toshiba all say they'll offer drives.

LightScribe is the best way I've found to neatly label discs. No more chicken scratch.

—*Jon L. Jacobi*

DVD Writer 640i

HP

★★★★☆

Solid DVD burning plus unique LightScribe labeling capability make this drive hard to beat.

Street: $130

find.pcworld.com/46650

All This and No Wires

Iomega NAS 100d Storage Servers hit sweet spot for small businesses and home offices.

Iomega's NAS 100d Storage Servers: outstanding storage and more.

>> To be useful to a business or for home users, data has to be readily accessible. It has to be secure. It also has to be easily shared among different users in today's increasingly collaborative world. And if all this can be accomplished in an elegant yet simple wireless environment, then all the better.

Users get that and much more with the Iomega NAS 100d Storage Servers, a solution for small businesses and home offices that allows users to protect, manage, and easily share important files and information.

Available in both 160GB and 250GB configurations, the Iomega NAS 100d is more than just an outstanding storage solution. This product also provides an instant wireless access point for creating a wireless infrastructure environment, acting as a de facto wireless server with its own operating system, processor, and controllers. The Iomega Automatic Backup software, included with the server, automatically provides effortless scheduled backup for desktops, laptops, or workstations attached to the server. Yet for all its versatility and power, the NAS 100d offers universal plug-and-play with a self-discovery tool that makes setup and configuration quick and easy.

As a storage vault, the Iomega

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www.iomega.com

NAS 100d Server speedily recovers data from accidents, errors, or attacks from hackers or viruses. The wireless interface allows for effortless setup on existing wireless networks, and two USB 2.0 ports allow for future expansion. And recognizing the realities of today's multi-protocol computing environments, the Iomega NAS 100d Server is compatible with Windows, UNIX, Linux, and Macintosh OSX environments.

■ *For more information, click now on www.iomega.com.*

Back Up And Running–Quickly

R-Tools give business continuity a big boost.

>> No amount of precaution can guarantee 100% against heavy data loss caused by virus or other malicious attacks, hardware failure, or an operating system crash.

That's where R-Tools (www.r-tt.com), a leader in backup and recovery solutions, steps up with its R-Drive Image 2.0, a powerful and business-critical utility that easily creates disk image files for backup or duplication. These disk image files are exact and precise copies of a hard drive partition or logical disk. Further, R-Drive Image creates and compresses these files without interrupting the Windows operating system—and therefore without interrupting your business.

Then, R-Drive Image restores

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R-Tools
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these images back to the original disks or, if users prefer, on any other partitions or on a hard disk's free space, all on the fly and without interruption. All these attributes of R-Drive Image translate into the capability to rapidly restore your system following a serious crash. That's not all. Users can exploit R-Drive Image files for mass system deployments when setting up several computers with identical configurations.

R-Tools also offers an innovative line of data recovery and file reconstruction utilities, including powerful R-Studio to recover lost data even

from formatted, damaged, or deleted disks; R-Word to recover damaged Microsoft Word documents; R-Excel to rebuild corrupted MS Excel files; and R-Mail to rescue accidentally deleted email messages and damaged .dbx files.

The online privacy utility, R-Wipe&Clean, keeps disks free and clear of unwanted data. And with an eye toward security, R-Guard allows users to set advanced access rights not only for users but also for applications and system processes, while free R-Firewall protects LAN clients against external and internal threats.

■ *For more information, click now on www.r-tt.com.*

STORAGE & BACKUP

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Innovation and ingenuity power Apricorn's personal storage solutions.

>> Whether you need to store a priceless music collection or business-critical information on customer pricing, it makes sense to go with the most innovative and trustworthy storage solutions available. With a peerless record of design and quality honed over 22 years of manufacturing experience, Apricorn, Inc. has consistently set a high bar of innovation in personal storage.

With Apricorn, such praise is more than just talk. So confident is Apricorn in its ultra-rigorous design, manufacturing, and testing methods that it can offer the industry's best product warranties as well as free technical support.

"We know that even the smallest innovation can mean the difference between a good product and a great one," says Michelle Fischer, Apricorn Marketing Manager.

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Consider the Apricorn's EZ-Bus Mini, an ultra-portable external hard drive for the growing legions of mobile users. The Mini sports an integrated USB cable that fits seamlessly into the back, eliminating the need for clumsy cables. Apricorn bundles the Mini with a powerful software suite, enabling the user to back up, encrypt, and synchronize data quickly and easily. *Tom's Hardware Guide* nominated the Mini as Best Innovation in Mass Storage. The Mini is also the first exclusively bus-powered external hard drive to be certified by the USB IF.1.
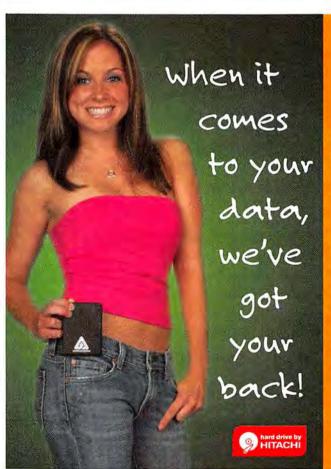
Apricorn's innovation also extends into notebook upgrade solutions, including the EZ-Upgrade and Xtreme Upgrade kits. "We've saved many customers the expense of buying a new notebook by giving them the storage they need," says Fischer. "With our innovative design, users can upgrade on their own in three easy steps and save the old drive as an emergency backup."

■ *For more information on the leader in innovation, click now on www.apricorn.com.*

Weighing just 5oz., the Mini gives high-capacity storage that fits in your pocket.

Spyware

BY MARY LANDESMAN • ILLUSTRATION BY DOUG FRASER

Renegade programs can slip onto your system in an instant—and they can be maddeningly

Stoppers

difficult to banish. **Our tests reveal the most powerful tools for fighting back.** ▶

Not long ago, Web- and e-mail–borne viruses were a computer user's worst enemy. Though viruses and worms still cause more damage in compromised or lost data, a newer menace, popularly known as spyware, steals users' productivity and peace of mind. The "spyware" label can apply to legitimate but annoying programs that users consent (perhaps unwittingly) to have installed on their PCs, or it can describe programs that install themselves without permission. Both types of applications can drain your computer's resources, slow your Internet connection,

spy on your surfing, and even forcibly redirect your Web browser. For the purposes of this story, we'll call the former category *adware* and the latter *spyware*. Adware clearly spells out its intent, comes with an uninstaller, and can be readily removed from a system. Spyware, in contrast, installs itself surreptitiously and can be nearly impossible to remove without assistance.

A crop of anti-spyware programs has sprung up to provide that assistance. We evaluated ten current anti-spyware utilities designed to detect and remove spyware and adware from PCs, looking at their rates of detection, scanning speed, ability to prevent unwanted applications from installing themselves, and ease of use. We were pleased to find that a couple of the programs did a very effective job of cleaning an infected system and preventing

FEATURES COMPARISON

CounterSpy and Spy Sweeper Lead the Field

SUNBELT SOFTWARE'S COUNTERSPY and Webroot's Spy Sweeper caught and cleaned more than 80 percent of adware and spy-

ANTI-SPYWARE SCANNER	Scanning efficiency [1]	REAL-TIME PROTECTION					OTHER FEATURES	
		Detects suspicious processes in memory	Prevents changes to Registry run keys	Protects against home- and search-page changes	Protects against Hosts file changes	Other [2]	Supports scheduled/startup scans	Supports automatic or scheduled updates
Sunbelt Software CounterSpy 1.0 **Best BUY** $20 (★★★★↑) find.pcworld.com/46684	85%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Webroot Software Spy Sweeper 3.2 $30 (★★★★☆) find.pcworld.com/46686	81%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lavasoft Ad-Aware SE Personal 1.0 Free (★★★↑☆) find.pcworld.com/44236	65%	No	No	No	[4]	No	No	Yes
InterMute SpySubtract Pro 2.6 $30 (★★★↑☆) find.pcworld.com/46680	56%	Yes	No	Yes	No	No	Yes	Yes
Safer Networking Spybot Search & Destroy 1.3 Free (★★★↑☆) find.pcworld.com/42052	54%	No	Yes	Yes	Yes	No	Yes	Yes
Computer Associates ETrust PestPatrol Anti-Spyware 5.0 $30 (★★★☆☆) find.pcworld.com/46678	48%	Yes	No	No	No	No	Yes	Yes
Aluria Software Spyware Eliminator 3.5 $30 (★★☆☆☆) find.pcworld.com/42046	32%	No	No	No	No	Yes	Yes	Yes
Network Associates McAfee AntiSpyware 1.0 $40 [3] (★★☆☆☆) find.pcworld.com/46682	22%	No	No	No	No	Yes	Yes	Yes
Allume Systems Internet Cleanup 4.0 $30 (★☆☆☆☆) find.pcworld.com/46676	5%	No	No	No	No	Yes	Yes	Yes

● = Yes ● = No **FOOTNOTES:** [1] Denotes each application's overall success rate in eliminating our 81 test examples of adware and spyware infections. See chart on page 72. [2] Includes other forms of real-time protection such as pop-up and ActiveX blockers. [3] Not the same as the Windows Messenger program. [4] Ad-Aware locks the Hosts file only after performing a repair.

new infestations with effective real-time protection.
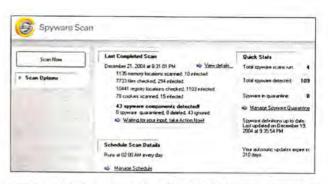
PC World tested seven products in the $20 to $40 range from big and small vendors: Allume Systems' (formerly Aladdin Systems') Internet Cleanup, Aluria Software's Spyware Eliminator, Computer Associates' ETrust PestPatrol Anti-Spyware, InterMute's SpySubtract Pro, Network Associates' McAfee AntiSpyware, Sunbelt Software's CounterSpy, and Webroot Software's Spy Sweeper. In addition, we tested two popular free programs—Lavasoft's Ad-Aware SE Personal and Safer Networking's Spybot Search & Destroy—and a third free program that operates very differently but no less effectively, Merijn.org's HijackThis. (You can get all three free products at find.pcworld.com/46698.) We did not include HijackThis in our charts because, unlike the

Spyware Scan

OUR WINNER: CounterSpy led the field in finding and killing spyware.

others, it does not scan for infections. We also tested one product in beta, Microsoft's new Windows AntiSpyware, which was until late last year Giant Software's AntiSpyware. (See "Future Windows AntiSpyware Looks Like a Winner," page 73.)

We pitted the anti-spyware utilities against 45 adware and spyware programs we've frequently run into in our work. These 45 applications created 81 separate files and processes—which proved a challenge for our apps to remove completely. Spyware infections can begin with a single installation of advertising-supported software. Often, the adware alerts the user to its intentions and the user willingly makes the trade-off in exchange for access to the free program (or blithely clicks the agreement without reading it). But although many adware programs seek your approval prior to installation, not all are so obliging. And even the free application that promises only limited advertising can morph into a system full of spyware by downloading and installing third-party applications.

Adware varies considerably in how it gets on your system. Two common search toolbars we encountered, Slotchbar and WinTools, did not show an End User License Agreement (EULA), in which adware typically declares that it may install additional components. These two installed without our consent and proved the most difficult to remove, using multiple processes that reinitiated one another when anything tried to delete them.

In contrast, the common adware applications WhenUSearch (a search toolbar) and Bonzi Buddy (a desktop companion that offers search assistance) presented easily understandable EULAs prior to installing and provided an effective uninstaller through Windows' Add or Remove Programs utility.

CLEANUP

WE FIRST TESTED how effectively a program could remove the spyware's active components; we then looked at each app's real-time protection, for preventing the installations in the first place.

Sunbelt Software's CounterSpy proved the most capable of the bunch, finding and stopping 93 percent of all the running processes created by our 45 test programs. CounterSpy was the only product in our tests that was able to shut down and remove the tenacious WinTools from our system. Webroot Software's Spy Sweeper came in a close second, clearing 89 percent of the active processes (but leaving behind elements associated with both WinTools and Slotchbar). The least effective were Network Associates' McAfee AntiSpyware and Allume Systems' ▶

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ware infections and finished well ahead of the competition.

Comments

Posted the highest detection rate in our tests. Offers a wide range of real-time protection, including script blocking and preventing infections from the addition of Browser Helper Objects.

Has the second-highest overall detection rate. Includes a shield to block the Windows Messenger Service, which is often exploited to serve targeted ads.[3]

Free scanner provides above-average detection. Real-time protection is available only in the $27 Plus and $40 Professional versions.

Slightly above average in detection. Includes comprehensive history cleaning and secure shredding of deleted files.

Former Best Buy didn't perform as well as the current leaders. Free scanner provides average detection rate, plus real-time prevention components to guard against infection.

With a detection rate of slightly less than 50 percent and limited capabilities, this product failed to distinguish itself.

A below-average scanner, Spyware Eliminator provides a unique "blacklist" of offending sites and ActiveX controls to protect users.

This product had one of the lowest overall detection rates, and the real-time protection failed to block or detect anything in our tests.

Almost completely ineffective at removing or preventing spyware in our tests. Provides features to block ads, pop-ups, and cookies, as well as Internet and system history cleaning.

[3] Download price for new customers; $30 to download upgrade; a packaged disc by mail costs $50. **CHART NOTE:** Street prices are as of 1/24/05.

Internet Cleanup, at a removal rate of 33 percent and 11 percent, respectively.

Spyware often hijacks the user's browser home page and search pages so that attempts to access or search the Internet are redirected to pornography and other unwanted Web sites. What's worse, reversing the automatic redirections can be hard when they're being monitored and restored by active processes. Browser home- and search-page modifications proved quite difficult for these utilities to fix. Internet Cleanup, McAfee AntiSpyware, Computer Associates' ETrust PestPatrol Anti-Spyware, and InterMute's SpySubtract Pro failed to detect any of these changes, and Aluria Software's Spyware Eliminator fixed only 7 percent. CounterSpy once again led the way—but with just a 53

SPY SWEEPER'S Shields let you block many Windows vulnerabilities.

percent success rate.

Browser Helper Objects, or BHOs, are programs that customize Internet Explorer and other browsers, usually for legitimate reasons. The Google Toolbar, for example, is a BHO. But spyware and adware developers also use BHOs to write toolbar components that load with Internet Explorer, and they exploit ActiveX controls to download and install BHOs to your PC. It's an easy way for miscreants to create often unwanted toolbars that escape the notice of permission-based firewalls and gain access to the Internet.

When we tested the anti-spyware programs' detection of potentially unwanted BHOs, both CounterSpy and Spy Sweeper caught 100 percent. Ad-Aware, eTrust PestPatrol Anti-Spyware, Spybot, and SpySubtract all managed 62 percent, compared with

SPYWARE DETECTION RATES

Cleaning Up the Mess

OUR TESTS CHALLENGED the anti-spyware utilities with 45 adware and spyware programs that created a total of 81 infections in different forms. Sunbelt's CounterSpy and Webroot's Spy Sweeper fixed 85 percent and 81 percent, respectively, giving them a comfortable lead over the rest of the field. Allume's Internet Cleanup, on the other hand, detected only 5 percent of infections.

ANTI-SPYWARE SCANNER	Running processes		Home- and search-page modifications		Browser Helper Objects and toolbars		Registry additions (loading executables)		Menus and buttons		Overall average	
TOTAL NUMBER OF TESTS	27		15		13		22		4		81	
	Number found	Percentage found	Number found	Percentage found	Number found	Percentage found	Number found	Percentage found	Number found	Percentage found	Number found	Percentage found
Allume Systems Internet Cleanup 4.0	3	11%	0	0%	0	0%	1	5%	0	0%	4	5%
Aluria Software Spyware Eliminator 3.5	10	37%	1	7%	4	31%	9	41%	2	50%	26	32%
Computer Associates ETrust PestPatrol Anti-Spyware 5.0	20	74%	0	0%	8	62%	11	50%	0	0%	39	48%
InterMute SpySubtract Pro 2.6	20	74%	0	0%	8	62%	14	64%	3	75%	45	56%
Lavasoft Ad-Aware SE Personal 1.0	20	74%	5	33%	8	62%	17	77%	3	75%	53	65%
Network Associates McAfee AntiSpyware 1.0	9	33%	0	0%	4	31%	5	23%	0	0%	18	22%
Safer Networking Spybot Search & Destroy 1.3	17	63%	7	47%	8	62%	11	50%	1	25%	44	54%
Sunbelt Software CounterSpy 1.0	25	93%	8	53%	13	100%	19	86%	4	100%	69	85%
Webroot Software Spy Sweeper 3.2	24	89%	7	47%	13	100%	18	82%	4	100%	66	81%

Tests Copyright © 2005 Mary Landesman

McAfee AntiSpyware and Spyware Eliminator, at 31 percent. Internet Cleanup detected none of the BHOs and toolbars.

Windows Registry run keys and system startup folders are also favorite launching pads for adware and spyware. Items added to these critical areas will launch each time Windows starts. Unfortunately, the anti-spyware scanners produced less-than-stellar results in this category. CounterSpy detected the most at 86 percent, followed by Spy Sweeper at 82 percent and Ad-Aware at 77 percent. Internet Cleanup found only 5 percent.

We also tested the scanners' detection of additions to a browser's menus. Such changes do not automatically load spyware, but if a user selects the added menu item, an infection can start. CounterSpy and Spy Sweeper had 100 percent detection rates for these buttons and menu items. SpySubtract Pro and Ad-Aware managed to detect 75 percent. Internet Cleanup, ETrust PestPatrol, and McAfee AntiSpyware each had a hit rate of zero in this category.

ANOTHER ROAD TO SUCCESS

THE TENTH PROGRAM in our tests, Merijn.org's HijackThis, is not a traditional scanner. HijackThis provides a report of all active processes, startup Registry keys, Startup folder contents, BHOs, and services found on the system. With this program's log, you can locate suspicious or unwanted startup items and remove them. Though identifying the suspicious entries in the log requires an experienced and confident user, the program is easy enough for even a novice to run. Less-experienced users can post their logs to various forums on the Internet for assistance in identifying undesirable processes. (For guidance on using HijackThis, see "Kill Really Stubborn Spyware With This Tool" by *PC World*'s privacy columnist, Andrew Brandt, at find.pcworld.com/46574.)

We used HijackThis along with the Add or Remove Programs feature in Windows XP's Control Panel. We were surprised to find that nearly all of the 45 adware/spyware apps on our infected system had a corresponding

uninstaller in Add or Remove Programs. (To use these uninstallers effectively requires that you know which programs they belong to; it's not always easy to tell.) By using the uninstallers and following up with HijackThis—which identified and deleted active components not removed by the uninstallers—we obtained our best score yet, killing off 100 percent of all active components of the adware and spyware infecting our ▶

Future Windows AntiSpyware Looks Like a Winner

AS WE WERE COMPLETING testing for this story, Microsoft released a beta version of its new Windows AntiSpyware, the product formerly owned by Giant Software, which Microsoft acquired in December 2004. The beta turned in excellent results in our tests. Because its signature files were more up-to-date than those in the rest of the products, we didn't compare it directly with the others in this roundup; nonetheless, AntiSpyware looks like it will be a top-notch product when it's ready for shipping.

It was able to detect 91 percent of the adware/spyware in our test suite, including 96 percent of processes running in memory, 67 percent of home- or search-page modifications, 100 percent of BHOs and toolbars, 95 percent of Registry additions, and 100 percent of other items such as menus and but-

Microsoft AntiSpyware Spyware Scan Results

Spyware Scan Completed
Warning: Spyware has been found on your computer!

Scan Summary

Spyware threats detected:	24
Memory processes scanned:	53
Memory processes infected:	9
Files scanned:	17455
Spyware files infected:	843
Registry keys scanned:	9254
Registry keys infected:	3908
Scan start time:	1/6/2005 7:21:26 AM
Scan end time:	1/6/2005 7:27:29 AM
Total scan time:	6 mins 3 secs

[View Results]

☐ Do not display this window after a spyware scan.

THE WINDOWS ANTISPYWARE BETA performed very well against our set of adware and spyware.

tons added to programs. The utility scanned our 2.7GB of data in less than 3 minutes. AntiSpyware's real-time monitoring stops infections by preventing changes to the browser home and search pages, identifying unknown processes in memory, blocking unauthorized edits to the Hosts file, and preventing changes to Registry run keys.

To counter browser home- and search-page hijackers, AntiSpyware can automatically reset the pages to the operating system defaults. You can also specify custom home and search pages by selecting *Advanced Tools•Browser Hijack Restore*. AntiSpyware will alert you to any attempts to change the designated pages from the custom or default settings. This is a better way to handle hijackers than the similar scheme of Webroot's Spy Sweeper, which restores the pages to the settings that were in place when Spy Sweeper was first installed. For more on AntiSpyware, see find.pcworld.com/46576.

Windows AntiSpyware boasts a clean, intuitive interface that is nearly identical in features and layout to that of Sunbelt Software's CounterSpy—an application that also makes use of Giant Software's spyware-signature technology. Unlike CounterSpy, AntiSpyware automatically ignores cookies as it scans—a refreshing change for those users who appreciate the automatic log-ins and site personalization features that cookies can provide.

machine. We obtained the same result when we followed a CounterSpy scan with HijackThis. No other combination gave us 100 percent—the WinTools processes that the other scanners left in place thwarted our cleanup efforts, and HijackThis was unable to stop the processes on its own.

BY THE NUMBERS

WE SAW A significant difference among scan speeds. The most effective scanner—CounterSpy—was also the fastest, taking only a minute to perform a complete scan of a system with 2.7GB of data. Also fast were Spybot and Spy Sweeper, which scanned our test system in just over 2 minutes. Conversely, Spyware Eliminator was inconsistent and slowest at scanning, taking anywhere from 10 minutes to an hour (we performed multiple scans). The remainder of the scanners took between 4 and 5 minutes.

ANTISPYWARE TIPS

Protect Yourself Against Spyware: Change or Update Your Browser

Please read the following important information before continuing. Do you accept all the terms of the following license agreement?

Zango End User License Agreement ("EULA")
(Last Revised August 4, 2004)

Preface: The software licensed under this agreement includes the Zango Desktop Application licensed to you by Zango (referred to in this EULA as "we" or "Zango"). The Zango Desktop Application is your free pass to premium web content and tools on the Zango Network in exchange for showing you targeted websites. This means that the Licensed Software will run in the background on your computer and automatically direct you to our sponsors' websites, allowing you to compare products, services, and prices
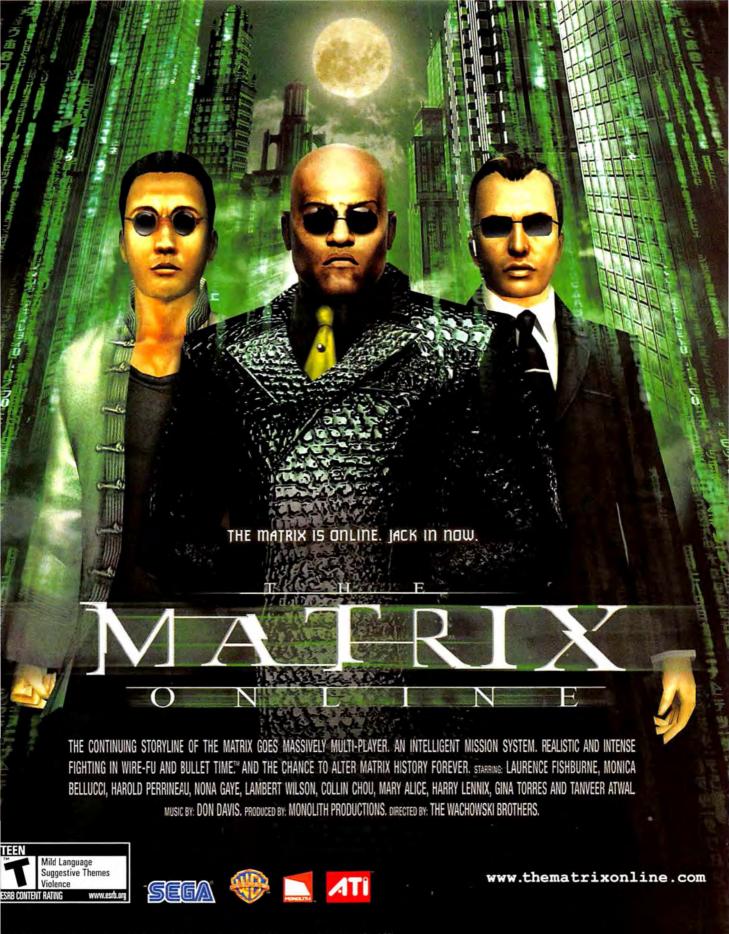
☐ Yes, I agree with all the terms of this license agreement

ZANGO MAY BE UNWELCOME, but at least its EULA spells out what you can expect. Seeing your browser redirected to advertiser Web sites should not come as a surprise.

YOU CAN PROTECT YOURSELF FROM MUCH SPYWARE by switching from Internet Explorer to a different browser, such as Mozilla Firefox. Still, even alternative browsers have security vulnerabilities that can lead to trouble. And you'll face hassles with the few Web sites that don't function properly with browsers other than IE.

For people who don't want to switch, IE version 6 and later has default security settings to better protect against spyware. (For more on security settings in IE, visit find.pcworld.com/46692.) Upgrading to the latest version, keeping your PC patched (windowsupdate.microsoft.com), and being careful about installing unknown software will help avoid spyware.

At the PC World Spyware Help Center (find.pcworld.com/46694), you can research programs before you install them. For those you do choose to install, make sure you carefully read and understand the implications of the End User Licensing Agreement; it may warn you that it will load other programs. Finally, if you end up with spyware on your system, try the easy route first: Check the Windows Add or Remove Programs list to see if an uninstaller is provided.

The spyware scanners reported infections very differently, too. For example, when we installed the WhenUSearch toolbar on our system, CounterSpy saw it as two separate adware objects, WhenUSearch and SaveNow. Ad-Aware, in contrast, detected the same toolbar as a total of 73 objects. And after we allowed CounterSpy to remove all active components of WhenUSearch, Ad-Aware continued to report 5 "critical" objects—these turned out to be 3 empty Registry keys and 2 empty folders. Such alerts can be unnecessarily alarming, and can cause the spyware problem to seem more severe than it is.

REAL-TIME MONITORING

THE ABILITY TO REMOVE spyware threats after a machine is infected is vital, but preventing an infection in the first place is even more desirable. One of the most effective tools in this respect was Spybot. Using the included add-on Resident TeaTimer, the utility warned us when any program attempted to make changes to critical areas of the system Registry. Even the spyware processes that were able to load themselves into memory were prevented from changing the Registry and thus were quickly squashed with a simple reboot of the system.

Spybot also includes a feature to protect the Hosts file from modification. The Hosts file provides a sort of road map for the browser; each entry consists of a Web site address and the corresponding IP address to which it is to be redirected. Malicious software creators frequently exploit the file to prevent users from visiting security-oriented pages such as those on anti-virus companies' sites.

CounterSpy and Spy Sweeper also blocked attempts to modify the Hosts file, stopped edits to the system Registry, prevented our browser home page and search pages from being changed, and detected suspicious processes in memory.

Ad-Aware SE Personal does not include real-time protection, although you can set it to block edits to the Hosts file. The paid versions of Ad-Aware—SE Plus and SE Professional ($27 and $40, respectively)—include Ad-Watch, which has features similar to CounterSpy's and Spy Sweeper's. ETrust Pest-Patrol Anti-Spyware was able to ▶

detect suspicious processes in memory, but it failed to alert us when changes were made to critical system settings. SpySubtract Pro warned us when changes were made to our browser home and search pages, and it detected suspicious processes in memory. McAfee AntiSpyware includes real-time protection, but its low recognition rates diminished its effectiveness.

Neither Spyware Eliminator nor Internet Cleanup provided much in the way of real-time protection. Spyware Eliminator only blacklisted suspect Web sites and ActiveX controls, though this unique blacklist of offending sites and controls is a very nice feature. Like Spyware Eliminator, Internet Cleanup ignored home page and search page changes, failed to detect suspicious processes, and lacked Hosts file protection. It did, however, block pop-ups and provide a personal-information blocker to prevent inadvertent disclosure of sensitive data.

EASE OF USE

COUNTERSPY'S interface is attractive and simple to use. The Scan Now button appears prominently on the welcome screen, menus are easy to traverse, and shutting down the program does not result in a loss of real-time protection. Ad-Aware's interface is equally attractive, but the program's menus are hidden behind unlabeled icons and require a bit of guesswork to find. Spybot requires the user to first switch to Advanced mode and then sort through various categories to find the most useful settings and tools options. Both Ad-Aware and CounterSpy provided reports that were easy to understand, but Ad-Aware listed a few cookies as "critical" objects—giving the impression that some benign cookies are a high-risk threat.

HijackThis's simple text-based interface presents options well, and the program is exceptionally easy to use—though the results it reports may require an advanced user to decipher them.
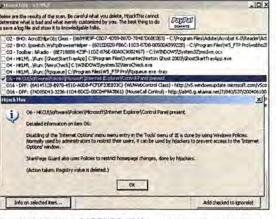
Spyware Eliminator provides a clean interface with clear menus, but the tool was slow to load. We found Internet Cleanup's interface cluttered and difficult to use. The menus were context-sensitive—they changed depending on the section we were in; and inconveniently, our only recourse when we got

in too deep was to click the Home button and start over.

Though easy to navigate, ETrust PestPatrol Anti-Spyware's interface appeared barren and unattractive. It was also a tad confusing initially: The Enter License Key button was the most prominent feature on the welcome screen. Only by reading the fine print were we assured that we had properly registered our copy.

Spy Sweeper's interface was intuitive, but we could not close the main program without also closing real-time protection. As a result, we endured numerous prompts asking if we really wanted to shut down protection or simply minimize the program. At the other extreme, McAfee Anti-Spyware installed the McAfee Security Center icon in our system tray, but the Security Center gave no options for—or access to—the anti-spyware component.

OUR PICKS

YOU CAN GET AN anti-spyware utility for free, but this is one area where going cheap isn't worth the savings. The no-cost Spybot Search & Destroy offers an overall detection rate of 54 percent and provides effective real-time scanning. Keeping on the free path, you could combine Spybot with Ad-Aware SE Personal, whose detection rate for active infections was slightly higher than Spybot's in most categories. However, even when combining Ad-Aware, Spybot, and the free HijackThis, we were unable to remove 100 percent of the infections on our test system.

Sunbelt Software's CounterSpy, our new Best Buy, proved the most capable of the products we tested, with the highest detection rates, cleanest interface, and fastest scan speeds. And its $20 price for a year of updates and tech support is a bargain. You also won't be disappointed by Webroot's Spy Sweeper, which was almost as effective as CounterSpy, scans quickly, and is easy to use. Combining either product with HijackThis—and reasonable caution when installing dubious goodies—you should be able to keep your system pretty well spyware-free. ∎

HIJACKTHIS WILL CAPTURE all the processes on your system, but you may want advice before taking action.

ONCE YOU MOVE PAST Ad-Aware's obscure opening icons, the program's interface is easy to understand.

Mary Landesman is a spyware and antivirus researcher and consultant, and serves as the antivirus guide for About.com.

Enjoy tobacco
in a smoke-free sports bar?
Believe it.

Enjoy tobacco the smoke-free way with Copenhagen® or Skoal.® Copenhagen offers legendary natural tobacco flavor, while Skoal comes in a variety of great tasting flavors that are sure to satisfy. They also make it easy to enjoy tobacco on your own terms. Try a rich satisfying pinch of long cut, or easy-to-use pouches. So maybe it's time to find your solution – and leave the smoke behind.

Break from the pack.™

Works around you **by design.**

New!
Satellite® R15 Tablet PC

Photo
Printers:
The Price of Great Pictures

Today's photo printers produce great snapshots and boast helpful new features. But with some, ink costs could leave you seeing red. We test 11 contenders, starting at $150. **By Paul Jasper**

PHOTO-ILLUSTRATION BY MARC SIMON

PHOTO PRINTERS HAVE greatly improved their print quality over the past several years, as most of the printers we've seen attest. They also cost less today than when they first appeared: The models in this roundup range in price from $150 to $399. But the ink and paper they use still tend to cost an arm and a leg. Most people purchase a photo printer in order to avoid the effort of going to an old-fashioned photo mart. However, in our tests of 11 printers—7 full-size desktop models and 4 smaller snapshot units—most made the photo mart and online photo printing services look like good deals.

The three major chains we surveyed (Ritz, Walgreen's, and Target) charge an average of 28 cents per print, with in-store pickup. To make 20 prints, the four online outlets we looked at (Ofoto, Snapfish, Shutterfly, and Yahoo Photos) charge an average of 35 cents each print, including shipping. In contrast, full-size photo printers averaged 66 cents per print and snapshot printers averaged 55 cents each, though costs varied widely, as detailed in the chart appearing on page 84.

PICTURED ABOVE: The Sony DPP-EX50 (left) and HP Photosmart 8450.

The Imaging Products Lab at the Rochester Institute of Technology tested ink and paper consumption for each inkjet printer on behalf of *PC World*. In IPL's tests, the Epson PictureMate was by far the cheapest at 23 cents per 4-by-6-inch print. The next cheapest option, the Dell Photo Printer 540, costs 39 cents per print—but to reach that cost, you must buy a $47 bundle of three print packs. Of the full-size printers, the most reasonable was the Canon Pixma IP4000R, at 46 cents per print. The Lexmark P915, on the other hand, will put a serious hole in your wallet: It used up 97 cents' worth of ink and paper per snapshot—and that was with its high-yield cartridges installed.

Print speeds also run the gamut from perky to poky. In speed tests conducted by the PC World Test Center, Canon's Pixma IP8500 printed 4-by-6-inch snapshots faster than any other printer—averaging just 39 seconds—but its text speed lagged. The Epson models were particularly slow at printing text documents, while the Lexmark P915 turned in a blistering 7.4 pages per minute.

Most of the inkjet printers here use dye-based inks, which are absorbed into the paper, whereas models that use pigment-based inks bond the inks to the surface of the paper. The one model that uses only pigment-based inks is the Epson Stylus Photo R800, but the two Canon printers and the Lexmark P915 use pigment-based black ink only for printing text.

PORTS AND PAPER OPTIONS

ALMOST ALL OF the printers offer a way to print photos without the help of a PC. Every printer except the Epson R800 has a direct-print port that lets you print from a compatible digital camera. Most models also have slots that read flash media cards; only the two Canons and the Epson R800 lack them. And most of the printers have an LCD screen for previewing your images and making simple edits, such as cropping and removing red-eye.

Having a photo printer with a built-in media card reader can also be convenient for uploading images to your PC. When you insert the media card from your camera, it shows up in Windows as a removable disk drive. Several models, including those from Dell and HP, also let you print images from a USB flash drive plugged into their direct-print port. The Epson Stylus Photo R320 is the ultimate in connectivity, letting you hook up a wide variety of USB devices, such as Zip drives and CD burners, for archiving your images.
For expanded reviews online, see
find.pcworld.com/46940.

FULL-SIZE PHOTO PRINTERS

OF THE SEVEN photo printers we tested, all except the Lexmark P915 earned our top score for their prints on letter-size glossy paper. However, both the HP Photosmart 8150 and the Canon Pixma IP4000R had difficulty feeding 4-by-6-inch paper smoothly, a glitch that resulted in noticeable

banding near the trailing edge of otherwise good-looking snapshots.

The HP Photosmart 8450 rated best overall because, in addition to printing near-perfect photos, it's loaded with features. It comes with an ethernet port and many other amenities, such as media card slots, a color LCD, and the capability to make banner-size prints. It also comes with HP Image Zone, the most comprehensive software package included with the printers here. Though it uses up

600MB of hard-drive space, the software offers many good tools for editing and sharing photos. But high ink and paper costs kept the Photosmart 8450 from earning our Best Buy honor.

Despite its problems with 4-by-6 paper, we awarded the Canon IP4000R our Best Buy. The IP4000R is inexpensive, its cost per page of 46 cents is the lowest of the full-size printers we tested, and you can achieve stellar results printing 4-by-6 photos on letter-size paper. ▶

FEATURES COMPARISON

TEST Center

PHOTO PRINTER

HP Photosmart 8450
$250 ★★★★⯪
find.pcworld.com/46500

Canon Pixma IP8500
$350 ★★★★
find.pcworld.com/46494

Canon Pixma IP4000R
Best BUY $230 ★★★★
find.pcworld.com/46498

Epson Stylus Photo R800
$399 ★★★★
find.pcworld.com/42496

HP Photosmart 8150
$200 ★★★★⯪
find.pcworld.com/46502

Epson Stylus Photo R320
$200 ★★★⯪
find.pcworld.com/46504

Lexmark P915
$150 ★★⯪
find.pcworld.com/46496

SNAPSHOT PRINTER

Epson PictureMate
Best BUY $199 ★★★★⯪
find.pcworld.com/42490

HP Photosmart 375 Compact Photo Printer
$200 ★★★★⯪
find.pcworld.com/46526

Sony Digital Photo Printer DPP-EX50
$180 ★★★⯪
find.pcworld.com/42492

Dell Photo Printer 540
$189 ★★★⯪
find.pcworld.com/46524

HOW WE TEST: We run time tests for text, line art, color graphics, and photo samples. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

Photo Printers: Big and Small

PRINT SPEEDS FOR 4-BY-6-INCH PHOTOS varied widely among the printers, as did connectivity options.

Features and specifications		Performance	Print quality
• 4800-by-1200-dpi maximum color resolution • Eight-ink printing • Banner maximum paper size • USB 2.0, ethernet ports; optional Bluetooth	• Media card slots • Prints from USB flash drives • 2.5-inch color LCD • 100 sheets input, 50 output	• 5.6 ppm text • 1.7 ppm graphics • 126 seconds per 4-by-6-inch photo	• Text: Good • Graphics: Good • 5-by-7-inch photos: Outstanding • 4-by-6-inch photos: Outstanding
• 4800-by-2400-dpi maximum color resolution • Eight-ink printing • Legal maximum paper size • USB 2.0 port	• Duplexer for two-sided prints • 300 sheets input, 100 output	• 3.4 ppm text • 1.4 ppm graphics • 39 seconds per 4-by-6-inch photo	• Text: Good • Graphics: Very Good • 5-by-7-inch photos: Outstanding • 4-by-6-inch photos: Outstanding
• 4800-by-1200-dpi maximum color resolution • Five-ink printing • Legal maximum paper size • USB 1.1, ethernet ports	• Duplexer for two-sided prints • 802.11g wireless • 300 sheets input, 100 output	• 6.8 ppm text • 2.5 ppm graphics • 54 seconds per 4-by-6-inch photo	• Text: Very Good • Graphics: Fair • 5-by-7-inch photos: Outstanding • 4-by-6-inch photos: Good
• 5760-by-1440-dpi maximum color resolution • Seven-ink printing (plus gloss overcoat) • Banner maximum paper size • USB 2.0, FireWire ports; no direct-print port	• Prints onto coated CD/DVD discs • Optional 802.11g wireless • 100 sheets input, output tray not rated	• 2.0 ppm text • 1.8 ppm graphics • 116 seconds per 4-by-6-inch photo	• Text: Very Good • Graphics: Poor • 5-by-7-inch photos: Outstanding • 4-by-6-inch photos: Outstanding
• 4800-by-1200-dpi maximum color resolution • Six-ink printing • Banner maximum paper size • USB 2.0 port; optional Bluetooth	• Media card slots • Prints from USB flash drives • 2.5-inch color LCD • 100 sheets input, 50 output	• 5.2 ppm text • 2.1 ppm graphics • 102 seconds per 4-by-6-inch photo	• Text: Good • Graphics: Good • 5-by-7-inch photos: Outstanding • 4-by-6-inch photos: Good
• 5760-by-1440-dpi maximum color resolution • Six-ink printing • Letter maximum paper size • USB 2.0 port; optional Bluetooth and 802.11g wireless	• Media card slots; prints from USB flash drives • Prints onto coated CD/DVD discs • 2.5-inch monochrome and 1.5-inch color LCDs • 120 sheets input, 30 output	• 2.0 ppm text • 1.6 ppm graphics • 108 seconds per 4-by-6-inch photo	• Text: Poor • Graphics: Fair • 5-by-7-inch photos: Outstanding • 4-by-6-inch photos: Outstanding
• 4800-by-1200-dpi maximum color resolution • Six-ink printing • Banner maximum paper size • USB 2.0 port; optional ethernet and 802.11g wireless	• Media card slots • 2.5-inch color LCD • 100 sheets input, 25 output	• 7.4 ppm text • 1.5 ppm graphics • 129 seconds per 4-by-6-inch photo	• Text: Fair • Graphics: Fair • 5-by-7-inch photos: Good • 4-by-6-inch photos: Fair
• 5760-by-1440-dpi maximum color resolution • Six-ink printing • 4-by-6-inch maximum paper size • USB 1.1 port; optional Bluetooth	• Media card slots • 2-inch LCD • 20 sheets input, output tray not rated	• 136 seconds per 4-by-6-inch photo	• 4-by-6-inch photos: Very Good
• 4800-by-1200-dpi maximum resolution • Three-ink printing • 4-by-6-inch maximum paper size • USB 1.1 port; optional Bluetooth	• Media card slots; prints from USB flash drives • Optional battery pack, car adapter • 2.5-inch color LCD • 20 sheets input, 20 output	• 107 seconds per 4-by-6-inch photo	• 4-by-6-inch photos: Very Good
• 403-by-403-dpi maximum resolution • Dye-sublimation printing • 4-by-6-inch maximum paper size • USB 2.0, composite video ports	• Media card slots • 1.5-inch LCD • 20 sheets input, no output tray	• 88 seconds per 4-by-6-inch photo	• 4-by-6-inch photos: Very Good
• 300-by-300-dpi maximum color resolution • Dye-sublimation printing • 4-by-6-inch maximum print size • USB 1.1 port	• Media card slots • Prints from USB flash drives • 2.5-inch color LCD • 20 sheets input, 25 sheets output	• 63 seconds per 4-by-6-inch photo	• 4-by-6-inch photos: Fair

CHART NOTES: Unless otherwise noted, all models have a direct-print port that supports one or more of the following standards: PictBridge, Picture Transfer Protocol, or USB Direct Print. Photos printed at best-quality settings, on glossy paper; 4-by-6-inch photos printed on 4-by-6-inch photo paper; 5-by-7-inch photos printed on letter-size paper. Optional photo inks used when offered. Prices given are street prices as of 1/7/05. Star ratings are based on print quality, features, ease of use, speed, and service and support. Price is considered for Best Buy honors only. See find.pcworld.com/10860 for details on PC World's Star Ratings.

HP Photosmart 8450 ●●●●● ●●●●●● ●●●●●● ●●●●●● ●●●●●● ●●●●●● ●●●●●● ●●●●● ●

THE $250 PHOTOSMART 8450 printed both snapshots and photos on letter-size glossy paper that showed sharp details and natural colors.

Despite its moderate price, the Photosmart 8450 offers many features for operation both with and without a PC. You can preview your pictures on the 2.5-inch color LCD and make basic edits using the buttons on the control panel. You can print from a media card, or directly from a compatible digital camera via the direct-print port. Also, like four other models here, the Photosmart 8450's direct-print port reads USB flash drives.

The Photosmart 8450 is one of two printers we tested that have an ethernet port. Alternatively, you can connect the Photosmart 8450 to a PC using its USB 2.0 port, or add a Bluetooth adapter ($50) to send it photos from compatible camera phones and PDAs.

Ongoing costs for the Photosmart 8450 could be steep, however. According to IPL's tests, photo paper and ink cost an average of 83 cents per snapshot—21 cents more than the average.

HP'S PHOTOSMART 8450 has media card slots that support most formats.

HP's software suite offers a wide range of features for editing and organizing photos, though photos emerged slowly. The Photosmart 8450 took over 2 minutes to make a 4-by-6-inch print at best-quality settings; only the Lexmark P915 and the Epson PictureMate took longer.

UPSHOT: The Photosmart 8450's long list of features make it a good choice for small offices and networked homes, though ink and paper costs are high.

SHOW ME THE MONEY: How Ink and Paper Costs Add Up

THE TEST: On behalf of *PC World*, the Imaging Products Laboratory at the Rochester Institute of Technology evaluated the ink and paper costs for printing 4-by-6-inch glossy photos. IPL printed a series of four 4-by-6-inch images, using each printer's "best" or "photo" mode, and the vendor's recommended glossy photo paper. **WHAT WE FOUND:** The good news is that you can print beautiful photos without getting bilked for supplies. For example, the Epson R320 printed top-notch photos for 49 cents each—well below the

average of 62 cents for all printers. In contrast, the Lexmark P915 printed less-attractive photos than any other desktop printer, yet its cost per page was 97 cents. Desktop printers using tricolor cartridges averaged 85 cents per snapshot; models using individual cartridges averaged 52 cents per print. The lowest cost came from the Epson PictureMate, which uses a single cartridge with six inks. For more details on IPL's testing, go to find.pcworld.com/46916.

—Eric Butterfield

PHOTO PRINTER ●●●●●●●●	Total cost per 4-by-6-inch color photo	Cost per standard set of ink cartridges	Ink cost per 4-by-6-inch photo	Paper cost per 4-by-6-inch photo	Ink cartridge configuration
HP Photosmart 8450	83 cents	$85	53 cents	30 cents	Two tricolor plus gray
Canon Pixma IP8500	57 cents	$96	36 cents	21 cents	Eight individual tanks
Canon Pixma IP4000R	46 cents	$62	25 cents	21 cents	Five individual tanks
Epson Stylus Photo R800	56 cents	$114	40 cents	16 cents	Eight individual tanks
HP Photosmart 8150	74 cents	$55	44 cents	30 cents	Tricolor plus black[1]
Epson Stylus Photo R320	49 cents	$79	33 cents	16 cents	Six individual tanks
Lexmark P915	97 cents	$55[2]	57 cents	40 cents	Two tricolor
SNAPSHOT PRINTER ●●●●●●●					
Epson PictureMate	23 cents	$29[3]	[4]	16 cents	One six-color
HP Photosmart 375 Compact Photo Printer	81 cents	$25	51 cents	30 cents	One tricolor
Sony Digital Photo Printer DPP-EX50	68 cents	$17[3]	[4]	[4]	One dye-sublimation ribbon
Dell Photo Printer 540	50 cents	$20[3]	[4]	[4]	One dye-sublimation ribbon

HOW WE TEST: Data based on tests designed and conducted by the Imaging Products Laboratory at the Rochester Institute of Technology. A series of four 400-dpi images from the International Organization for Standardization were printed at "best" or "photo" settings to calculate page yield and cost per page. Paper costs based on packs of either 100 or 120 sheets, except for the Lexmark P915, for which only 20-sheet packs are available. See find.pcworld.com/46916 for more information on these tests. **FOOTNOTES:** [1] Optional tricolor photo cartridge not used in this test. [2] High-yield color cartridge used. [3] Price for set of paper and either ink cartridge or dye-sublimation ribbon. [4] Paper and ink or ribbon costs cannot be calculated separately; print consumables sold together.

PHOTOGRAPHS: RICK RIZNER

Canon Pixma IP8500 ●●●●●●●●●●●

LIKE THE HP PHOTOSMART 8450, the Canon Pixma IP8500 generated great-looking photos and very attractive borderless snapshots, but it costs a hundred dollars more, at $350. The extra money does save you time when printing snapshots: The Pixma IP8500 printed a 4-by-6-inch photo in just 39 seconds, more than three times faster than the Photosmart 8450. However, the IP8500 printed graphics on plain paper at a below-average 1.4 ppm.

The unit's ink and paper costs are lower than average, at 57 cents per snapshot. Our borderless 4-by-6-inch print appeared as good as the photos this model printed on letter-size paper. In addition, the Pixma IP8500 printed attractive color graphics on plain paper; the prints looked quite sharp, with sufficient detail in darker areas.

If you plan to perform all your image editing on your PC, you won't mind the IP8500's lack of an LCD and media card slots. There is a port for printing directly

THE CANON PIXMA IP8500 uses eight ink cartridges, including red and green inks as well as photo cyan and photo magenta.

from a compatible camera, though you can't use the port to upload images to your computer, as you can with several other models here. The IP8500 holds a lot of paper—up to 300 sheets—and provides a built-in duplexer.

UPSHOT: The IP8500 prints photos very quickly, generates appealing color graphics, and has below-average ink and paper costs; direct printing features are limited.

Canon Pixma IP4000R ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

THE $230 PIXMA IP4000R is the only printer we tested that comes with an 802.11g wireless connection, though both the Epson Stylus Photo R800 and R320 offer an 802.11g option. The Pixma IP4000R doesn't have media card slots or an LCD screen, but it does have a direct-print port and an ethernet connection.

The Pixma IP4000R produced prints more cheaply than any other full-size printer we tested. Ink and paper cost 46 cents per 4-by-6-inch borderless print. Only the Epson PictureMate's prints have a lower cost.

The unit uses five individual ink cartridges, employing just three primary colors plus a dye-based black ink for photos and a pigment-based black ink for printing text. Nonetheless, the IP4000R printed very attractive, vividly colored photos on letter-size paper that impressed us as much as those printed by models using more inks. However, on its snapshot prints we noticed fine banding toward the trailing edge, where the printer apparently had difficulty feeding the smaller paper. Color graphics on plain paper suffered from heavy-handed use of the pigment black ink, which seemed to cause a pixelated effect in some areas.

THE CANON IP4000R has an ethernet port, plus wireless connectivity.

The IP4000R is a good all-around performer. It was the quickest at printing color graphics, at 2.5 ppm. At its best-quality settings, our 4-by-6-inch photo sample emerged in 54 seconds, second only to its big sibling, the Canon Pixma IP8500. Both Canons were noticeably quieter than the other printers we tested.

The IP4000R can hold 300 sheets of paper: up to 150 sheets each in the bottom drawer and in the upper feeder. The built-in duplexer enables two-sided printing, but the first side has to dry before printing begins on the other side.

UPSHOT: Its fast print speeds and many features make the IP4000R a good buy, plus its printing costs are low.

Epson Stylus Photo R800 ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

THE $399 EPSON Stylus Photo R800 isn't meant for casual shutterbugs; it's clearly designed for photographers who prefer to edit their images on a PC monitor, not on a small LCD. Unlike every other printer in this roundup, the R800 doesn't have a direct-print port, and it lacks an LCD. But it is the only printer we tested that has a FireWire port.

The R800 uses a total of eight cartridges, but only five colors. To the standard set of cyan, magenta, and yellow inks, the R800 adds red and blue inks.

The other cartridges supply photo black, matte black (for text), and a gloss overcoat.

The unit printed the least impressive color graphics on plain paper, but glossy photos looked gorgeous, with sharp detail and rich colors. Snapshots were also attractive—and inexpensive. IPL tallied the R800's ink and paper costs at a below-average 56 cents per 4-by-6-inch print.

EPSON'S R800 doesn't have an LCD, but it does have a FireWire port.

The printer applies a gloss overcoat to photos in light-colored areas to prevent dull patches. Though we saw the coating in the company's sample photos, we could not detect it on our test photo.

The R800 printed graphics at 1.8 ppm, which was about average. Snapshots printed in just under 2 minutes, or 19 seconds longer than the average.

The R800 can print ▶

on rolls of photo paper that are either 4 inches or 8.3 inches wide. Pressing a button pushes finished photos out for you to cut off. You don't have to remove paper from the main tray before feeding in a roll—an improvement on Epson's previous roll-printing models. Also, a dedicated tray feeds a specially coated CD or DVD through the paper path. One minor inconvenience: To print on a CD or DVD, you must reposition the output tray.

UPSHOT: The R800 offers unique features such as a roll feeder and a FireWire port, and it prints to CD/DVD discs—but you get high print quality only when using full-size glossy photo paper.

HP Photosmart 8150

THE $200 HP PHOTOSMART 8150 has a 2.5-inch color LCD screen, as well as four media card slots that accommodate all the popular card formats. You can also print directly from a compatible camera connected to the 8150's direct-print port, or from a USB flash drive loaded with images.

The 8150's paper drawer contains as many as 100 sheets of plain paper, up to legal size. A second feeder holds up to 20 sheets of 4-by-6-inch photo paper. Also, you can add a 250-sheet paper drawer or a duplexer; each option costs $80.

HP'S PHOTOSMART 8150 holds only two cartridges— but you can swap in others.

The 8150 uses up to six inks with two cartridges installed: a tricolor cartridge and a photo ink cartridge. For printing text documents, you can insert a black-ink cartridge; for printing black-and-white photos, HP offers a photo-gray cartridge.

In IPL's tests, snapshots cost a pricier-than-average 74 cents each. Though the 8150 made high-quality prints on glossy letter-size paper, 4-by-6-inch glossy prints were marred by dithering in light areas and by banding near the trailing edge.

The 8150 printed graphics quickly, at 2.1 ppm. Snapshots printed in 102 seconds, just below the average of 97 seconds.

HP's Image Zone software offers many tools for organizing and sharing photos.

UPSHOT: The 8150's extensive features make it well suited for amateur photographers, though printing costs are high.

Epson Stylus Photo R320

THE $200 EPSON STYLUS PHOTO R320 provides a lot of versatility. It has media card slots, and its direct-print port lets you offload photos to a host of devices, including Zip drives, CD and DVD writers, and USB flash drives.

The R320 proved economical, using up 49 cents' worth of ink and paper per snapshot.

Using its six individual ink cartridges, the R320 printed excellent glossy photos on letter-size paper as well as superb snapshots. But its fuzzy text prints were the worst of the bunch, and its color graphics on plain paper looked blurry.

EPSON'S R320 prints onto coated CD/DVD discs, and can write to an external optical drive.

The R320 printed a snapshot in 108 seconds, 11 seconds slower than the average. The R320 has two LCD screens, but its color LCD is only 1.5 inches wide. The 2.5-inch monochrome LCD shows menus.

We think one 2.5-inch color LCD would have been more useful.

The R320 skimps on paper capacity, offering only a 120-sheet paper feeder and no optional paper tray or duplexer. An optional Bluetooth adapter costs $69.

UPSHOT: The R320 prints superb glossy photos and works with various media, but prints on plain paper are lackluster. ▶

In Search of TOP-NOTCH SNAPS

THOUGH SIX OF the seven full-size photo printers earned our top score for their glossy photos printed on letter-size paper, not all of those models printed equally impressive snapshots.

The Canon Pixma IP4000R and the

OUTSTANDING   **GOOD**

Canon IP4000R
The IP4000R made top-quality prints on letter-size paper...

Canon IP4000R
...but its borderless snapshots looked less impressive.
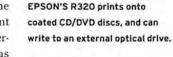
HP Photosmart 8150 both printed 4-by-6-inch photos that showed banding near the trailing edge, which may be due to problems feeding the smaller paper. Some textures in the IP4000R's snapshot didn't look as smooth as they did on larger paper. Details in the 8150's 4-by-6-inch print looked over-sharpened—edges appeared jagged.

None of the snapshot printers earned an Outstanding for their snapshots, though four of the full-size printers did.

Other considerations for the finicky: Using borderless settings doesn't guarantee a borderless print. Even though our image measured exactly 4 by 6 inches, and we selected a borderless print in the print driver, the Sony DPP-EX50 left a narrow white strip along two edges of its prints; similarly, the Dell 540 didn't print to the top edge of its paper. Dye-subs weren't the only models to have sizing problems: Both the HP 8450 and the Epson R320 trimmed about an eighth of an inch from at least one edge of our image in their borderless prints. —*Eric Butterfield*

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Lexmark P915

THE LEXMARK P915, at $150, is the lowest-priced photo printer we tested. It includes media card slots, a direct-print port, and a 2.5-inch color LCD display for previewing photographs and delving into menus. When it's not listing menus, the LCD indicates ink levels as a series of bars.

THE LEXMARK P915's LCD shows ink levels—but not the high ink cost of 57 cents per snapshot.

Those bars could represent a lot of money. Even using Lexmark's high-capacity ink cartridges, the P915 had the highest ink costs; add to that the highest paper costs of any printer we tested, and snap-shots cost almost a dollar apiece. That's more than four times the per-print cost of Epson's Picture-Mate, which had the lowest cost of consumables. One potential plus is that the P915's ink cartridges, like the HP's, have printheads built in, which in theory prevents clogged nozzles. The P915 uses two cartridges supplying six inks: a tricolor cartridge with dye-based inks and a photo ink cartridge with pigment-based inks.

The P915 turned in the fastest text printing speed, 7.4 ppm. However, the unit's 1.5 ppm color graphics speed was among the slowest, and the P915 took over 2 minutes to print our test snapshot at best-quality settings.

The P915's print quality was a disappointment across the board. Colors in photos looked muted, and fine horizontal banding was evident. The black-and-white photo was particularly grainy, and earned a Poor score for its dull appearance. On plain paper, color graphics looked fuzzy, but with decent contrast in shadows. In text documents, some letters were so fuzzy that they seemed to cast a shadow.

UPSHOT: The P915 has a low price, but its features don't make up for the poor print quality and expensive ink and paper.

SNAPSHOT PRINTERS

SNAPSHOT PRINTERS offer an easy way to print 4-by-6-inch photos. Three of the units we tested almost matched the high print quality of the best full-size printers. But one model, the Dell Photo Printer 540, was particularly disappointing, producing less vibrant colors than the others.

Epson PictureMate

THE $199 PICTUREMATE isn't the smallest or lightest snapshot printer here, but nonetheless its handle and lunch-box size suggest portability. The PictureMate doesn't run on batteries, though you can buy a car adapter for $50. It prints only on 4-by-6-inch paper, but it will print two wallet-size photos on one sheet.

We found the PictureMate a pleasure to use—and the least expensive to operate. Epson advertises that prints cost 29 cents each; its $29 print packs include 100 sheets of glossy paper and an ink cartridge intended to print at least 100 photos. To see how far you might be able to stretch your dollar, IPL fed the printer extra paper (16 cents per sheet) until the print quality degraded noticeably. This reduced the per-print cost to 23 cents. No other printer approached that level of economy.

The PictureMate has a direct-print port

EPSON PICTUREMATE's ink cartridge slides into the back. Using extra paper reduced print costs to 23 cents each.

and memory card slots, and it can print via a Bluetooth module ($69). Also, it can write files to an external CD burner. The LCD doesn't display images, though you can print a proof sheet and select images by number.

In our test photos, colors were bright, and details popped out in sharp focus.

However, to print our test photo the PictureMate took 2 minutes and 16 seconds—longer than any other snapshot printer.

UPSHOT: The PictureMate is a good choice for very low-cost snapshots, as long as you don't need prints in a hurry.

HP Photosmart 375 Compact Photo Printer

SNAPSHOT PRINTERS don't get any more portable than the $200 HP Photosmart 375. This petite printer weighs just 2.6 pounds, and is less than 5 inches thick and 4.5 inches tall; an optional $80 rechargeable battery tucks neatly inside the printer. With its silver top and white side panels, the 375 looks like a four-slice toaster for mini cocktail bread.

A 2.5-inch LCD flips up from the top, and the front panel folds down to act as an output tray, revealing four memory card slots. The rear panel tilts back to expose a 20-sheet input tray.

The quality of the photos that popped out of the Photosmart 375 were on a par with those from two other snapshot printers we looked at, the Epson PictureMate and the Sony DPP-EX50. We liked the rich colors and sharp details in most of the Photosmart 375's test prints, but ▶

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noted that the photo didn't look as smooth as the same image printed by its full-size sibling, the Photosmart 8450. Both HP models gave the sky and water in that image a purplish tinge, but the Photosmart 375's prints also showed a slight band across the trailing edge of the paper.

The Photosmart 375 uses a tricolor car-

THE HP PHOTOSMART 375 is petite and has a flip-up LCD, and its side panels fold out to serve as paper trays.

tridge (or a gray-ink cartridge for printing black-and-white photos). Running costs are high, however: Ink and paper costs came to a total of 81 cents per 4-by-6-inch snapshot in IPL's tests—higher than our other three snapshot printers.

The Photosmart 375 printed at below-average speeds, printing a 4-by-6-inch

snapshot in 1 minute and 47 seconds, though the HP Photosmart 8450 took over 2 minutes to print the same image.

The printer comes with the same high-quality software package that accompanies HP's desktop inkjets. Also available are a $50 Bluetooth adapter and a car-lighter power adapter that costs $40.

UPSHOT: Printing costs for the HP Photosmart 375 are high—but this small printer is the only model here offering an optional battery pack or car adapter, making it ideal for taking along on the road.

Sony Digital Photo Printer DPP-EX50

YOU CAN DRIVE THE $180 Sony DPP-EX50 dye-sublimation printer, like the other snapshot printers we tested, from a direct-print-capable camera; the printer also has memory card slots (but only for Memory Stick and CompactFlash cards). Many people, though, will want to connect this model to a TV set—a capability unique to the Sony in this group.

The TV displays photos and print menus, and options for creating postcards or multiple-image layouts. Also, you can convert images to sepia tone or grayscale, and apply other effects.

When you do link to a computer, you'll probably want to use Sony's PictureGear

Studio 2.0 software to edit your images because Sony's Windows driver lacks many common options, such as color and density adjustment and red-eye reduction.

The DPP-EX50 can print to three sizes of paper: 4-by-6-inch, 3.5-by-5-inch, and 3.5-by-4-inch; all three work with the same cassette, which slips into an opening on the front of the case. A 25-sheet pack of 4-by-6-inch paper with an ink ribbon costs $17, or 68 cents per print. The $43 value pack with 75 sheets re-

SONY'S DPP-EX50 has a control panel for PC-free use, and it works with a TV.

duces the per-print cost to 57 cents, but that's still more than double the 23-cent per-print cost of the Epson PictureMate.

The DPP-EX50 printed a snapshot from a PC in 88 seconds, faster than most full-size printers we tested. The print showed very sharp details and the luminous quality that we have come to expect from dye-sub prints.

UPSHOT: The Sony DPP-EX50's TV interface is unique, but you'll get lower-cost prints with the Epson PictureMate.

Dell Photo Printer 540

OF THE SNAPSHOT PRINTERS we tested, Dell's $189 Photo Printer 540 was the quickest, but it also turned out the least attractive photos. Noticeable light and dark bands appeared close to the trailing edge. As you'd expect with a dye-sublimation unit, tonal changes looked smooth, but we saw richer colors from most of the other models. Also, our test prints were aligned improperly, leaving white bands on the paper's top and right edges.

This dye-sub printer generated 4-by-6-inch photos in just over a minute—more

THE DELL 540's paper has perforated tabs, which leave a rough edge when removed.

than 30 seconds faster than the average.

Like all of the other snapshot printers we looked at, the Photo Printer 540 has both a direct-print port and slots for memory cards, though it lacks an XD-Picture Card slot. One plus: The direct-print port can also read USB flash drives. The unit's 2.5-inch color LCD screen is convenient for previewing photos and making simple adjustments.

Buying Dell's print packs individually makes the cost per print 50 cents, but if

you buy Dell's $47 bundle of three packs, you reduce the cost to 39 cents per print, which beats the cost of all of the full-size photo inkjets we tested.

This printer is small and light enough for easy travel, weighing only 3.6 pounds and measuring 7.5 by 5.5 by 2.7 inches. Though the device can't run on batteries, the power adapter is compact.

UPSHOT: The Dell 540 is very fast, and costs are low if you buy supplies in large quantities, but print quality is subpar. ∎

Paul Jasper is a technology consultant and freelance writer in San Francisco; Eric Butterfield is an associate editor for PC World *and writes the online column* The Print Shop.

acer

Acer® TravelMate® C300
Convertible Tablet with 14.1" Display

The Acer TravelMate C300 is the convertible tablet that you'll want to use as your primary computer. With a big 14.1" XGA display—a first for a tablet PC—full-size keyboard and internal, modular optical drive, it's similar to a standard notebook but offers more. The screen becomes a writing surface when you rotate it and fold it back over the keyboard, perfect for taking notes, annotating documents and completing online forms.

Tablet & full-featured notebook in one

- Intel® Centrino™ Mobile Technology
  - Intel® Pentium® M Processor
  - Intel® 855GME chipset
  - Intel® PRO/Wireless 2200BG network connection
- Microsoft® Windows® XP Tablet PC Edition
- 14.1" XGA (1024 x 768) TFT display

- 4-in-1 card reader for optional MultiMediaCard™, Secure Digital card, SmartMedia™ card or Memory Stick®
- Intel® Extreme Graphics 2
- 802.11b/g WLAN, Bluetooth®, 10/100 LAN, V.92 modem
- One-year limited warranty³

Acer TravelMate C303XMi-SP2
$1,999

INTEL® PENTIUM® M PROCESSOR 735
(1.70GHz, 2MB L2 CACHE, 400MHz FSB)
MICROSOFT® WINDOWS® XP TABLET PC EDITION
1GB DDR333 SDRAM, 80GB¹ HARD DRIVE
AND MODULAR DVD-DUAL DRIVE (DVD+/-RW)
(LX.T280E.183)

UNBEATABLE VALUE!

Acer TravelMate C302XCi-SP2
$1,699

INTEL® PENTIUM® M PROCESSOR 725
(1.60GHz, 2MB L2 CACHE, 400MHz FSB)
MICROSOFT® WINDOWS® XP TABLET PC EDITION
512MB DDR333 SDRAM, 60GB¹ HARD DRIVE
AND MODULAR CD-RW/DVD-ROM COMBO DRIVE
(LX.T280E.181)

Acer® EasyPort

Acer EasyPort Port Replicator III
$99

COMPATIBLE WITH THE TRAVELMATE 8000, 6000, 4500, 3200, 800, 660, C300, C110 AND FERRARI 3400
(LC.T4101.004)

Compare Monitor Prices/Features & You'll Choose Acer

Acer AL2032wd
- 20.0" TFT LCD
- 1680 x 1050 native resolution
- 600:1 contrast ratio
- 178° horizontal viewing angle
- 178° vertical viewing angle
- 2 x 5.0W integrated speakers
- VGA, DVI-D, signal connectors
- 300 cd/m² brightness
- 16ms response time
- Black color

WIDE-SCREEN LCD!

Acer AL2032wd
$649
20.0" LCD

Acer AL1914smd
- 19.0" TFT LCD
- 1280 x 1024 native resoluti
- 500:1 contrast ratio
- 140° horizontal viewing an
- 140° vertical viewing angl

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

acer

Acer® TravelMate® 2300
Maximum Mobility, Affordable Price

The Acer TravelMate 2300 is designed to deliver high performance in a portable package that's both appealing and affordable. This all-in-one notebook with integrated wireless connectivity and 15.0" viewing area has the comprehensive feature set and flexibility needed for a busy lifestyle like yours.

- Intel® Celeron® M Processor
- Microsoft® Windows® XP Professional
- 512MB DDR266 SDRAM
- 60GB hard drive
- Integrated CD-RW/DVD-ROM combo drive
- 15.0" XGA (1024 x 788) TFT display
- Intel® 852GM chipset with integrated Dynamic Video Memory Technology (DVMT)
- 802.11b/g WLAN, 10/100 LAN, V.92 modem
- One-year limited warranty[2]

Perfect balance of price & performance

Acer TravelMate 2304LCi-XPP

$849

INTEL® CELERON® M PROCESSOR 350
(1.30GHz, 1MB L2 CACHE, 400MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL
(LX.T5606.206)

Compare Monitor Prices/Features & You'll Choose Acer

Acer AL1732d
- 17.0" TFT LCD
- 1280 x 1024 native resolution
- 500:1 contrast ratio
- 140° horizontal viewing angle
- 140° vertical viewing angle
- 2 x 2.0W integrated speakers
- VGA, DVI-D, signal connectors
- 400 cd/m² brightness
- 12ms response time
- Black color

Acer AL1732d

$359

17.0" LCD

Acer AL1715smd
- 17.0" TFT LCD
- 1280 x 1024 native resolution
- 500:1 contrast ratio
- 150° horizontal viewing angle
- 135° vertical viewing angle

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

Acer recommends Microsoft® Windows® XP Professional.

Acer® Aspire™ 1800
Desktop Power in Mobile Form Factor

Let the Acer Aspire 1800 be your portable entertainment and creativity center. Play the latest games, watch your favorite movies, edit videos or use power-hungry productivity applications. You won't miss one show-stopping moment on the 17.0" wide-screen display, and thanks to the ATI MOBILITY™ RADEON® X600 chip, you'll experience new levels of graphics performance. Instead of being tied to your desk, enjoy the best in multimedia all around your home.

- Intel® Pentium® 4 Processor with HT Technology
- Microsoft® Windows® XP Professional
- 512MB DDR333 SDRAM
- 100GB¹ hard drive
- 17.0" WXGA (1280 x 800) TFT display
- Integrated Super-Multi Drive (DVD+R, DVD-R, DVD-RAM)
- ATI MOBILITY™ RADEON® X600 graphics, 128MB DDR
- 802.11b/g WLAN, Bluetooth®, gigabit LAN, V.92 modem
- One-year limited warranty²

See more on the wide-screen 17" display

Acer Aspire 1804WSMi-128MB-XPP
$1,699

INTEL® PENTIUM® 4 PROCESSOR 540 WITH HT TECHNOLOGY
(3.20GHz, 1MB L2 CACHE, 800MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL
(LX.A39006.002)

Acer® TravelMate® 2700
Performance Teamed with Practicality

Savvy users know that a wide-angle display can make work easier and enhance productivity. You'll see sharp text and crisp images on the Acer TravelMate 2700's 15.4" wide-angle LCD and have the convenience of viewing spreadsheets side by side on a single screen. Combining practicality with first-class performance, the Acer TravelMate 2700 is an excellent choice for small/home offices and small-to-medium businesses as well as government/educational institutions.

- Intel® Pentium® 4 Processor
- Microsoft® Windows® XP Professional
- 512MB DDR333 SDRAM
- 80GB¹ hard drive
- Integrated CD-RW/DVD-ROM combo drive
- 15.4" WXGA (1280 x 800) TFT display
- ATI MOBILITY™ RADEON® 9000 graphics
- 802.11b/g WLAN, 10/100 LAN, V.92 modem
- One-year limited warranty²

Acer TravelMate 2702WLCi-XPP
$1,199

INTEL® PENTIUM® 4 PROCESSOR 3GHz
(1MB L2 CACHE, 800MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL
(LX.T6006.206)

- 2x 1.0W integrated speakers
- VGA, DVI-D signal connectors
- 300 cd/m² brightness
- 12ms response time
- Silver color

Acer AL1715smd
$269
17.0" LCD

Acer AL1715
- 17.0" TFT LCD
- 1280 x 1024 native resolution
- 500:1 contrast ratio
- 150° horizontal viewing angle
- 135° vertical viewing angle
- VGA signal connector
- 300 cd/m² brightness
- 12ms response time
- Black or beige color

$20 PRICE CUT!

Acer AL1715
$229
17.0" LCD

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

acer

Acer® AcerPower™ FV
Affordable Yet Feature-Rich

The AcerPower FV boasts an impressive feature set in a stylish chassis at a price that won't break your budget. Ample power means you can efficiently perform everyday tasks. Multiple expansion slots make the system easy to upgrade, while the six USB 2.0 ports (two front, four back) give you the ability to connect to the latest peripherals.

- Intel® Pentium® 4 Processor
- Microsoft® Windows® XP Professional
- 256MB DDR SDRAM
- 80GB¹ SATA hard drive
- CD-ROM drive
- 1.44MB¹ floppy drive
- Integrated Intel® Graphics Media Accelerator 900
- 10/100 LAN
- One-year limited warranty¹

Card reader shown is not included on featured model.

AcerPower FV-U-P5050
$499

INTEL® PENTIUM® 4 PROCESSOR 505
(2.66GHz, 1MB L2 CACHE, 533MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL

Acer® AcerPower™ F2b
All-Around Budget Performer

Proven technology, high-level reliability and expansion options help to make the AcerPower F2b minitower a sound investment for home, school or office needs.

- Intel® Celeron® D Processor
- Microsoft® Windows® XP Professional
- 256MB DDR SDRAM
- 80GB¹ hard drive
- CD-ROM drive
- 1.44MB¹ floppy drive
- Intel® Extreme Graphics 2
- 10/100 LAN
- One-year limited warranty¹

AcerPower F2b-U-C3000
$399

INTEL® CELERON® D PROCESSOR 330
(2.66GHz, 256KB L2 CACHE, 533MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL

New charcoal-black chassis

Card reader shown is not included on featured model.

Compare Monitor Prices/Features & You'll Choose Acer

Acer AL1511
- 15.0" TFT LCD
- 1024 x 768 native resolution
- 350:1 contrast ratio
- 140° horizontal viewing angle
- 125° vertical viewing angle
- VGA signal connector
- 250 cd/m² brightness
- 25ms response time
- Black or beige color

LOWEST PRICE EVER!

Acer AL1511
$189
15.0" LCD

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

Acer recommends Microsoft® Windows® XP Professional.

intel inside
pentium 4

Acer® Veriton® 7600GT
Business Productivity Tool - Minitower

The Acer Veriton 7600GT minitower, with a deep-charcoal chassis, is a superb business productivity tool that includes a powerful processor, integrated graphics, management software and room for expansion. The one-touch recovery feature easily returns the PC to its original configuration.

- Intel® Pentium® 4 Processor with HT Technology
- Microsoft® Windows® XP Professional
- 512MB DDR400 SDRAM
- 80GB¹ hard drive
- CD-RW drive
- 1.44MB¹ floppy drive
- Intel® Extreme Graphics 2
- Gigabit LAN
- Three-year limited warranty¹

Acer Veriton 7600GT-U-P3201

$839

INTEL® PENTIUM® 4 PROCESSOR WITH HT TECHNOLOGY 3.20GHz
(1MB L2 CACHE, 800MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL

Acer Veriton 7600GT-U-P3001

$799

INTEL® PENTIUM® 4 PROCESSOR WITH HT TECHNOLOGY 3GHz
(1MB L2 CACHE, 800MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL

Acer® Veriton® 5600GT
Business Productivity Tool - Standard Desktop

The Acer Veriton 5600GT standard desktop offers the ultimate balance between space-saving design and expandability, all in a handsome deep-charcoal chassis.

- Intel® Pentium® 4 Processor with HT Technology
- Microsoft® Windows® XP Professional
- 512MB DDR400 SDRAM
- 80GB¹ hard drive
- CD-RW drive
- 1.44MB¹ floppy drive
- Intel® Extreme Graphics 2
- Gigabit LAN
- Three-year limited warranty¹

Acer Veriton 5600GT-U-P3201

$839

INTEL® PENTIUM® 4 PROCESSOR WITH HT TECHNOLOGY 3.20GHz
(1MB L2 CACHE, 800MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL

Acer Veriton 5600GT-U-P3001

$799

INTEL® PENTIUM® 4 PROCESSOR WITH HT TECHNOLOGY 3GHz
(1MB L2 CACHE, 800MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL

Acer AC711
- 17.0" CRT
- 16.1" diagonal viewing area
- 1024 x 768 @ 85Hz recommended resolution
- 0.27mm dot pitch
- Black or beige color

Acer AC711

$109

17.0" CRT
(16.1" VIEWABLE)

GREAT VALUE!

acer
Empowering People

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

PC Support on Call

When technology glitches have you stumped, **who can you turn to?** We tried services that come to you–in person or over the Internet–**and found ones that do the job right.**

AS A PC WORLD READER, you know a lot about fixing uppity computers. But from time to time, whether you're a hobbyist or a PC professional, you'll encounter a problem that's too big for just one person to handle.

Perhaps you know exactly how to repair the faulty computer, but the system is located hundreds or thousands of miles away,

BY LAURIANNE McLAUGHLIN

ILLUSTRATIONS BY EDWIN FOTHERINGHAM

in a college dorm room or at a relative's home. Or it could be that you're too busy to spend the time researching and fixing the problem yourself. Whatever the reason, you need PC assistance, and you need it fast.

That's where the new breed of PC repair services can help. Promising service with a smile (like a 1950s-era gas station ▶

attendant), technical support experts bring professional expertise with Windows, applications, and problematic hardware to computer users, either in person or over the Internet.

SUPPORT OPTIONS

KNOWING A LITTLE ABOUT the nature of your problem should help you decide whether to use an online service—one where you install software that lets a technician control (and fix) your PC over an Internet connection—or an on-site service company. Each type of service has advantages and weaknesses.

For instance, if speed is of the essence, an online support service can begin to diagnose and fix your problem almost immediately, as long as neither your problem nor its solution interferes with your Internet connection. In our tests, getting help online cost less than on-site service. We paid only for the minutes we were connected to a remote technician, which turned out, in this case, to cost considerably less than having a tech visit in person.

Besides costing more, on-site service requires you to set aside time for an appointment, usually within one to two business days of when you call. On the other hand, a technician sitting in front of a balky PC can solve far more complicated matters.

Small software problems that don't inhibit your ability to get on the Internet (issues such as reinstalling device drivers) are best handled by online support services, but overall, for spyware problems, we preferred to work with a competent on-site tech.

TEST PREP

FOR THIS TEST, we used three unglamorous PCs of a kind still serving in many homes: Dell Dimension XPS T700r desktops, now more than three years old, running Windows 98.

We introduced a range of problems that we felt were fixable either on-site or online: We "lost" some important work files (by dragging them from the My Documents folder to another place on the hard drive); we deleted the graphics board's driver files; and we installed four common spyware apps. For the on-site technicians, we added a final, challenging test: a damaged IDE cable that prevented the CD-ROM drive from working.

We sent the sick PCs to reporters in three metropolitan areas: Boston; Austin, Texas; and Los Angeles. Our field operatives called four repair companies that make house calls: CompUSA, ComputerAssistant.com, GeeksOnTime, and Geek Squad (affiliated with Best Buy). One person also tried out three online service companies: PC Pinpoint, PlumChoice, and Tech24.

WHAT'S IN A FIX?

IDEALLY, THE TECHS would fix all the problems. But this was not always the way it worked out. As with most tech support, the results you get are largely dependent on the quality of the support person you end up working with. Even the best services have some PC wizards and some real duds—and we dealt with both. For example, some techs couldn't solve our spyware problem even though it's one of the main reasons people call for help.

Based on our experiences, among the on-site companies we have a slight preference for CompUSA's Technical Services. ComputerAssistant.com did a good job in Boston and Austin, but our experience in Los Angeles was so poor that we cannot fully recommend the company. Online, PC Pinpoint and PlumChoice both had smart, spyware-savvy techs on hand, but we liked PC Pinpoint a bit more because, unlike PlumChoice, it doesn't require you to make an appointment in advance.

REPAIR SERVICES

ON-SITE REPAIRS BEST FOR COMPLEX PROBLEMS

WHILE THEY COST MORE than online repairs, fix-it services that send a technician to your home are more likely to succeed.

ON-SITE SERVICE	Price¹	Comments
CompUSA Technical Services ★★★★☆ www.compusa.com/tech_services	$150 (flat rate, per visit)	**Good.** While reporters in Los Angeles and Boston had generally positive experiences, our Austin reporter said the technician spent less than 30 minutes at her home and didn't fix anything. No technician figured out the CD-ROM drive cable problem; they all recommended replacing the drive.
ComputerAssistant.com ★★★☆☆ www.computerassistant.com	$89 for the first hour; additional hours $59 to $99	**Fair.** In Boston and Austin, technicians arrived on time and fixed the PCs (except for the CD-ROM drive) quickly. The tech in Austin even correctly diagnosed the drive cable, but didn't have a replacement. Our Los Angeles reporter tried for 12 days to book a tech, however, and the one he got did a terrible job.
GeeksOnTime ★★☆☆☆ www.geeksontime.com	$85 for the first hour; subsequent service charges are pro-rated in 15-minute increments	**Fair.** In Austin, after about an hour the technician called for backup, and a second tech came out to help. The techs forgot to search for the missing files (despite being reminded twice) and couldn't fix the CD-ROM drive. In Los Angeles, the company offered a discount after inadvertently canceling the appointment.
Geek Squad ★★★☆☆ www.geeksquad.com	$129 to $229 (flat rate, depending on the type of service required)	**Good.** Our Boston experience was typical: The "Double Agent" arrived a bit early, listened carefully, and correctly diagnosed and repaired most of the problems. Geek Squad recommends that customers take their PC in to a Best Buy store for a hardware problem. In Austin, the tech failed to remove all of the spyware, and it reinfected the system after he left.

FOOTNOTE: ¹ The rates and method of billing vary from service to service; when given a choice, we chose a rate plan suited to a single visit by a technician.

On-Site Service:
Desperate House Calls

YOU MAY FANTASIZE that a technician can sprinkle magic dust on the PC to make it work again. But get a grip: The only dust you'll be seeing is the stuff inside your PC's case. If you book a house call from a service that charges by the hour, some problems could cause you to spend more on a fix than a new PC would cost.

Once we had an on-site service appointment, almost every technician showed up on time or early—but it's not always easy to land an appointment. Our reporters had to wait for one to three business days on average, but there were a couple hitches. For example, our tester in Los Angeles hounded ComputerAssistant.com for 12 days, without receiving a response, before finally getting an appointment. In other cities, this same company was responsive and sent out a service person within two days.

Whether you get a great tech or just a so-so one is a bit of a crapshoot, though most of the techs in our experiences were careful listeners. A few didn't communicate well, but those techs were in the minority. Except for Geek Squad, where everyone is on staff, the on-site support companies we tried hire locals on a contract basis. Bottom line: If you get a service person you don't like, don't just suffer them. Cut the appointment short, and then call the company and ask them to send someone else.

TECH-STRAORDINAIRE: Wayne Johnson of CompUSA did a great job for our Boston reporter.
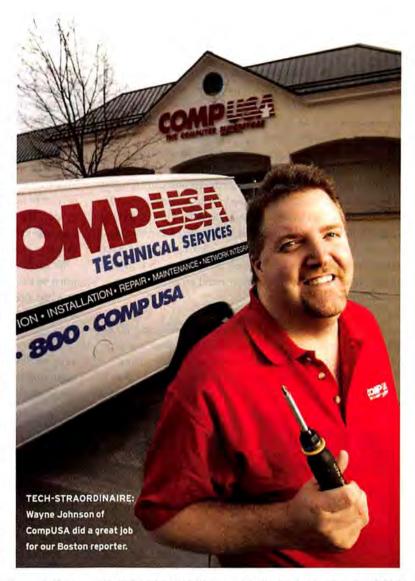
COMPUSA

COMPUSA'S PERFORMANCE WAS MIXED, but good overall. The techs who responded in Boston and Los Angeles were professional and thorough. Each technician brought along a personal toolkit. And at $149 (flat rate), the 1.5-hour service call was the most affordable of the house-call visits.

The results varied somewhat. The Boston tech clearly knew his stuff: He downloaded the drivers right away, and he installed a 30-day demo version of SpySweeper (a spyware remover that tends to be more accurate and thorough than the free Spybot tool some techs use). He also came tantalizingly close to solving the CD drive problem, but he never entirely succeeded.

The technician in Los Angeles left our reporter with a trial version of Panda Antivirus, which deleted the spyware handily, and he patiently explained how using a firewall and antivirus software could help prevent a future spyware infection on the PC.

However, the Austin tech didn't fix anything on our reporter's PC. At first, he tried fiddling with the display settings, but failed to figure out the graphics-driver problem. After spending a few more minutes examining the CD drive inside the PC, he offered only one option: Take the system in to the store for repairs. Otherwise, he said, the PC might be ready for trashing. He never installed any spyware-removal software, nor did he call for help. Though he helpfully suggested that we could apply the $149 on-site service fee toward in-store work, we declined his offer.

COMPUTERASSISTANT.COM

THE BOSTON TECHNICIAN from ComputerAssistant.com was a former IT director. He carefully solved all of the PC's problems in about 3 hours—and then billed our reporter for only 2. He also scavenged the cable from an old PC that was sitting around the house, thereby restoring the CD drive to working condition.

Similarly, in Austin the smart, professional ComputerAssistant.com technician asked a lot of questions. He volunteered to purchase a new IDE cable and come back to replace it the next day, and he stayed on the job for 2 full hours but billed for just 1.

Our reporter in Los Angeles had the worst experience with ▶

ComputerAssistant.com, but eventually it turned out okay. Over 12 days, our tester repeatedly left voice mail messages and filled out forms on the Web site, begging for an appointment. When someone finally came out, "he refused to correct anything unless I agreed to a complete Windows reinstall—an 8-hour job at $45 per hour," our reporter says. Later, the tech admitted that he was not one of the service's regular contractors; apparently, he was a friend of "Eddie," who decided to pass the gig along to his buddy.

Instead, we cajoled the dispatcher to send a different tech. The second technician showed up on time and fixed the PC promptly and professionally. In retrospect, demanding a different repair tech taught us another important lesson: You shouldn't accept the advice of a technician you don't trust, especially if the only repair proposed seems very expensive and time-consuming.

GEEKSONTIME

AT $90 AN HOUR, GeeksOnTime provided little bang for our bucks. In Austin, our reporter said that the geek was "totally perplexed for an hour trying to find or restore the video driver."

Then the tech had to call a colleague to inspect the CD-ROM drive. Arriving 10 minutes later, the second tech took 30 min-

utes to decide (incorrectly) that the drive was broken and to recommend buying a new one. As part of our 3-hour ($170) investment, the geeks also failed to remove all the spyware: They ran Ad-Aware only, which left several spyware apps unquashed.

In L.A. a polite geek arrived and said, "I'm sick. I didn't sleep at all last night." Ugh. We had to wonder whether we might not contract a human virus the next day. (Thankfully, we didn't.) This tech came well prepared, with a case of tools and spare parts. He figured out the bad cable and installed a new one quickly. He also swiftly solved the graphics and file problems. He chose to install SpySweeper, and he left before it had finished running. Predictably, this program alone didn't catch everything.

We canceled our appointment with GeeksOnTime in Boston when we discovered that the GeeksOnTime tech assigned to our case had already scheduled an on-site visit with us on behalf of another repair company. (We couldn't confirm which one.)

GEEK SQUAD

BEST BUY'S GEEK SQUAD uses a secret agent theme in all of its communications. This seems funny at first, when you book an appointment with "Double Agent Joe." But you won't laugh ▶

SELF-HELP TIPS

Clean Your Windows

IF YOU PREFER to handle the big Windows fixes yourself, you'll need the best troubleshooting resources you can find. Here are a few of our favorite sites (including forums), utilities, and books.

Web Sites

• **Computing.Net Support Forums** Simply post your questions at Computing.Net's forums, and knowledgeable helpers may provide the advice you seek. www.computing.net/forums

• **Tech Support Guy** Everyone, including novices, should feel comfortable asking any question here. forums.techguy.org

• **Windows Secrets** Got a strange DLL error and want to know what the heck it means? Use the WinFind tips search box to look through a variety of expert sources for authoritative articles on Windows topics such as "hidden files." www.windowssecrets.com

• **WinTasks Process Library** Free reference covers many common Windows system files, as well as spyware. find.pcworld.com/46960

Utilities
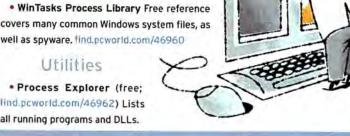
• **Process Explorer** (free; find.pcworld.com/46962) Lists all running programs and DLLs.

• **Registry Mechanic 4** ($30; www.pctools.com) This application from PC Tools Software inspects the health of your PC's Windows Registry and helps you deal with troublesome or unnecessary entries that breed crashes and errors.

• **WinPatrol 8.1** (free; www.winpatrol.com) Close the door to spyware, adware, and other nasty invaders that may hijack your browser (or do worse than that). The paid version gives you additional information about the intrusive software it finds.

• **XPLite and 2000Lite 1.5** ($40; www.litepc.com) LitePC's utilities (including its $25 98lite Professional 4.7) enable you to decipher various mysteries of Windows, allow you to tweak the OS for performance, and help you save disk space.

Books

• **50 Fast Windows XP Techniques** by Keith Underdahl ($25, Wiley Publishing)

• **Special Edition Using Microsoft Windows XP (3rd Edition)** by Robert Cowart and Brian Knittel ($45, Que Publishing)

• **Windows XP Pro: The Missing Manual (2nd Edition)** by David Pogue, Craig Zacker, and L.J. Zacker ($30, O'Reilly & Associates)

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AMD Athlon™ 64 processor 3500+* with HyperTransport™ technology (Socket 939)

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Microsoft® Windows™ XP Home Edition with Service Pack 2

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with Gigabit LAN, Dual PCI-Express & SATA RAID Support

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Dual nVIDIA GeForce 6600 GT 128MB Video Cards with SLI™ Technology Enabled

Realtek ALC850 8-Channel On-Board Audio

160 GB SATA RAID 0 Disk Array (2 x 80 GB Hard Drives)

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Antec True 550W Power Supply for Extreme Power Reliability

16X DVD-ROM

16X Double-Layer DVD+/-RW DVD Recordable Drive

* This model number indicates relative software performance among AMD processors

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later when you get the bill—this service option is among the most expensive we encountered in the course of our investigation.

Geek Squad charged $229 in Los Angeles and Boston, and $172 in Austin. (The company advertises spyware removal alone for $159.) But according to Geek Squad's president (aka "Chief Inspector"), Robert Stephens, you get more than a technician for the additional cost. He characterizes the company as a hospitality business, and says that technicians are trained not only in the technical skills needed, but in communication skills, punctuality, and even the small niceties: The tech in Boston wouldn't enter the house until he'd removed his messy snow boots.

How'd they do? In Los Angeles and Austin, okay but not great. When we set up the appointments, the Geek Squadders warned us that they often can't fix hardware problems, and they suggested that we might be better off taking the system in to the closest Best Buy store. Neither agent figured out the bad CD-ROM cable, but they weren't equipped to do so. In each instance, their (low-pressure) advice was the same: Buy a new drive, or take the PC to a store for repair. Give them points for sticking to the company line, but don't call Geek Squad if you think you have dead hardware.

After Geek Squad visited our reporters in Los Angeles and Austin, the reporters still had spyware on their PCs. The techs solved the lost-files and graphics problems, but we weren't happy about paying more than $200 and not ridding the test PCs of all the spyware. If we were their boss, we'd send 'em back to secret agent school.

In Boston, the technician demonstrated sophisticated knowledge and put in above-average effort, including a correct diagnosis of the bad IDE cable. He declared the spyware mess so bad that he recommended wiping the hard drive and reinstalling

Fix 1 of 5
You may have a virus. Click on "Show Me Fix" to be shown step by step fix procedure.

[Show Me FIX] First......Click on this button to be shown the step-by-step fix procedure.

[HELP] HELP......Click on this Button for 24hr live help.

PC PINPOINT USES A DIAGNOSTIC tool that first tries to guide you through the steps a tech would, but a live helper is just a click away.

Windows 98. Since this was the last appointment, our reporter agreed, curious about how this approach would work compared with attempting a pick-and-choose file cleanup. The spyware disappeared completely, as hoped. More important, the Boston Geek Squad tech was incredibly dogged about returning the PC to good health. He spent approximately 5 hours rebuilding the OS and reinstalling system device drivers, and he made sure that everything functioned properly at the end of the day.

Online Repair:
Proceed With Care

INSTANT HELP for a sick PC seems like a brilliant idea: Log on to a service, and have a technician fix your PC for you, using remote-control software. But we learned that in practice online repair is not all bliss.
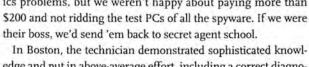
Many online support companies charge you by remote-session time, and the grand total can get expensive quickly with a time-intensive computer problem, such as spyware: Tech24 charges $30 per half-hour and PlumChoice has different packages available, with the least expensive starting at $23 for 15 minutes.

PC Pinpoint, however, charges $75 for a one-year subscription to its daily, around-the-clock tech support service (the company offers both online chat and phone support), plus a diagnostic application and a fix-it-yourself database. If you can't solve your problem using the automated diagnostic tool, you pay a flat $25 fee for each remote-control session.

In our experience, for dealing with an ugly spyware situation, PC Pinpoint was the only smart choice of the three online ▶

REPAIR SERVICES

ONLINE SERVICES BETTER SUITED TO SIMPLE FIXES

SPYWARE INFESTATIONS AND PROBLEMS that inhibit Internet connectivity can stymie online service technicians.

ONLINE SERVICE	Price	Comments
PC Pinpoint ★★★★☆ www.pcpinpoint.com	An annual subscription costs $75; then each remote-control session costs a flat $25	**Very Good.** The support techs were helpful and extremely patient, and they provided instructions that allowed our reporter to conduct some of the repairs herself, offline. When the anti-spyware scans failed to remove the offending programs, a tech carefully removed the spyware manually, leaving the computer fully repaired.
PlumChoice ★★★★☆ www.plumchoice.com	$23 per 15 minutes	**Very Good.** Online service requires an appointment, following a call with an operator who takes down details of your PC problems. Techs were friendly and knowledgeable, recommending that our reporter reinstall Windows (or upgrade to XP) rather than pay a costly hourly rate to repair the PC.
Tech24 ★☆☆☆☆ www.tech24.com	$30 per 30 minutes	**Unacceptable.** Technicians were generally uncommunicative and didn't ask what our reporter's highest priority was before installing anti-spyware software on the test PC. The technicians failed to remove the spyware, and the tool they installed left the system less stable than it was before the service call.

services we tested. Conversely, for solving many typical Windows configuration or application problems, investing $23 in a 15-minute phone call to PlumChoice makes more financial sense.

PC PINPOINT

AFTER OUR ROUGH START using PC Pinpoint's diagnostic tool (it crashed and couldn't continue), a tech who answered our call for help pulled together a remarkably solid repair on our test PC.

Because we couldn't use the company's remote help applet, we were given a toll-free phone number to call. A PC Pinpoint tech answered the phone call almost immediately. Spyware was the culprit for the crashing diagnostic utility—a common problem, he said. By phone, the tech guided us through the steps of installing Ad-Aware and running a custom scan in Windows' Safe Mode. Once the most disruptive spyware was gone, the tech could take remote control of the PC without launching the problematic app. He installed HijackThis and Process Explorer—a utility he likened to a more rugged Windows Task Manager—and began a patient, manual spyware removal using Process Explorer, Ad-Aware, HijackThis, and the MS-DOS command-line console to get rid of adware files one at a time.

As the tech checked files, he sounded serene, as if there were nothing he'd rather be doing than picking through this PC's innards. Finally, he announced, "You're clean."

Select an appointment time:

Availability for Sat, Feb 12, 2005 (EST) change date

Techs	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm
CDONOSO		sel	sel	sel						
Others	sel	sel	sel	sel	sel	sel	sel	sel	sel	sel

Service technicians will contact you at, or within 30 minutes of, your scheduled appointment time. The following times are for online computer support.

☐ Available ☐ Unavailable

PLUMCHOICE, UNLIKE MOST online support services, requires you to book an appointment in advance (usually just a day ahead) for remote-control sessions that are guided by a live technician.

He whipped through the graphics-driver and lost-files problems in minutes. "I hope I don't hear from you again soon," he said good-naturedly. The guy even had a sense of humor.

Though we spent almost 3 hours on the phone, almost all of it was devoted to (successfully) correcting the spyware problem.

PLUMCHOICE

UNLIKE THE OTHER ONLINE SERVICES, PlumChoice required us to schedule an appointment with a representative in advance. At the appointed time, the rep called and guided us to the Plum-Choice site for the remote session. The tech warned us that the PC was "grossly infected" and that a spyware cleanup might not work. Fair enough—this guy was being honest. "If I can't fix it, ▶

SELF-HELP TIPS

Networking and Broadband Help

FEELING TWISTED as you try to troubleshoot a broadband connection or home network? Try these sites, tools, and books.

Web Sites

• **Practically Networked** Don't start a project without consulting a tutorial, troubleshooting guide, or forum at this useful site. www.practicallynetworked.com

• **Wi-Fi Planet Forums** Wi-Fi Planet delivers a good collection of tutorials and advice from savvy wireless users on a wide array of topics such as security, standards, and troubleshooting. forums.wi-fiplanet.com

• **Tom's Networking** Computer geeks know about Tom's Hardware, but wireless users should get to know Tom's Networking. The dedicated site provides troubleshooting tips on basic network setups, and its reviews dig deeper into the technical details of how specific networking products work. www.tomsnetworking.com

Utilities

• **NetStumbler** (free; www.netstumbler.com) Got Wi-Fi? This helpful program diagnoses wireless trouble, pinpoints security weaknesses, and helps you find strong hotspots.

• **SuperScan 4** (free; find.pcworld.com/46964) SuperScan probes your network to let you know which PCs are vulnerable to hackers or viruses.

Books

• **Absolute Beginner's Guide to Home Networking** by Mark Edward Soper ($17, Que Publishing)

• **Absolute Beginner's Guide to Wi-Fi Wireless Networking** by Harold Davis ($17, Que Publishing)

• **How to Do Everything With Windows XP Home Networking** by Dave Field and Andrew Brandt ($25, Osborne)

• **The Wireless Networking Starter Kit (2nd Edition)** by Adam Engst and Glenn Fleishman ($27, Peachpit Press)

I won't charge you," he said. We had him try the easier problems first. Within minutes, he downloaded and installed a new graphics driver from NVidia's site, and then he found the "lost" files.

The spyware remained. The PC looked awfully infected, he said, and since it was locking up, too, he suggested that the best course might be to reinstall Windows 98, or upgrade to XP, and then reinstall the apps. "This has reinstall written all over it," he said. He was trying hard to prevent us from wasting money. (When was the last time you felt that way at a car repair shop?)

Bottom line: We'd recommend PlumChoice for any software difficulty other than a case of spyware infestation; solving time-intensive problems seemed cost-prohibitive. And even though our tester didn't cure the spyware problem, in view of the potentially high cost, we feel that the technician treated us fairly.

TECH24

DURING SIGN-UP Tech24 clearly warned us that spyware and virus removal could "take several hours." We pressed on, and in minutes a rep took control of the PC. But after a few minutes of watching the rep move the mouse, we saw nothing. As we wondered whether the PC had frozen, a dialog box appeared: "Your session is over. We hope your real-time session was helpful." Not exactly: The guy hadn't actually done anything.

After a reboot, we reconnected, and this same tech dropped Ad-Aware Personal Edition onto the PC. He told us to hang up, install the program, and then run a scan, so as not to rack up bill-

able minutes while the scan ran. It sounded fair, but the tech didn't tell us which type of scan (Ad-Aware offers two) to specify. He also didn't mention running the scan in Safe Mode, a detail that meant the difference between success and failure.

The experience didn't get better. The PC continually froze up, and we never even got to the other two problems. After about 4 hours of getting nowhere, we washed our hands of Tech24.

PARTING LESSONS

WE LEARNED SOME IMPORTANT lessons from our online PC repair experiences. First, as common as spyware is, it poses a unique repair conundrum for online support: The computer may be too flaky for online repair to work.

For smaller problems, PlumChoice is an affordable option at $23 for 15 minutes or $46 for a half-hour. Given the knowledgeable, honest representatives we encountered at PlumChoice and PC Pinpoint, we would advise against paying for on-site support if you just need to resolve small glitches.

On the other hand, if you're the "safe bet" type, or if a serious spyware problem confronts you, PC Pinpoint delivers a good deal at $75 for a yearlong subscription to its 24/7 tech support, plus $25 per remote-control session. Remember, the $25 we invested on top of our subscription bought us 3 hours with a fantastic rep. And a good support technician is worth far more than that. ∎

Laurianne McLaughlin is a freelance writer based near Boston.

SELF-HELP TIPS

The Inside Story

NOT ALL PC PARTS ARE CREATED EQUAL. Learn about the innards of your PC, track down potential sources of trouble, and improve your PC's pep with these sites, tools, and books.

Web Sites

• **Driver Files** and **The Driver Guide** Need new drivers in a hurry? It's hard to beat these two sites. www.driverfiles.net, www.driverguide.com

• **Tom's Hardware Guide Community** No matter which part of your computer you need help with, you'll find useful advice on the packed forums at this site. www.community.tomshardware.com

Utilities

• **Lavalys Everest Home Edition** (free; www.lavalys.com) This thorough system information and diagnostic utility tells you all about the components inside your computer and tests your

system for possible gotchas (like a broken fan or hard drive).

• **SiSoftware Sandra Lite** ($35; www.sisoftware.net) Besides detailing the minutiae inside your PC, this utility diagnoses possible ills and can benchmark your computer.

• **System Mechanic 5** ($50; www.iolo.com/sm) This veteran utility from Iolo Technologies isn't cheap, but it gives you a powerful all-in-one tool for jobs like Registry cleanup, file deletion, and software uninstalls.

Books

• **PC Annoyances** by *PC World* contributing editor and columnist Steve Bass ($20, O'Reilly & Associates)

• **PC Hardware in a Nutshell (3rd Edition)** by Robert Bruce Thompson and Barbara Fritchman Thompson ($20, O'Reilly & Associates)

• **Upgrading and Repairing PCs (16th Edition)** by Scott Mueller ($60, Que Publishing)

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Creative Cambridge Inspire P7800 7.1
   Surround Sound System
Logitech Deluxe 104 Keyboard
Microsoft Optical intelli Explorer Mouse
Aluminum X-Navigator Server Tower Case 420W
   with MOD "See Through Windows"
Microsoft® Windows® XP Home Edition w/ SP2

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Creative Cambridge Desk Top Theater 5.1
   SS60 5.1 Surround Sound
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Go to find.pcworld.com/46845

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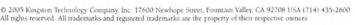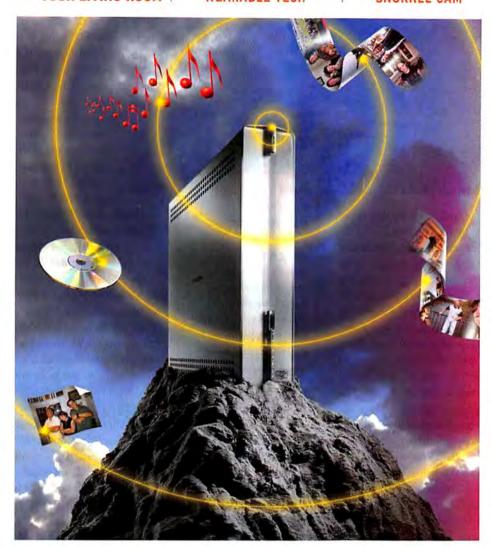
FREE YOUR MEDIA

OUR INTREPID ENTERTAINMENT FAN CHECKS OUT FIVE NEW PRODUCTS THAT LET YOU STREAM DIGITAL MUSIC, PHOTOS, AND VIDEOS FROM YOUR PC TO ANY ROOM. BY MATTHEW MCKENZIE

THERE'S A WORLD of digital entertainment at my finger-tips, yet it's all trapped in ugly PC boxes with 17-inch dis-plays and tin-can speakers. At the same time, I have thou-sands of dollars invested in high-end home entertainment equipment sitting in my living room, and none of it is worth a dime when I want to watch or listen to anything in my digital media library.

But finally, my PC and my home entertainment gear are getting a chance to make a love connection. With the lat-est digital media receivers, you can access your PC-based music, pictures, and video on any audio or video device in your home. You just need a wireless home network. (You *can* use ethernet, but all that wiring tends to get messy.) Though it's possible to stream music over an 802.11b wire-less connection, using the fast-er 802.11g standard is essen-tial if you plan to watch video.

All of the devices I tested for this article can handle audio, video, and pictures, but that's where the resemblance ends. The first products I looked at were basic digital media ▶

receivers for simply sending multimedia files from a computer over to your TV or your stereo system. In that category I tested products from D-Link, Philips, and Pinnacle. I then ventured into the world of Media Center PCs and assessed an HP Media Extender. And finally, I checked out a fancy media server manufactured by ViewSonic that can deliver multimedia content without any help from a computer.

CHEAP AND (MOSTLY) EASY

SETTING UP A digital media receiver is a cinch. Each unit comes with PC-based server software that indexes your media files and then streams

> Finally, my PC and my home entertainment gear [get to] make a love connection.

them on demand to the device itself; the receiver hooks up to your audio system and/or to a television through common connectors. Digital media receivers feature analog A/V connections (RCA audio, composite video, and/or S-Video) and, in many cases, component video and digital audio (Coaxial, S/PDIF, or optical) hookups. Make sure that the device you purchase includes all of the outputs you need; some models, for exam-

ple, provide only one set of RCA audio outputs.

Each product gives you a setup screen on your TV to step you through finding the network connection and server. If you have to enter IP addresses or an encryption key, be sure to write everything down in advance. And don't forget: Your PC must be running to stream content. If it decides to take a nap while you're jamming to Led Zeppelin in your living room, you will have to interrupt your air guitar solo to wake it up.

I started out testing D-Link's MediaLounge DSM-320, connecting it to my stereo system with the included RCA cables and then plugging it into my TV set with a composite video cable (the DSM-320 provides digital-audio and component-video outputs, too, but my equipment lacks them). When I turned on the receiver, the quick-start wizard found my wireless network and located the D-Link media server software that I had already configured on my PC. Later, I installed the server software on a second computer and was able to use the television setup menu to switch between the two servers.

D-Link MediaLounge DSM-320
find.pcworld.com/46618
List: $189
Rating: ★★★☆☆
Bottom Line: The price is right, setup is a snap, and access to Napster and Rhapsody is a plus. The brain-dead remote control and sluggish response are not.

Setting up the DSM-320 was easy, but getting it running wasn't. Some of my multimedia folders contain hundreds of files, and the unit was often painfully slow to list their contents on screen. The remote control was a bit sluggish, too: Even at close range and having inserted fresh batteries, I sometimes had to press buttons several times before the

system responded. After that, however, the D-Link unit performed well, streaming the Vincent Price movie *The Abominable Doctor Phibes* without pausing or stuttering at any time over my high-speed wireless connection. The device works with Napster, Radio@AOL, and Rhapsody, allowing subscribers to play streaming music and videos directly from the Internet.

The DSM-320 can also support Windows Media Connect software (find.pcworld.com/46730). None of these devices play protected Windows Media files, however, which is an obstacle if you like to download music from Web sites such as Napster and Musicmatch On Demand. Installing Windows Media Connect fixes that problem. If you spent your last paycheck on Napster downloads, this could be a major selling point.

Philips's Streamium SL300i works much like the DSM-320. Right off the bat, though, I ran into a problem with this product—the Streamium couldn't locate my network, even after I entered the needed information manually.

Philips Streamium SL300i
find.pcworld.com/46620
List: $300
Rating: ★★★☆☆
Bottom Line: Plan to party like it's 1989, because you won't encounter any digital hookups on this model. However, the unit does work with a nice selection of Internet content partners.

I was able to resolve the difficulty using an age-old troubleshooting technique: I went into the kitchen, made a grilled-cheese sandwich, ate it, and then returned and tried again, this time successfully.

From there, the Streamium performed beautifully, giving me the opportunity to digest my meal to the mellifluous sounds of Black Sabbath. (Perhaps the Streamium knew what was coming.) I did discover one quirk, though: You have no way to page through long file lists.

Streamium works with a number of Internet services, including Live 365, Musicmatch, IFilm (previews and short movies), Launch (music videos), and Yahoo Movies (trailers only). If you're as hooked on any of these online services as I am on Rhapsody (which it doesn't yet support), you'll like this device. On the downside, the Streamium lacks the component-video and digital-audio outputs that the D-Link provides.

By the time I got to our third digital media receiver, Pinnacle's ShowCenter, I was ready for another sandwich. With this unit, however, I didn't have problems—all the receiver needed from me was my wireless network's SSID (service set identifier, or the network's name), and it did the rest. ShowCenter also did a good job finding and playing content.

ShowCenter's PC-based server software delivers more than its competitors,

allowing you to do things such as burn CDs or DVDs and export Winamp-compatible playlists. The software can also copy and convert incompatible media formats—most notably Windows Media video files—into one of four ShowCenter-compatible video formats. Like the D-Link, ShowCenter supports analog and digital audio output, as well as composite and component video.

ShowCenter does have an Achilles' heel: It provides no support for Internet-based streaming-media services. However, at press time Pinnacle said that it was planning to release an upgrade to make the device support both Rhapsody and Shoutcast-based Internet radio sites.

Not everyone is interested in streaming video and pictures to TV, of course. If you are merely concerned with playing your Bob Seger digital music collection and dancing around your house in your skivvies à la *Risky Business*,

choose an audio-only receiver such as the $200 Roku Sound-Bridge M500 (find.pcworld.com/46724) or the $500 Sonos ZonePlayer ZP100 (find.pcworld.com/46726).

And if you're troubled by the growing collection of boxes you're amassing in your living room, you might be interested in a DVD player or other component that has built-in wireless support. One option is Buffalo Technologies' $349 LinkTheater Wireless Network Media Player (find.pcworld.com/46728), which combines a progressive-scan DVD player with the ability to stream high-definition content to your HDTV. In addition, D-Link offers a version of the DSM-

320 containing a DVD player for $269. Other manufacturers, including KISS Technology, GoVideo, and Lite-On, sell similar combination devices.

EXTEND YOUR MEDIA CENTER

IF YOU OWN a Windows Media Center PC, you probably know about its digital video recorder feature and the ability to pause, save, and play back TV programs. Unfortunately, most digital media receivers aren't designed to stream TV from your Media Center.

Media Center Extenders work like other digital media receivers in that they connect to your television or stereo and stream content from a remote computer; however, they can also stream most types of Media Center content, including TV programming (live or recorded) and other Windows Media–formatted files. Extenders also allow you to operate the same remote control and interface as a Media Center PC. That's great, since most of us don't need another gadget to lose in the sofa, nor do we want to learn how to use new software just to watch *Happy Days* reruns.

HP and Linksys, among others, make Media Center ▶

Extenders. If you have an Xbox, you can use the $80 Media Center Extender for Xbox (find.pcworld.com/46732). I tested the HP Media Center Extender X5400 with an HP Media Center PC, and setup was a snap. I connected the receiver to my TV using composite video, and then the setup wizard asked several basic questions, including the wireless network's SSID. To complete the process, I simply installed software on the Media Center PC for managing the Extender.

The X5400 did a fine job of streaming various files to the TV and stereo system in my bedroom, playing music files and Monty Python reruns smoothly off the Media Center PC in my living room.

Bear in mind that Extenders won't stream content from the PC's DVD or CD drives, nor will they play copy-protected programs you record—certain premium-channel movies, for example. Plus, Extenders don't allow you to access the Internet or your Windows desktop on your TV. Nevertheless, if you own a Media Center PC, Extenders are the way to go.

GET AMBITIOUS

WITH NO FEWER than four computers in my home, and a 200GB portable drive floating among them, I've been fighting a losing battle to keep track of my digital content.

Enter networked media servers. These devices marry the storage and software features of a computer with the connectivity of a digital media receiver. Such servers either in-

ViewSonic Wireless Media Network
find.pcworld.com/46626
List: WMG120 gateway $499, WMA100 adapter $299
Rating: ★★★☆☆
Bottom Line: Better user documentation, more-extensive software, and a larger hard drive would make this product more worthy of your time and money.

clude or enable you to attach a hard drive, creating a single point for storing and managing media files. They work with PCs or on their own—an attractive proposition for people who don't want to keep a PC running all the time.

ViewSonic's Wireless Media Network has two components. The WMG120 wireless gateway has a built-in 120GB hard drive that acts as a single repository for media files. The unit also includes an 802.11g wireless access point, four ethernet ports, a USB print server, and two USB 2.0 ports for adding storage. Meanwhile, the WMA100 wireless adapter connects to your audio/video components and delivers the streaming content stored on the wireless gateway.

Unfortunately, the product impresses more in theory than it does in practice. One

weakness is the scant, sometimes mystifying help files and documentation for setting up the WMG120, which is designed to replace your existing gateway. Even though I found setup no more difficult than usual for this type of hardware, I pretty much had to fly solo. No setup wizard appears to guide you, and I didn't find the quick-start guide all that helpful. If you lack networking experience, you may want to think twice about buying.

After I set up my gateway, things got easier. I connected the WMA100 to my stereo system and TV using its analog-audio and composite-video ports. Since I configured the gateway as a DHCP (Dynamic Host Configuration Protocol) server, the WMA100 adapter found the server right away.

Once you get the two devices talking, the adapter can pull content off the WMG120 or from a PC that's running ViewSonic's server software. The device supports the SMB networking standard, so it appears as a networked drive volume on most desktop operating systems. Sure enough, my Windows machines were able to find the WMG120 and mount it as a shared drive; I

then copied my files from my computers to the server's audio, video, and image folders (the software can't automatically sync your content).
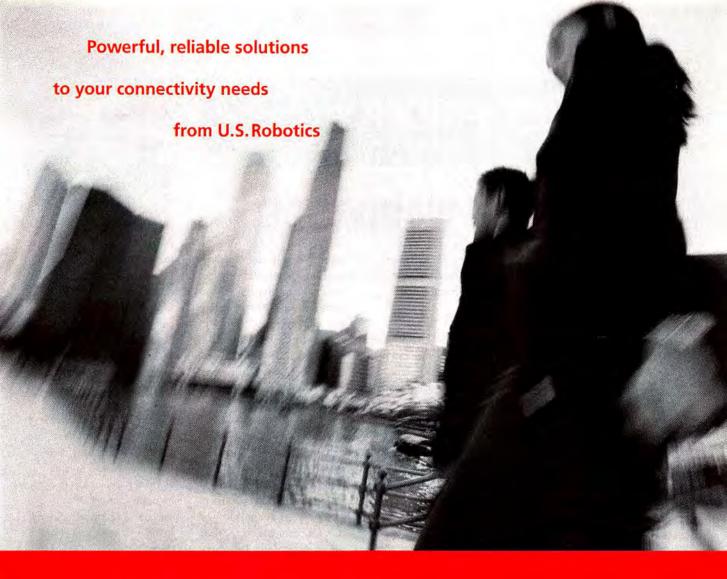
I started streaming a few ancient digitized home movies that turned out to be suitably surreal for the late hour at which I was working. The ViewSonic hardware served everything up without so much as a hiccup. I do wish, however, that for the total $798 price tag the ViewSonic software offered several additional features in the vein of Pinnacle's ShowCenter—for instance, the ability to convert unsupported file formats. Also, though the ViewSonic system will stream Internet radio, it has no partnerships with content sites like Live365.

IN THE END

BY THE TIME I finished all of my testing, I was sprawled on the floor: All the time I'd spent on my sofa had made me sore in strange places. So what did my foray into streaming digital media reveal? At this point, the ViewSonic doesn't provide enough media management features, hard-drive space, and user guidance to justify the cost. Go with a digital media receiver instead—of the ones I tested, I was most impressed by Pinnacle's ShowCenter. And of course, if you have a Media Center PC, an Extender is clearly the best choice. ∎

Matt McKenzie is a writer and editor based in San Francisco. He still wants to rock and roll all night, even though he's getting too old to party every day.

GADGET FREAK

DAN TYNAN

BRAVE NEW WARDROBE

WHEN IT COMES to fashion, I'm stuck between the preppie eighties and the grungy nineties. It's not a pretty sight, as my wife will attest. But my wardrobe may soon become a whole lot hipper, thanks to some nifty gadgets that double as clothing accessories.

For example, Oakley's $500 Thump (www.oakley.com/thump) combines a flash MP3 player with a set of lightweight and stylish sunglasses—a very cool gadget. Ingenio's Eyetop DVD ($599, www.eyetop.net) fixes a tiny display to a pair of wraparound shades, which is wired to a portable DVD player on your hip (very clunky).

NYX Clothing is marketing $2000 jackets with LEDs sewn into the fabric that can display text messages from your PDA or your cell phone—handy for emergency roadside workers or all-night ravers. Vectra-Sense Technologies (www. verbforshoe.com) sells a $500-plus sneaker that physically adapts to your foot, records how far and fast you run, and can wirelessly zap your contact information to your compatibly clad fellows. And of course there's Microsoft, which wants you to fork over $10 per month to get news and weather reports from MSN Direct delivered to a special $199 wristwatch.

But before ware-wear becomes a standard part of our wardrobes, we will have to solve two niggling little problems: input and output.

WASH-N-WARE

MANY OF US already wear computers, only we call them cell phones, says Sandy Pentland, director of MIT Media Lab's wearable computing project. Like PCs, today's handsets let you surf the Net, play MP3s, and watch videos. Do anything fancier than jabber into the phone, though, and you'll quickly run into its Achilles' heel: an eensy-weensy keypad and screen.

Voice recognition can help, but just imagine barking commands at your handheld in a meeting or at the movies. One solution may be fabric keyboards sewn into a sleeve or pant leg, says Pentland (an idea that screams "Geek!"). Another may be gesture recognition. Samsung plans to release a phone in Korea that detects movement: To dial, draw the number in the air; to end a call, shake the phone.

Displays are tougher. The usual approach has been to graft a display onto a pair of glasses, where it can be magnified to look like a 10-inch laptop screen. But this brings its own problems, says Steve Schwartz, a Media Lab alum who designs head-mounted displays for the U.S. Army.

To get enough bandwidth to transmit video means running wires to the headset—ugly and potentially hazardous, especially in combat—or using a wireless antenna that sucks battery power, making the unit bulky and unattractive. A possible solution may lie in low-voltage wireless technologies and organic LEDs that are brighter than LCDs but draw a fraction of the power, says Pentland. (See "OLED: New Star of the Small Screen" on page 26 for more on OLEDs.)

Worse, with video, even small movements—like chewing gum with the headmount on—can give you that disorienting "I'm about to hurl" feeling. There's also the dis-

traction factor. "How is Joe Citizen going to parse a nasty-gram e-mail from his boss while crossing the street without getting killed by a bus?" asks Schwartz.

So when will the average Joe or Jane open the closet and see wearable wares in there?

"If I'm feeling optimistic, then I say next year," says Pentland. "Pessimistic would be four or five years. The fundamental technology is all there, it just needs to mature."

Funny, that's exactly what my wife says about me and my wardrobe. ■

Contributing Editor Dan Tynan isn't kidding about his wife.

ILLUSTRATION: ZOHAR LAZAR

TOP 100

SPOTLIGHT: DVD DRIVES

DOUBLE-LAYER TAKES OVER: All of the drives we tested this month can record to write-once double-layer media.

DVD on the Edge

We test double-layer burners designed to pack twice as much content onto a disc.

IF YOU'VE BEEN on the fence about upgrading to a new internal DVD burner, you're officially out of excuses. In the 12 months since our last major DVD roundup (in April 2004), disc capacities have nearly doubled, write speeds have increased twofold, and average drive prices have dropped by more than half.

Formerly an exotic feature, double-layer support—which permits users to write up to 8.5GB to a write-once DVD+R disc—is now de rigueur, and speeds are increasing

from 2.4X. Double-layer's superior capacity is especially valuable for people who need to burn up to 2 hours of high-bit-rate video or to copy data folders that exceed a conventional DVD's 4.7GB space limit.

The current 16X write speed for both DVD-R and DVD+R is a maximum rating; the drive commences writing at a slower speed (say, 6X) on the inner part of the disc, and only approaches its full stride of 16X as the recording progresses toward the outer edge of the disc. The write time

per full disc running at 16X is a little over 6 minutes, as compared with 8.5 minutes at 8X. That's an improvement, certainly, but not the doubling you might expect from the specified maximums. Because the rate of improvement in performance is not linear and would continue to diminish above 16X, we may not see burners that push beyond the 16X barrier.

We gathered 12 state-of-the-art burners to run through the PC World Test Center's rigorous test suite. Though their

technical specs are far too numerous to list here (see our chart on page 122), all of the drives burn to at least one kind of write-once recordable DVD disc at 16X, and all can burn to double-layer discs.

DRIVE BY DRIVE

WHEN DOUBLE-LAYER DVD+R was introduced last year, its write speed was 2.4X. Today, the latest drives can burn to a write-once double-layer disc at 4X or 5X (achieving the faster write speed when recording to 2.4X double-layer media). In this roundup, only one-third (4 out of 12) of the drives wrote at 2.4X: the AOpen DUW1608, HP DVD Writer 640i, Lite-On SOHW-1633S, and Samsung TS-H552B (you can bump BenQ's DW1620 up to 4X with a free firmware update). The others reached 4X/5X. For more information on double-layer technology, see "Double-Layer: Burning Issues" on page 123.

Though rewritable speeds remain largely at 4X for both DVD-RW and DVD+RW, fans of rewritable DVD will be happy to learn that faster speeds are imminent. In fact, two drives we tested here—Plextor's PX-716A and LG's GSA-4160B—have already upped the ante to 8X. Unfortunately, we couldn't officially test how well they performed at 8X because no suitable media was available at press time—nor will it be available until March at the earliest. Plextor, however, supplied us with preproduction media, and in our informal tests using it the results met our expectations for significant speed gains, based on the performance rating of the drive. None of the drives we tested support 6X DVD-RW, but models that do support this speed will be shipping by the time you read this.

Only one model here, the LG, supports writing to DVD-RAM (at 5X). On the other

BLUE-LASER DVD

High-Def Recording Format Wars

THE NEXT GENERATION of DVD drives is just around the corner, and the first drives could begin appearing in as little as six months. Based on blue lasers instead of the red lasers that today's models use, these drives promise to deliver faster write speeds and dramatically more storage.

So who needs all that additional speed and storage? Aficionados of high-definition recording, for one. HD video requires more storage capacity than a red-laser DVD can easily provide in the current

THE GUTS OF BLU-RAY: Pioneer's Blu-ray optical pickup has been in development for almost three years.

MPEG-2 compression scheme. As a result, the industry is positioning blue-laser DVD as the logical companion recording technology for snazzy HDTVs.

Every big consumer electronics company supports the blue movement. Two major high-definition, blue-laser DVD formats will be competing to become the prominent standard: HD DVD and Blu-ray Disc. Backers developed the HD DVD standard with an eye toward ease of implementation and speed to market. But at only 15GB per layer, HD DVD is a bit light in the capacity department for HDTV,

which tops out at a rate of 19.4 mbps or about 17.4GB per 2-hour movie. HD DVD's developers do have plans to increase the technology's capacity, but the format's spokespeople are less concrete than their Blu-ray Disc counterparts about how high the capacity will go.

Blu-ray Disc has considerably greater capacity at 25GB per layer; that's sufficient storage space to accommodate a 2-hour movie, with plenty to spare for a slew of extras. And Blu-ray's backers have already begun discussing implementing up to eight layers for a gigantic 200GB disc.

Since both HD DVD and Blu-ray use the same compression schemes (MPEG-2, AVC MPEG-4, and VC-1), there will likely be no discernable difference in picture quality to tilt consumer opinion one way or the other.

In the end, it may come down to which standard gets to the public first with content, in which case HD DVD has a clear advantage. HD DVD recorders and players are set to hit store shelves by fall 2005. Blu-ray recorders and players won't arrive until the end of 2005, or early 2006.

hand, several models (including Pacific Digital's Mach 16 U-30264, Pioneer's DVR-A08XLA, and Toshiba's SD-R5372) can read DVD-RAM discs—and that's a boon if you use DVD-RAM to capture content on your DVD video recorder.

We tested complete retail kits so that we could evaluate the out-of-box experience each vendor provides. Installing an internal DVD burner isn't particularly difficult, but helpful documentation and appropriate cables and screws make ▶

things even easier. Most of the drives we looked at offered at least passable instructions on paper. Plextor and Toshiba earn kudos for providing exceptionally detailed documentation, as does Memorex, for its 16x Internal Double-Layer Dual-Format DVD Recorder. Alas, LG provides no paper manual at all, opting instead for a CD-based installation guide—which is fine unless your only computer is already open (or you're trying to replace its deceased optical drive). The guides from Pacific Digital and Samsung were barely adequate, offering meager usage details.

Of the dozen we tested, only the Sony DRU-710A and the Lite-On have short bodies—an important detail if you're upgrading a bread box–size compact PC.

THE SPEED GAME

WE FOUND NO great surprises in our performance tests. All of the drives performed within reasonable proximity of what we'd have expected from their speed ratings. We tested all units with the most up-to-date firmware available at the time; sometimes, as in the case of the BenQ, this boosted the drive's write speeds.

In March, Plextor expects to release a firmware update that it says will boost the PX-716A's double-layer write speeds to 6X. And BenQ says it will offer free updates to 8X in the spring. We recommend that you visit your drive vendor's Web site regularly for firmware updates. By doing so, you might be able to benefit from

TOP 100

TEST Center

Double-Layer DVD Burners on Parade

TOSHIBA'S SD-R5372–one of the fastest drives on the chart–and BenQ's competitively priced DW1620 capture Best Buy awards.

	INTERNAL DVD DRIVE	Features and specifications		Performance		Bottom line
1	Plextor PX-716A $130 (★★★★✦ NEW) find.pcworld.com/46594	• 4X double-layer DVD+R [1] • 16X DVD-R, 16X DVD+R, 4X DVD-RW, 8X DVD+RW, 48X CD-R	• Roxio Easy Media Creator Basic 7.1 software	• Double-layer +R: 27:11 • Single-layer +R: 6:30 • DVD+RW: 11:44	Feature-filled drive provides fine overall performance, along with 8X DVD+RW and new firmware for 6X double-layer.
2	Toshiba SD-R5372 **Best BUY** $130 (★★★★✦ NEW) find.pcworld.com/46600	• 5X double-layer DVD+R • 16X DVD-R, 16X DVD+R, 4X DVD-RW, 4X DVD+RW, 48X CD-R	• Nero Express 6.3 (with Nero-Vision Express 2.1 and Photo-Show Express) software	• Double-layer +R: 22:24 • Single-layer +R: 5:37 • DVD+RW: 12:49	The best all-around performer on the chart. Regrettably, the bundled version of Nero has limited components.
3	Memorex 16x Internal Double-Layer Dual-Format DVD Recorder $112 (★★★★☆ RETESTED) find.pcworld.com/44911	• 4X double-layer DVD+R • 16X DVD-R, 16X DVD+R, 4X DVD-RW, 4X DVD+RW, 48X CD-R	• Nero Express 6.3 (with Nero-Vision Express 2.1, BackItUp, and PhotoShow Express) software	• Double-layer +R: 26:57 • Single-layer +R: 6:15 • DVD+RW: 12:44	This drive is a good value, given its solid performance and jam-packed Nero software bundle, which includes Recode.
4	Pacific Digital Mach 16 U-30264 $110 (★★★★☆ RETESTED) find.pcworld.com/45532	• 5X double-layer DVD+R • 12X DVD-R, 16X DVD+R, 4X DVD-RW, 48X CD-R	• Nero Express 6.3 (with Nero-Vision Express 2.1 and Photo-Show Express) software	• Double-layer +R: 22:23 • Single-layer +R: 5:35 • DVD+RW: 12:45	Excellent performer uses the same drive mechanism as the Toshiba SD-R5372, but a mediocre manual holds it back.
5	Hewlett-Packard DVD Writer 640i $130 (★★★★☆ NEW) find.pcworld.com/46650	• 2.4X double-layer DVD+R • 8X DVD-R, 16X DVD+R, 4X DVD-RW, 4X DVD+RW, 40X CD-R	• Sonic RecordNow 7.22, Inter-Video WinDVD Creator 2.4, SureThing SE software [2]	• Double-layer +R: 44:59 • Single-layer +R: 5:49 • DVD+RW: 11:45	A strong performer on all but double-layer writes, this model is distinctive thanks to its snazzy LightScribe label-etching ability.
6	Lite-On SOHW-1633S $80 (★★★✦ RETESTED) find.pcworld.com/44908	• 2.4X double-layer DVD+R • 8X DVD-R, 16X DVD+R, 4X DVD-RW, 48X CD-R	• Nero Express 6.3 (with Nero-Vision Express 2.1 and BackItUp) software	• Double-layer +R: 43:38 • Single-layer +R: 6:05 • DVD+RW: 12:03	Cheapest drive on the chart has a short-depth design for easy installation in tight cases. But its 2.4X DL speed is poky.
7	Sony DRU-710A $115 (★★★✦☆ RETESTED) find.pcworld.com/44912	• 4X double-layer DVD+R • 12X DVD-R, 16X DVD+R, 4X DVD-RW, 4X DVD+RW, 48X CD-R	• Nero Express 6.3 (with Nero-Vision Express 2.1, BackItUp, and Recode) software	• Double-layer +R: 27:09 • Single-layer +R: 6:03 • DVD+RW: 12:32	Quick short-body drive is especially suitable for smaller PCs. Good documentation, but its tray feels a bit flimsy.
8	BenQ DW1620 **Best BUY** $90 (★★★✦ RETESTED) find.pcworld.com/44906	• 2.4X double-layer DVD+R [1] • 16 DVD-R, 16 DVD+R, 4X DVD-RW, 4X DVD+RW, 40X CD-R	• Sonic RecordNow 7.2 and InterVideo WinCinema 6 software	• Double-layer +R: 28:15 • Single-layer +R: 6:22 • DVD+RW: 11:45	We upgraded this inexpensive drive's firmware for 4X double-layer writes; future updates will push DL speed even faster.
9	Pioneer DVR-A08XLA $120 (★★★✦☆ RETESTED) find.pcworld.com/45364	• 4X double-layer DVD+R • 16X DVD-R, 16X DVD+R, 4X DVD-RW, 4X DVD+RW, 32X CD-R	• Ulead DVD Movie Factory 3.5 SE, and VideoStudio 8 SE, and Nova-Stor NovaBackup 7.1 software	• Double-layer +R: 26:56 • Single-layer -R: 6:58 • DVD-RW: 12:04	Well-made, reliable burner offers only middling performance—including the slowest CD-R write speed of the bunch.
10	LG Electronics GSA-4160B $90 (★★★☆ RETESTED) find.pcworld.com/45384	• 4X double-layer DVD+R • 16X DVD-R, 16X DVD+R, 6X DVD-RW, 8X DVD+RW, 40X CD-R	• Nero Express 6.3 (with Nero-Vision Express 3SE), CyberLink PowerDirector Gold 2 software	• Double-layer +R: 27:05 • Single-layer +R: 5:42 • DVD+RW: 13:21	Model stands out for its competitive pricing and quick single-layer +R write performance. Also writes at 5X to DVD-RAM.

FOOTNOTES: [1] Vendor is shipping firmware upgrade that should boost double-layer speed. [2] Sonic DLA 4.95 packet writing software is a download only, from HP's Web site. **HOW WE TEST:** We test drives under Windows XP Home on a PC with a 1.67-GHz Athlon XP 2000+ CPU and 512MB of SDRAM, using media supplied by the vendor or by Verbatim. We test the drives with the format specified by the vendor at review time. Some vendors may change drive suppliers without changing their model designations; our results reflect the configuration tested at review time. Write speed is the time (in minutes:seconds) required to write 7.9GB to double-layer DVD+R, 4.35GB to DVD using the drive's bundled mastering software, to format a blank rewritable DVD, and copy 2.64GB of data to that disc. **CHART NOTES:** Prices given are street prices as of 1/25/05. Price is taken into consideration for Best Buy honors only. All drives are internal IDE models, and have a one-year warranty. See find.pcworld.com/10860 for details on PC World's Star Ratings.

increased write speeds—for double-layer media as well as for discs in other formats. These updates can also refresh the drive's media support.

Toshiba's SD-R5372 (a Best Buy) and Pacific Digital's Mach 16 U-30264 dominated the speed competition, finishing first or second in most of our tests. Not surprisingly, given this statistical dead heat, the two products are virtual twins: Pacific Digital uses the Toshiba drive.

Even more impressive was these drives' 5X double-layer write performance, which solidified their victory by lopping nearly 4 minutes off the average 4X competitor's time for 7.9GB written to a double-layer disc, and a whopping 22 minutes over the average 2.4X drive's time. The only test in which this pair fell off the pace was our DVD+RW packet-writing test, where each posted a time 4 percent slower than the group average. The Plextor PX-716A, which ranked third overall in speed, climbs to the top of our chart by virtue of its strong combination of performance, documentation, and features.

Only two burners offering strictly 2.4X double-layer DVD+R make the chart: the Lite-On SOHW-1633S and the HP DVD Writer 640i. Neither model is suitable if you're buying with double-layer writing in mind: Both of them required almost twice as much time as the Toshiba to complete our double-layer test (nearly 23 minutes extra, in the case of the HP). And at press time, neither vendor planned a firmware update to improve the write speed.

BEYOND SPEED

NEVERTHELESS, each of these units has an advantage over the competition. At $80, the Lite-On drive is the cheapest on the chart. The HP, meanwhile, is the first model we've tested that incorporates LightScribe, a slick technology enabling the drive's laser to etch labels on the top of specially coated discs.

If the HP drive wrote double-layer at 4X, the unit's nifty LightScribe capability might have boosted the model to a Best Buy; as it was, this feature, coupled with strong single-layer write performance, enabled the HP to take fifth place on the chart. (For more about how LightScribe

Double-Layer: Burning Issues

EVERY DRIVE IN this roundup can write to 8.5GB double-layer DVD+R discs, which offer enough capacity to hold a standard DVD movie. Unfortunately, in spite of the availability of both drives and media for nearly a year, double-layer writing has faced several barriers to mass consumer adoption.

From the beginning, double-layer has had to deal with backward-compatibility issues. Despite efforts by media and drive vendors to improve compatibility, your double-layer DVD+R disc may not play correctly in a DVD player or in an older, single-layer DVD drive. Dual-layer DVD-R—the DVD Forum's nomenclature for 8.5GB -R drives and media (both due out this spring)—will likely experience complications from the same issues.
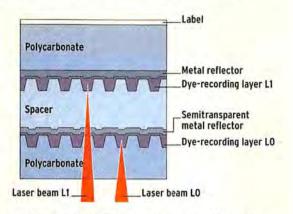
Part of the problem is that many older players won't try to play a double-layer DVD+R disc because they fail to recognize its newer media ID or its disc type. With the right software and hardware combination, you can change the disc type to DVD-ROM so that older players might read it.

Even if you're willing to take a chance with double-layer, chances are you haven't been able to find media in your local computer or electronics store. This is due to difficulties in manufacturing double-layer media, a process that has required makers

TWO LAYERS, ONE DISC: This side view shows the two dye-recording layers of a double-layer DVD. When the laser writes to the disc, it directs its beam to either layer one or layer two.

to invest in new and expensive production lines. Those costs (and short supplies) in turn continue to affect the disc-buying public. Disc manufacturers plan to up their double-layer production by summer, which means you'll see a greater quantity of DL-compatible media reaching store shelves.

Even so, disc prices remain high. We recently saw a three-pack selling for $25, about half what the media cost ten months ago. By contrast, single-layer discs typically sell for about 50 cents each (in spindles of 25 discs). Experts expect double-layer media prices to remain high, at least through the summer.

Media manufacturers note that since DL discs are more difficult to produce than single-layer discs, they may never sell at a competitive price per GB. But vendors do expect the price of DL media to drop to as low as $2 or $3 per disc by the end of this year, and perhaps by this fall.

works, see *New Products*, page 62.) HP developed LightScribe, but is also licensing the technology to other drive vendors.

Missing our chart altogether were the AOpen drive, which finished at or near the bottom in every test except for CD-R writing, and the Samsung, which was near the top at writing to CD-R and near the bottom in practically everything else.

Except in the case of double-layer writing, you probably wouldn't notice most of the performance differences we observed, unless you used a stopwatch. In the end, a combination of overall strong performance and friendly documentation garnered the Toshiba SD-R5372 one of our two Best Buy nods. The BenQ DW1620 earned the other Best Buy, for pairing excellent performance with a low price.

—*Jon L. Jacobi*

IN THE CHARTS

EDITED BY THE REVIEWS STAFF

New PC Sets Performance Record in WorldBench 5 Tests

THE FOUR PCs new to our desktops chart this month have one trait in common: They all turned in strong performance numbers in our WorldBench 5 suite. One system—the Polywell Poly 939N-FX55—notched a score of 113, the fastest performance we've seen yet. In our high-end gaming tests, this Poly averaged 283 frames per second—also the best result we have recorded to date.

The other new entrant on the power side of the chart, the MPC Millennia 940i, is a rather staid-looking system intended for business and educational applications. Appearances aside, the unit is well equipped for general power computing; and with a WorldBench 5 score of 99, it has plenty of speed to spare. It also came with one standout feature: a massive 1050GB of storage, which should cover the needs of just about every type of user.

The two newcomers in the value section—Polywell's Poly Mini-Box 939AX 3200 and WinBook's PowerSpec 9262 —are opposites in both design and styling. The petite, black, shoe-box-size Mini-Box, which runs Windows XP Media Center, costs just $1350, mak-ing Media Center extras, such as digital video recorder capabilities, affordable for many.

The other new model, the WinBook, takes the last spot on the chart. Though it isn't the most decked-out PC we've seen—in fact, the machine is pretty basic—it nevertheless strikes us as the sort of work-horse office system it's meant

SONY'S VAIO VGN-T150P has an integrated multiformat DVD burner and business applications.

to be. It performed well in our WorldBench 5 tests (scoring 91), but if you need graphics horsepower, we suggest you upgrade the graphics card.

NOTEBOOKS

NEW NOTEBOOKS this month include the Sony VAIO VGN-T150P, which weighs a svelte 3 pounds without its power adapter. The VAIO VGN-T150P wowed us by lasting over 7 hours on one battery charge. Just pop this two-tone Wi-Fi-ready notebook in your bag and go. The 10.6-inch wide-aspect screen is small but readable, and the key-board works well enough for quick touch typing.

Snagging fifth place in the desktop replacement part of our chart, the relatively inexpensive HP Pavil-ion Ze2000 sports a five-in-one card reader, a long 4.4-hour battery life, and the option to upgrade to a multiformat DVD burner. A sloped front and back give style to its chunky black-and-silver case.

Four other notebooks we tested were not sufficiently competitive to make the chart this month. The Compaq Pre-sario M2000 is a virtual twin of the HP Ze2000—just with-out the curvy case and long battery life. The WinBook C240, priced reasonably at $1199, fell short of our value list. The Sharp Actius PC-MP30, a 2.8-pound unit that doubles as a personal DVD player or USB hard drive, landed just shy of our ultra-portable ranking, as did the stylish 4.6-pound Sys Technol-ogy MobileElite M2000.

TOP 15 DESKTOP PCs

★ Products in this chart are ordered by star rating. Visit find.pcworld.com/46712 for reviews of all products tested this month and ranked in this chart.

POWER SYSTEM

		Features and specifications [1]		Performance	Bottom line
1	**Alienware Aurora 64 FX-55** $3846 (★★★★✦ Feb 05) find.pcworld.com/45562	• 2.6-GHz Athlon 64 FX-55 • 320GB drive space (RAID) • DVD±RW, DVD-ROM drives	• 19-inch NEC LCD monitor • 256MB ATI Radeon X800 Pro graphics • Logitech X-530 speakers	• WorldBench 5 score: 110 • Graphics: Outstanding • Design: Outstanding	Blazing performance keeps this well-equipped, nicely priced gaming system at the top of the chart.
2	**ABS Ultimate M5-64** $3799 (★★★★✦ Feb 05) find.pcworld.com/45558	• 2.6-GHz Athlon 64 FX-55 • 348GB drive space (RAID) • DVD±RW, DVD-ROM drives	• 19-inch Samsung LCD monitor • 256MB EVGA E-GeForce 6800 Ultra graphics • Logitech Z-680 speakers	• WorldBench 5 score: 107 • Graphics: Outstanding • Design: Very Good	Loaded PC has an industrial-strength metal case and a liquid-cooled CPU. Three hard drives in this configuration.
3	**Dell Dimension 8400** $2999 [2] (★★★★✦ Oct 04) find.pcworld.com/43544	• 3.6-GHz Pentium 4 560 • 320GB drive space (RAID) • DVD+RW, CD-RW drives	• 19-inch Dell LCD monitor • 256MB ATI Radeon X800 XT graphics • Dell 5650 speakers	• WorldBench 5 score: 98 • Graphics: Outstanding • Design: Good	One of the fastest Pentium systems on the chart; powerful graphics and an attractive LCD are a winning combo.
4	**Alienware DHS 5** $5835 (★★★★✦ Jan 05) find.pcworld.com/45194	• 2.2-GHz Athlon 64 3500+ • 250GB drive space • DVD±RW/-RAM drive	• 30-inch BenQ LCD monitor • 128MB ATI Radeon 9800 Pro graphics • Klipsch ProMedia Ultra 5.1 speakers	• WorldBench 5 score: 92 • Graphics: Outstanding • Design: Very Good	Our favorite Media Center PC in a stereo-component style; terrific LCD TV accounts for $3450 of the price.
5	**Polywell Poly 939N-FX55** **Best BUY** $2995 (★★★★✦ NEW) find.pcworld.com/46714	• 2.6-GHz Athlon 64 FX-55 • 149GB drive space (RAID) • DVD±RW, CD-RW drives	• 19-inch ViewSonic CRT monitor • 256MB NVidia GeForce 6800 Ultra graphics • Creative T7700 7.1 speakers	• WorldBench 5 score: 113 • Graphics: Outstanding • Design: Good	Elegant-looking black-and-silver unit has top-notch performance; CRT monitor keeps the price down.
6	**MPC Millennia 940i** $3699 (★★★★✧ NEW) find.pcworld.com/46710	• 3.8-GHz Pentium 4 570J • 1050GB drive space (RAID) • DVD±RW, CD-RW drives	• 19-inch MPC LCD monitor • 256MB NVidia GeForce 6800 Ultra graphics • Creative Inspire P7800 speakers	• WorldBench 5 score: 99 • Graphics: Very Good • Design: Good	Well-appointed and fairly quick home-office model has three hard drives, two in a RAID configuration.
7	**HP Media Center PC M1050y** $4810 (★★★★✧ Jan 05) find.pcworld.com/45242	• 3.8-GHz Pentium 4 570 • 400GB drive space • DVD±RW, DVD-ROM drives	• 23-inch HP LCD monitor • 256MB ATI Radeon X600 graphics • Klipsch ProMedia Ultra 5.1 speakers	• WorldBench 5 score: 96 • Graphics: Very Good • Design: Very Good	Ultimate home system offers a slot for a removable hard drive. Widescreen LCD adds $2000 to the total.

VALUE SYSTEM

1	**Sys Technology MediaMax** $1345 (★★★★ Jan 05) find.pcworld.com/45208	• 3.2-GHz Pentium 4 540 • 120GB drive space • DVD±RW drive	• 17-inch Planar LCD monitor • 128MB PNY Verto GeForce FX 5200 graphics • Sys MediaMax speakers	• WorldBench 5 score: 84 • Graphics: Very Good • Design: Good	Looks more like a stereo component than a PC; has stand-alone radio, DVD, and CD options.
2	**IBM ThinkCentre A51p** $1627 (★★★★✧ Feb 05) find.pcworld.com/45626	• 3-GHz Pentium 4 530 • 160GB drive space • DVD-ROM, CD-RW drives	• 17-inch ThinkVision LCD monitor • 64MB ATI Radeon X300 Pro graphics • Cyber Acoustics CA-3090 speakers	• WorldBench 5 score: 83 • Graphics: Very Good • Design: Good	Tool-less design and advanced security features distinguish this good-looking, all-business black tower.
3	**Dell Dimension 4700** $1299 [3] (★★★★ Oct 04) find.pcworld.com/43542	• 3-GHz Pentium 4 530 • 160GB drive space • DVD-ROM, CD-RW drives	• 17-inch Dell LCD monitor • Integrated Intel 915G graphics • Dell ADA-425 speakers	• WorldBench 5 score: 83 • Graphics: Good • Design: Good	Improved graphics and sound, plus faster RAM, make update of past Best Buy suit both home and business.
4	**CyberPower Gamer Ultra 7500 Elite** **Best BUY** $999 (★★★✦✧ Feb 05) find.pcworld.com/45622	• 2.2-GHz Athlon 64 3200+ • 120GB drive space • DVD±RW drive	• 17-inch AOpen LCD monitor • 256MB NVidia GeForce FX 5700LE graphics • Creative SBS 5.1 560 speakers	• WorldBench 5 score: 91 • Graphics: Very Good • Design: Good	Funky-looking system includes top-mounted USB and audio ports and a pop-up status panel.
5	**Alienware Bot** $1441 (★★★✦ Dec 04) find.pcworld.com/44204	• 3-GHz Pentium 4 530 • 120GB drive space • DVD±RW drive	• 17-inch NEC LCD monitor • Integrated Intel 915G graphics • Logitech Z-640 speakers	• WorldBench 5 score: 83 • Graphics: Very Good • Design: Good	Compact business PC has tool-less servicing and a case lock, but room for future expansion is limited.
6	**Compaq Presario SR1010Z** $1433 (★★★✦✧ Mar 05) find.pcworld.com/46284	• 2.2-GHz Athlon 64 3200+ • 160GB drive space • DVD+RW, DVD-ROM/CD-RW drives	• 17-inch Compaq LCD monitor • 256MB ATI Radeon 9800 Pro graphics • Altec Lansing VS2121 speakers	• WorldBench 5 score: 90 • Graphics: Very Good • Design: Very Good	Smart case design and above-average graphics performance make this an attractive home PC.
7	**Polywell Poly Mini-Box 939AX 3200** $1350 (★★★✦ NEW) find.pcworld.com/46718	• 2.2-GHz Athlon 64 3200+ • 200GB drive space • DVD±RW drive	• 17-inch Hyundai LCD monitor • Integrated Intel 915G graphics • Creative Inspire T5400 speakers	• WorldBench 5 score: 85 • Graphics: Fair • Design: Very Good	Stylish black Media Center entertainment system fits easily into tight quarters, but upgrades are limited.
8	**WinBook PowerSpec 9262** $1983 (★★★✧✧ NEW) find.pcworld.com/46720	• 3.4-GHz Pentium 4 550 • 160GB drive space • DVD±RW, DVD-ROM drives	• 19-inch LG LCD monitor • 128MB NVidia GeForce FX 5330 graphics • Altec Lansing VS4121 speakers	• WorldBench 5 score: 91 • Graphics: Fair • Design: Very Good	Basic, all-black system lacks front-mounted ports, but its performance on our WorldBench 5 tests was solid.

FOOTNOTES: [1] Features listings are not exhaustive; hard-drive capacity may represent multiple drives. [2] Use Dell Value Code 6V411-840REV to get this price. [3] Use Dell Value Code 6V411-470REV to get this price. **CHART NOTES:** Street prices are as of 1/21/05. See find.pcworld.com/10860 for details on *PC World*'s Star Ratings. Price is taken into consideration for Best Buy honors only. All tests designed and conducted by the PC World Test Center. All rights reserved.

THREE QUESTIONS
YOU SHOULD ASK
BEFORE YOU DECIDE
WHERE TO
BUY RAM...

Can you guarantee your RAM will be compatible with my system?

Use the Crucial® Memory Advisor™ tool, and we guarantee that our memory will be compatible with your system, or we'll refund the price of your module.

The Memory Advisor is a one-of-a-kind online tool that contains detailed information about more than 110,000 upgrades for more than 20,000 PCs, including many older systems. Our database is so specific that we know more about the memory in your PC than your computer manufacturer (OEM) does. The information comes from our close working relationship with computer manufacturers and from the Crucial Compatibility Lab, where seven certified lab technicians perform tests on nearly 3,000 different motherboards.

Even though it contains so much complex information, the Memory Advisor is surprisingly easy to use. Simply tell us the make and model of your system, and in just three clicks you'll know exactly what kind of RAM you need.

Do you actually make the memory chips you sell?

Other memory companies may claim to manufacture memory, but what they actually do is just attach chips to a memory module—someone else makes the chips.

Why does it matter? Quality. Those other guys buy the cheapest chips they can find—often chips that haven't even been individually tested to make sure they'll work in your PC. If you install inferior memory, your computer might not boot. Or it might seem to work fine at first, but later experience mysterious crashes and error messages.

Crucial is the only consumer memory upgrade supplier that's part of a major DRAM manufacturer—we're backed by 26 years of Micron expertise. We actually make (and test) our own chips. In fact, because the world's leading computer manufacturers rely on our high-quality RAM, chances are good that the OEM memory in your system came from Micron. Crucial brings this same high-quality memory directly to you. It just costs less because you don't pay middleman mark-up fees.

What kind of support do you offer if I have questions?

We offer superior customer service right from the start. The Memory Advisor tool is so easy to use that most customers find exactly what they need on their own, but if you ever do have a question, we make it easy to find fast, free answers. You can call us directly, e-mail us, chat with a live Expert Online, or learn on your own with our 3,000 articles and FAQs.

And our free tech support really is free. Our certified support agents are true Memory Experts℠, averaging 15 hours of technical training each month and 20 hours a month "hands-on" in the Crucial Performance Lab. We don't keep you waiting when you have a problem—the average hold time (over a six-month period) is just over one minute, and the average time spent resolving an issue by phone is about three minutes.

Crucial is the answer.

When you compare Crucial's quality, low prices, and superior support to our competitors, it's no surprise that our great customer ratings from September 2003 through August 2004 earned us a "Circle of Excellence" Platinum award from BizRate.com® (October 2004). In fact, from October to December 2004, we scored 97 percent in overall customer satisfaction. Join the millions of customers we've successfully served over the Internet!

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TOP 15 NOTEBOOK PCs

★ Products in this chart are ranked by star rating. Visit find.pcworld.com/46570 for reviews of all products tested this month and ranked in this chart.

	DESKTOP REPLACEMENT	Features and specifications [1]		Performance	Bottom line
1	**HP Compaq Business Nc6000** Best BUY $1699 (★★★☆ May 04) find.pcworld.com/41093	• 1.6-GHz Pentium M 725 • 14.1-inch screen • 6.6 pounds	• DVD-ROM and CD-RW combo drive • Touchpad and eraserhead pointing devices • 802.11a/g, Bluetooth, gigabit ethernet	• WorldBench 5 score: 74 • Overall design: Very Good • Tested battery life: 6:23	Lightweight corporate notebook comes with dual wireless capabilities and has great battery life.
2	Dell Latitude D600 $2125 (★★★★ Jan 05) find.pcworld.com/44960	• 2-GHz Pentium M 755 • 14.1-inch screen • 6.4 pounds	• DVD+RW drive • Touchpad and eraserhead pointing devices • 802.11g, Bluetooth, gigabit ethernet	• WorldBench 5 score: 81 • Overall design: Very Good • Tested battery life: 4:02	Fast and light, this full-featured model offers a multipurpose bay and dual pointing devices.
3	IBM ThinkPad T42 $2099 (★★★★☆ Feb 05) find.pcworld.com/45860	• 1.8-GHz Pentium M 745 • 14.1-inch screen • 6.3 pounds	• DVD-ROM and CD-RW combo drive • Touchpad and eraserhead pointing devices • 802.11g, fingerprint scanner	• WorldBench 5 score: 77 • Overall design: Good • Tested battery life: 5:34	Slide fingerprint reader is a bit finicky. This laptop has an industry-leading electronic manual.
4	Chem USA ChemBook 2037 $1899 (★★★★☆ Mar 05) find.pcworld.com/46170	• 2-GHz Pentium M 755 • 15.4-inch wide-screen • 8.7 pounds	• DVD-RW drive • 802.11g, four-in-one media card reader, built-in camera	• WorldBench 5 score: 89 • Overall design: Good • Tested battery life: 4:13	This well-designed model has ports on the front and features an 800-by-600-pixel VGA camera in its lid.
5	HP Pavilion Ze2000 $1174 (★★★★☆ NEW) find.pcworld.com/46508	• 1.5-GHz Pentium M 715 • 15.0-inch screen • 7.3 pounds	• DVD-ROM and CD-RW combo drive • Touchpad pointing device • 802.11g, five-in-one media card reader	• WorldBench 5 score: 67 • Overall design: Good • Tested battery life: 4:24	Well-rounded notebook delivers decent performance and battery life for a reasonable price.
	ALL-PURPOSE NOTEBOOK				
1	**IBM ThinkPad R51** Best BUY $1549 (★★★★☆ Sept 04) find.pcworld.com/43118	• 1.5-GHz Pentium M 715 • 15.0-inch screen • 7.4 pounds	• DVD-ROM and CD-RW combo drive • Touchpad and eraserhead pointing devices • 802.11g, gigabit ethernet	• WorldBench 5 score: 67 • Overall design: Outstanding • Tested battery life: 3:54	The slim R51 will suit users who don't require many fancy extras. Excellent keyboard.
2	Polywell Polynote 3015AW $2150 (★★★★☆ Nov 04) find.pcworld.com/44062	• 2-GHz Pentium M 755 • 15.4-inch wide-screen • 7.6 pounds	• DVD+RW drive • Touchpad pointing device • 802.11g, four-in-one media card reader	• WorldBench 5 score: 98 • Overall design: Very Good • Tested battery life: 3:03	This stylish, fast laptop has a firm keyboard, a swappable DVD burner, audio buttons, and shortcut keys.
3	Micro Express CL5620 $1599 (★★★☆ Mar 05) find.pcworld.com/46172	• 2-GHz Pentium M 755 • 15.0-inch screen • 7.2 pounds	• DVD±RW drive • Touchpad pointing device • 802.11g, SD Card slot	• WorldBench 5 score: 97 • Overall design: Fair • Tested battery life: 3:56	Elegant-looking portable sports a beautiful high-resolution screen and an ultrafirm keyboard.
4	Chem USA ChemBook 2056 $1869 (★★★☆☆ Sept 04) find.pcworld.com/42910	• 1.7-GHz Pentium M • 15.0-inch screen • 7.3 pounds	• DVD±RW drive • Touchpad pointing device • 802.11g, SD Card slot	• WorldBench 5 score: 83 • Overall design: Good • Tested battery life: 4:07	Strong performance and battery life distinguish this unit. The optical drive is mounted on the front.
5	MPC TransPort T2200 $2002 (★★★☆ Oct 04) find.pcworld.com/43356	• 1.7-GHz Pentium M • 14.1-inch screen • 6.9 pounds	• DVD-ROM and CD-RW combo drive • 802.11g, three-in-one media card reader, fingerprint scanner	• WorldBench 5 score: 79 • Overall design: Good • Tested battery life: 3:50	Stylish, lightweight notebook offers a fingerprint scanner but comes with hard-to-hit mouse buttons.
	ULTRAPORTABLE				
1	Sony VAIO VGN-T150P [2] $2300 (★★★★☆ NEW) find.pcworld.com/46512	• 1.1-GHz Pentium M ULV 733 • 10.6-inch screen • 3.8 pounds	• DVD±RW drive • Touchpad pointing device • 802.11g, Memory Stick Pro slot	• WorldBench 5 score: 56 • Overall design: Fair • Tested battery life: 7:04	This expensive, ultralight portable has a comfortable keyboard and the best battery life we've seen.
2	Dell Latitude X300 $2364 (★★★★ Dec 04) find.pcworld.com/44250	• 1.4-GHz Pentium M LV 738 • 12.1-inch screen • 4.0 pounds	• External DVD+RW drive • Touchpad pointing device • 802.11g, SD Card slot, docking station	• WorldBench 5 score: 73 • Overall design: Very Good • Tested battery life: 2:31	This relatively fast Latitude is expandable thanks to the best docking station we've seen in this class.
3	**Fujitsu LifeBook P7010D** Best BUY $1999 (★★★★☆ Dec 04) find.pcworld.com/44260	• 1.1-GHz Pentium M ULV 713 • 10.6-inch screen • 4.1 pounds	• DVD-ROM and CD-RW combo drive • 802.11a/g, four-in-one media card reader, fingerprint scanner, Microsoft Works 7	• WorldBench 5 score: 58 • Overall design: Very Good • Tested battery life: 5:15	Light unit with a fingerprint reader lasts ages on a battery charge and has extra card slots.
4	Dell Inspiron 700m $1772 (★★★★ Dec 04) find.pcworld.com/44246	• 1.8-GHz Pentium M 745 • 12.1-inch wide-screen • 4.8 pounds	• DVD+RW drive • 802.11g, SD Card slot, Corel WordPerfect Productivity Pack	• WorldBench 5 score: 80 • Overall design: Good • Tested battery life: 2:45	This strongly built, lightweight laptop offers a wide-aspect screen but has a cramped keyboard.
5	IBM ThinkPad X40 $2299 (★★★★☆ Sept 04) find.pcworld.com/43066	• 1.2-GHz LV Pentium M • 12.1-inch screen • 5.6 pounds	• DVD-ROM and CD-RW combo drive • 802.11g, Bluetooth, gigabit ethernet, SD Card slot, docking station	• WorldBench 5 score: 55 • Overall design: Good • Tested battery life: 2:36	Ultraportable ThinkPad boasts the finest keyboard for its size. Optical drive is USB- or dock-based.

FOOTNOTES: [1] Features listings are not exhaustive. [2] Sony has replaced its VAIO VGN-T150P with the VAIO VGN-T250P, which has a 1.2-GHz Pentium M ULV 753 processor and a 60GB hard drive. We have not yet tested the VAIO VGN-T250P. CHART NOTES: Street prices are as of 01/13/05. Weight includes AC adapter, power cord, and optical drive. Optical drives are removable unless otherwise noted. Price is taken into consideration for Best Buy honors only. All tests designed and conducted by the PC World Test Center. All rights reserved. See find.pcworld.com/10860 for details on *PC World*'s Star Ratings.

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TOP 10 MONITORS

★ Products in this chart are ranked by star rating. Visit find.pcworld.com/46578 for reviews of all products tested this month and ranked in this chart.

THIS MONTH WE TESTED (or retested) seven 19-inch LCD monitors—and in this hotly competitive field, only four of them make the chart. CTX Technology's F973 posted the highest overall image-quality scores, boosted by its highly accurate reproductions of intense colors and delicate flesh tones. We retested the chart topper from our January Top 10 list, View-Sonic's VP912b, because the company gave it a new antiglare screen. Though the revamped screen doesn't equal its predecessor in crispness and color saturation, it came in a strong third for overall image quality—and thanks to a reasonable price

and an overall strong performance, it remains a Best Buy. Samsung's SyncMaster 920t delivers a very nice features package—including the button-free screen-settings tool MagicTune—in an unusual design that incorporates stand-mounted speakers. Not to be outdone at software, the LG Electronics Flatron L1980U has Forte-Manager, a tool that resembles MagicTune. ForteManager goes a step beyond, however: It lets you enable automatic pivoting and mirroring, which keep your screen right side up even when you pivot it or flip it backward. For more detail on the L1980U, see this month's *New Products* section on page 54.

SAMSUNG SYNCMASTER 920t

19-INCH LCD MONITOR	Features and specifications[1]		Performance	Bottom line
1 Eizo FlexScan L768 $800 (★★★★☆ Jan 05) find.pcworld.com/45206	• Inputs: one analog, one digital • Adjustments: tilt, swivel, pivot, and height	• 25ms response time • 15.0 pounds	• Text quality: Very Good • Graphics quality: Very Good • Usability: Very Good	Advanced screen settings and five fine-contrast modes make this a display for the demanding user—but the price is pretty demanding, too.
2 Samsung SyncMaster 920t $730 (★★★★☆ NEW) find.pcworld.com/46538	• Inputs: one analog, one digital • Adjustments: tilt, swivel, pivot, and height	• 25ms response time • 15.4 pounds	• Text quality: Very Good • Graphics quality: Good • Usability: Very Good	Sleek silver unit has speakers built into the two-footed stand, saving space without sacrificing the monitor's responsiveness to physical adjustment.
3 Dell UltraSharp 1905FP **Best BUY** $529 (★★★★☆ Jan 05) find.pcworld.com/45204	• Inputs: one analog, one digital • Adjustments: tilt, swivel, pivot, and height	• 20ms response time • 15.3 pounds • Three-port USB 2.0 hub	• Text quality: Very Good • Graphics quality: Very Good • Usability: Very Good	Three USB 2.0 ports and a full range of physical adjustments make this nicely designed thin-bezel monitor a pleasure to use.
4 ViewSonic VP912b **Best BUY** $560 (★★★★ RETESTED) find.pcworld.com/44986	• Inputs: one analog, one digital • Adjustments: tilt, swivel, pivot, and height	• 12ms response time • 16.5 pounds	• Text quality: Very Good • Graphics quality: Very Good • Usability: Very Good	This model came in second for text, but others had crisper, more vivid graphics; a new antiglare screen doesn't equal its predecessor in performance.
5 Philips Brilliance 190P5EB $639 (★★★★☆ Jan 05) find.pcworld.com/45146	• Inputs: one analog, one digital • Adjustments: tilt, swivel, pivot, and height	• 25ms response time • 18.3 pounds	• Text quality: Good • Graphics quality: Outstanding • Usability: Good	Vibrant, accurate colors earned this monitor the highest graphics score on the chart. Contrasting buttons make using the unit a breeze.
6 Sharp LL-191A $519 (★★★✓ Jan 05) find.pcworld.com/44984	• Inputs: one analog • Adjustment: tilt	• 16ms response time • 17.2 pounds	• Text quality: Very Good • Graphics quality: Good • Usability: Very Good	Buttons are comfortably accessible on the bottom of this inexpensive model's bezel, and the head-phone jack is intelligently placed on the stand.
7 CTX Technology F973 $459 (★★★✓☆ NEW) find.pcworld.com/46534	• Inputs: one analog, one digital • Adjustment: tilt	• 12ms response time • 12.1 pounds	• Text quality: Outstanding • Graphics quality: Very Good • Usability: Very Good	Low-priced unit delivered excellent overall image quality, but we'd like longer tech-support hours and more control over physical adjustments.
8 LaCie Photon19vision $589 (★★★✓☆ Jan 05) find.pcworld.com/44978	• Inputs: one analog, one digital • Adjustments: tilt, swivel, pivot, and height	• 25ms response time • 15.8 pounds • Two-port USB 1.1 hub	• Text quality: Good • Graphics quality: Very Good • Usability: Outstanding	Stand and screen are easy to adjust so they can handle different tasks by day and by night, making this model appropriate for general use.
9 LG Electronics Flatron L1980U $549 (★★★✓☆ NEW) find.pcworld.com/46556	• Inputs: one analog, one digital • Adjustments: tilt, pivot, and height	• 12ms response time • 12.3 pounds	• Text quality: Very Good • Graphics quality: Good • Usability: Very Good	Innovative autopivot and automirror software automatically adjust images when you rotate the screen or flip it backward.
10 AG Neovo X-19AV $839 (★★★✓ Jan 05) find.pcworld.com/44970	• Inputs: one analog, one digital • Adjustment: tilt	• 25ms response time • 17.4 pounds	• Text quality: Good • Graphics quality: Very Good • Usability: Good	Imposing, attractive monitor shows its stuff through an extra-hard, easy-to-clean optical filter glass, but we've seen better text quality.

FOOTNOTE: [1] Digital inputs require a graphics card with a DVI digital output, which we use to test all monitors that offer DVI. Unless otherwise specified, "analog" refers to 15-pin analog and "digital" refers to DVI. **HOW WE TEST:** Judges rate how well each monitor displays 13 text and graphics images at a native resolution of 1280 by 1024. Some screens are from DisplayMate for Windows (www.displaymate.com). See find.pcworld.com/34613 for testing details. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. **CHART NOTES:** Prices given are street prices as of 2/2/05. Star ratings are based on text quality, graphics quality, features, ease of use, and service and support, but not price. Price is taken into consideration for Best Buy honors only. See find.pcworld.com/10860 for details on *PC World's* Star Ratings.

TOP 10 DIGITAL CAMERAS

★ Products in this chart are ranked by star rating. Visit find.pcworld.com/46744 for reviews of all products tested this month and ranked in this chart.

IF YOU'RE LOOKING FOR a point-and-shoot camera that's small enough to drop in a shirt pocket, your choices abound. This month we tested five new models that weigh less than 7 ounces and easily pass the pocket test. But small size does come with compromises: None of the five has an optical viewfinder—you use only their LCDs for composing shots—and all have relatively limited battery life, due to tiny rechargeable batteries.

Canon's new PowerShot SD20, for example, is only 3.6 by 0.7 by 1.9 inches and weighs just 4.3 ounces. It took surprisingly good photos in our tests, and comes in attractive colors such as the garnet model we looked at. There is one drawback, and

THE SLEEK Sony Cyber-shot DSC-L1.

it's not a small one: no optical zoom. Go up a little in thickness and you have the Sony Cyber-shot DSC-L1, which has fewer controls than the Canon and scored lower on our photo tests but includes a 3X optical zoom.

We also looked at Olympus's Stylus Verve (find.pcworld.com/46706)—an oddly shaped, 4-megapixel model that comes in six different colors and produced about the same image quality as the Sony—but it performed very poorly in our battery-life tests. Meanwhile, Epson's L-500V (find.pcworld.com/46696) and Casio's EX-S100 (find.pcworld.com/46708) are both equipped with big LCDs, but neither camera's image quality impressed us.

	POINT-AND-SHOOT CAMERA	Features and specifications[1]		Performance	Bottom line
1	**Nikon Coolpix 4800** **Best BUY** $400 (★★★★☆ Jan 05) find.pcworld.com/45116	• 4.0 megapixels • 36mm to 300mm zoom • 15 scene modes	• 640 by 480 video • Rechargeable battery • 10.6 ounces	Image quality: Very Good Ease of use: Good Battery life: Very Good	Ideal for snapshots and travel, the moderate-size 4800 has an appealing price for a camera with an 8.3X optical zoom lens—the longest on the chart.
2	**Sony Cyber-shot DSC-P150** $450 (★★★★☆ Jan 05) find.pcworld.com/45120	• 7.2 megapixels • 38mm to 114mm zoom • 9 scene modes	• 640 by 480 video • Rechargeable battery • 6.5 ounces	Image quality: Very Good Ease of use: Very Good Battery life: Very Good	One of the smallest 7-megapixel cameras available, this pocketable model is especially quick to power up, and shutter lag is minimal.
3	**Kodak EasyShare DX7630 Zoom** **Best BUY** $350 (★★★★☆ July 04) find.pcworld.com/42264	• 6.1 megapixels • 39mm to 117mm zoom • 16 scene modes	• 320 by 240 video • Rechargeable battery • 9.6 ounces	Image quality: Very Good Ease of use: Very Good Battery life: Very Good	A dazzling 2.2-inch LCD and a solid selection of advanced controls (such as aperture- and shutter-priority) highlight this relatively small camera.
4	**Canon PowerShot S60** $449 (★★★★☆ Oct 04) find.pcworld.com/43541	• 5.0 megapixels • 28mm to 100mm zoom • 5 scene modes	• 640 by 480 video • Rechargeable battery • 10.0 ounces	Image quality: Very Good Ease of use: Very Good Battery life: Good	Canon gave the S60 a wider-angle lens than most point-and-shoots have; the camera is fairly bulky, but you get lots of creative controls.
5	**Casio Exilim EX-Z55** $400 (★★★★☆ Jan 05) find.pcworld.com/45122	• 5.0 megapixels • 35mm to 105mm zoom • 23 scene modes	• 320 by 240 video • Rechargeable battery • 5.6 ounces	Image quality: Very Good Ease of use: Good Battery life: Outstanding	Easily pocketable camera has a big 2.5-inch LCD and scene modes for all occasions; connects to a PC via an included docking station.
6	**Olympus C-60 Zoom** $350 (★★★☆☆ Aug 04) find.pcworld.com/42830	• 6.1 megapixels • 38mm to 114mm zoom • 6 scene modes	• 320 by 240 video • Rechargeable battery • 7.1 ounces	Image quality: Outstanding Ease of use: Good Battery life: Good	Powerful, fairly compact model has a fine selection of semiautomatic and full-manual exposure modes, but it could be easier to use.
7	**HP Photosmart R707** $300 (★★★☆☆ July 04) find.pcworld.com/41998	• 5.1 megapixels • 39mm to 117mm zoom • 10 scene modes	• 320 by 240 video • Rechargeable battery • 7.4 ounces	Image quality: Very Good Ease of use: Good Battery life: Good	Simple-to-use compact camera has built-in help for novices, a few advanced controls for experienced shooters, and in-camera red-eye removal.
8	**Fujifilm FinePix E550** $350 (★★★☆☆ Nov 04) find.pcworld.com/44208	• 6.3 megapixels • 33mm to 130mm zoom • 5 scene modes	• 640 by 480 video • Two AA batteries[2] • 9.3 ounces	Image quality: Very Good Ease of use: Fair Battery life: Very Good	Bulky camera with a 2-inch LCD has a broad array of controls, but some are a bit tricky to use. Price is low for a 6.3-megapixel model.
9	**Sony Cyber-shot DSC-L1** $279 (★★★☆☆ NEW) find.pcworld.com/46566	• 4.1 megapixels • 32mm to 96mm zoom • 7 scene modes	• 640 by 480 video • Rechargeable battery • 5.1 ounces	Image quality: Good Ease of use: Fair Battery life: Good	Compact, smartly designed model comes in four colors and has a four-shot burst shooting mode. The tiny joystick is a bit hard on the thumb.
10	**Canon PowerShot SD20** $310 (★★★☆☆ NEW) find.pcworld.com/46564	• 5.0 megapixels • Fixed 39mm lens • 5 scene modes	• 640 by 480 video • Rechargeable battery • 4.3 ounces	Image quality: Very Good Ease of use: Very Good Battery life: Fair	Stylish, ultracompact camera takes great shots and comes in various colors. It's pricey for a model without an optical zoom, however.

FOOTNOTES: [1]Resolutions are expressed in effective pixels, zoom range (focal length) is identified as 35mm equivalent, and camera weights include batteries. The designation "Rechargeable battery" refers to a lithium ion battery unless otherwise noted; AA batteries are alkaline. Video capability includes audio. [2]Rechargeable AA batteries included. **HOW WE TEST:** To gauge picture quality, we take a series of shots, with and without flash, at the camera's highest resolution and default automatic settings. We photograph a complex still life and a mannequin to see how well each camera captures details and subtle colorings such as skin tones. A panel of judges reviews the on-screen and printed photos and assigns image-quality scores; we then average those scores. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. **CHART NOTES:** Prices given are street prices as of 01/31/05. Star ratings are based on picture quality, ease of use, features, battery life, and support, but not price. Price is taken into consideration for Best Buy honors only. See find.pcworld.com/10860 for details on *PC World*'s Star Ratings.

MORE REVIEWS

MISSED AN ISSUE OF *PC World* or passed your copy along to a friend? Here's a recap of *Top 100* topics from previous issues. To read reviews of the products listed in these charts, go online and type in the *PC World* Find-It URL from the top of each chart. Next month in the *Top 100*, we'll look at DVD burners and point-and-shoot digital cameras, and our Spotlight review will cover wide-screen LCD monitors. Also be on the lookout for an in-depth feature on motherboards.

CANON'S POWERSHOT G6, with 7.1 megapixels, produced great-looking photos.

EPSON'S Perfection 4180 Photo captured excellent image quality at good speeds.

EIZO'S FlexScan L568 tied for top scorer in our graphics-quality tests.

ADVANCED DIGITAL CAMERAS
find.pcworld.com/45822

1. Canon EOS 20D (★★★★✦ Dec 04) find.pcworld.com/44874
2. Canon PowerShot G6 Best BUY (★★★★✦ Dec 04) find.pcworld.com/44872
3. Olympus C-8080 Wide Zoom (★★★★✦ June 04) find.pcworld.com/41860
4. Olympus C-5060 Wide Zoom (★★★★✦ Feb 04) find.pcworld.com/39527
5. Nikon Coolpix 8800 (★★★★☆ Feb 05) find.pcworld.com/45732
6. Nikon Coolpix 8400 (★★★★☆ Feb 05) find.pcworld.com/45734
7. Canon PowerShot Pro1 (★★★★☆ Sept 04) find.pcworld.com/43164
8. Nikon D70 (★★★★☆ Dec 04) find.pcworld.com/44876
9. Olympus C-7000 Zoom Best BUY (★★★★☆ Feb 05) find.pcworld.com/45736
10. Sony Cyber-shot DSC-V3 (★★★★☆ Feb 05) find.pcworld.com/45738

From the February 2005 Issue

FLATBED SCANNERS
find.pcworld.com/46412

SMALL-OFFICE SCANNER
1. Epson Perfection 2580 Photo Best BUY (★★★★☆ Mar 05) find.pcworld.com/46364
2. Epson Perfection 4180 Photo (★★★★☆ Mar 05) find.pcworld.com/46366
3. Epson Perfection 2480 Photo (★★★★ Sept 04) find.pcworld.com/43114
4. HP Scanjet 5550c (★★★✦☆ Apr 03) find.pcworld.com/34406
5. Microtek ScanMaker i320 (★★★ May 04) find.pcworld.com/41543

CORPORATE SCANNER
1. Canon CanoScan 9950F Best BUY (★★★★✦ Mar 05) find.pcworld.com/46362
2. HP Scanjet 8200 (★★★★ Oct 03) find.pcworld.com/37382
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4. HP Scanjet 5590 (★★★✦ Sept 04) find.pcworld.com/43112
5. Epson Perfection 4870 Photo (★★★✦☆ May 04) find.pcworld.com/41564

From the March 2005 Issue

17-INCH LCD MONITORS
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7. Iiyama ProLite E435S-B (★★★★☆ Mar 05) find.pcworld.com/46168
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9. LG Electronics Flatron L1730S (★★★✦☆ Mar 05) find.pcworld.com/46188
10. NEC MultiSync LCD1735NXM (★★★✦☆ Mar 05) find.pcworld.com/46198

From the March 2005 Issue

Media Magic

Verbatim's discs are super-flat for the ultimate in high-speed recording.

>> **Verbatim reasserts its leadership in the DVD media industry.**

If you're like most people, you probably assume that once you copy music or video files to DVD discs or commit important business files to DVD storage, your files are safe as long as you don't scratch up the media.

But the truth is, not all DVD media are created equal. With the rapid rise of DVD technology, which has all but replaced CD technology in certain applications, many low-cost but also low-quality DVD media have hit the market.

Verbatim Mini DVDs: the classic movie-reel look

Buyers beware! The manufacturing of truly high-quality, long-lasting DVD media is an art unto itself. Without proper care, attention, and expert engineering, the result can be discs that aren't as flat as they need be to accommodate high-speed data transfer. Flaws in the disc surface can translate into reading errors. Some discs may not even conform to emerging DVD standards, limiting their usefulness in certain players.

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Verbatim Corp.
www.verbatim.com
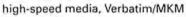
Verbatim: Consistently First

It's one thing for a company to simply call itself a leading vendor of high-density digital media. But when a company is consistently the first to produce successive generations of media technology, and when virtually all burner manufacturers and software suppliers use that company's pre-production media to validate

their own products' performance and compatibility, that's real leadership. And that company is Verbatim Corp. (www.verbatim.com).

Now Verbatim has expanded its industry-leading line of DVD media. The company recently took the wraps off five new media products, including 16x DVD-R, 8x DVD+R Double Layer, 4x DVD-R Dual Layer, 8x DVD+RW, and 2-6x DVD-RW. In order to optimize writing performance with these high-speed media, Verbatim/MKM has developed a unique, high-sensitivity dye formula and ultra-precise molding technology, yielding the super-flat disc shape essential in high-speed recording.

And keeping pace with emerging DVD standards, Verbatim has begun shipping 8x DVD+RW and 6x DVD-RW recordable 4.7GB discs.

Among other recent launches at Verbatim are:
■ A family of **Mini DVD DigitalMovie Discs** that brings the classic movie-reel look to the Mini DVD format, with discs measuring just three inches in diameter yet offering a capacity up to 1.4 GB. The discs also feature enhanced abrasion resistance and data protection.

■ **VideoGard™ DVD discs** designed specifically for home video recording, making valuable home videos and TV recordings 40 times more resistant to damage—without a major increase in media costs.
■ Shipments of 1-16x speed **DVD-R media** with the ability to record video, photos, music, or data files at about 21MB/sec—fast enough to fill an entire 4.7GB disc in under six minutes.

For more information on these and other exciting media products from Verbatim, click now on www.verbatim.com.

Verbatim VideoGard Discs are highly resistant to damage.

And when purchasing DVD media products, bear in mind the relatively low cost of high-quality media versus the value of what is being stored on them. Digital photos lost on poor-quality media are lost forever. Digital movies, particularly those old 8mm movies remastered and put on DVD, are only as good as the media to which they are transferred—not unlike the original movie tape itself.

Also, consider whether you need write-once or rewriteable media before you buy. These DVDs are available in two types: DVD-R/RW and DVD+R/RW. Fortunately, DVD writers made today sport a combination design supporting both formats. Generally speaking, for video DVD+R is more compatible with standard DVD players.

HERE'S HOW

WINDOWS TIPS

SCOTT DUNN

Find Your Local Files the Web Way in Windows

Windows 2K | XP 98 ME HOW CAN GOOGLE instantly find a bazillion Web sites with information about the words you search on, while your own PC takes forever when you use Windows' search tool (*Start•Search•For Files and Folders*)? Google consults an index of the Web it has already built into its database, rather than digging through the entire Internet with each search. Microsoft's new MSN Toolbar Suite beta, in addition to its other useful features, aims to make

finding files on your hard disks as fast, easy, and accurate as Web searches. Best of all, the toolbars for Internet Explorer, Outlook, Outlook Express, Windows Explorer, and your folder windows are free (and available at find.pcworld.com/46302).

The three programs that make up the MSN Toolbar Suite search your disks and provide the same results based on a single shared index of your e-mail and local files. MSN Desktop Search is a stand-alone search application; the MSN Tool-

bar appears in your folder and Explorer windows; and the Deskbar resides in your taskbar (at the bottom of the screen on most PCs). They search Outlook and Outlook Express e-mail and attachments—after you change the default setting, as discussed below—as well as Word, Excel, and other Office files. They also index PDFs, text files, and HTML files.

Index the folders you choose: The MSN Toolbar Suite searches only for items in its index; and by default, it indexes only your e-mail and the contents of your system's My Documents folder. To expand the search to include any or all of your system's hard drives, click the butterfly icon on the Deskbar to open the MSN Toolbar Suite Options menu, and then choose *Options•Deskbar Options*. To reach these options from Internet Explorer or from a folder window that displays the MSN Toolbar, click the down arrow that's to the right of the toolbar butterfly and choose *Options•Toolbar Options* (there's also a 'Change MSN Toolbar options' icon to the left of the Help icon on the far right of the toolbar). But the fastest way to get to this dialog box is to right-click the MSN Desktop Search icon in the system tray (to the left of the clock on the bottom right), and choose *Indexing Options*.

Once the dialog box is open, select *Desktop Search* in the tree diagram in the left pane (if necessary). Click *Email and all hard disks* under 'Search locations' on the right; or for speedier searches, set the program to index only selected folders: Click *Specific locations•Browse*, and check the drives and folders you want the tools to search (see **FIGURE 1**). You can add Web addresses to the index by entering the appropriate URL in the field at the bottom of the dialog box and clicking *Add*. When

FIGURE 1: SPEED YOUR local file searches by indexing only the folders that you pick.

you're done with your choices, click *OK*.

Type in the taskbar: If you don't see the Deskbar on your Windows taskbar, right-click the taskbar and choose *Toolbars• MSN Deskbar*. Or right-click the *MSN Desktop Search* icon in the system tray (to the left of the clock on the bottom right) and choose *Show Deskbar*. The first time you type in the Deskbar, you may see results for a Web search rather than for a search of your own files. If that's not what you want, click *Desktop Items* at the bottom of the pop-up window that appears when you click in the Deskbar text box (see **FIGURE 2**). From now on, you'll be searching files on your local hard drive; but you can still do a Web search by pressing **<Shift>- <Enter>** instead of <Enter> after you type in your search term. Or click *Web Items* at the bottom of the window to change the default behavior back to Web searching.
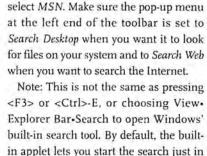
If you keep your Windows taskbar on the left or right edge of your screen (as I do), the Deskbar may be too narrow to be of any use. Right-click the taskbar and make sure 'Lock Toolbars' is unchecked. Now grab the toolbar handle just above the MSN butterfly and drag it to your desktop. You can keep it there as a floating toolbar (see **FIGURE 3**), or dock it at the top or bottom of your screen.

Search from a window: To search in a regular application window rather than from the taskbar, click or double-click the *MSN Desktop Search* icon on the desktop to open a search window. Unfortunately, you'll have to do without some features of the Deskbar, such as support for text shortcuts or aliases (see "Create and use aliases" on page 140). But at least you will get the same indexed search results. To search files on your computer, click the *Desktop* or *Files* link just above the search text box; the other links in this window are for doing Internet searches.

If you prefer to save desktop space, you can move the MSN Desktop Search icon to your Start menu (though there is probably already an icon for the program in your *Start• Programs* or *Start• All Programs* menu), or place it in the Quick Launch toolbar at the bottom of your screen—or anywhere else you can put a shortcut.

Search from any folder: To see the MSN

FIGURE 2: TO SEARCH YOUR PC rather than the Web, click *Desktop Items* at the bottom of the Deskbar window.

Toolbar in Explorer or in a folder window, open such a window and choose *View• Toolbars•MSN*. Or right-click a toolbar and select *MSN*. Make sure the pop-up menu at the left end of the toolbar is set to *Search Desktop* when you want it to look for files on your system and to *Search Web* when you want to search the Internet.

Note: This is not the same as pressing <F3> or <Ctrl>-E, or choosing View• Explorer Bar•Search to open Windows' built-in search tool. By default, the built-in applet lets you start the search just in the folder currently displayed. But the MSN Toolbar, like the other MSN search tools, always searches all the files that are

FIGURE 3: DRAG THE DESKBAR to your desktop to make it float anywhere rather than remaining docked.

in its index, regardless of their location.

Get results: Press **<Enter>** after beginning a search to see the results in the MSN Desktop Search Results window (basically, an Explorer window). This window displays graphics and other file types as thumbnails to give you a sense of the file content. For text-based files, it displays a snippet of text showing the keyword(s) (see **FIGURE 4**). You can use the links or pop-up menu found beneath the search text box to filter the results by file type.

For quick searches, however, just start typing your search query in the Deskbar's text box on the taskbar; as you type, a window will pop up to show results sorted by file type (see **FIGURE 5**). Click any file ►

in the results window to open it in its associated application, or right-click a file to see the same context options you would find in Explorer. If you can't find the file there, either press **<Enter>** (if the cursor is

FIGURE 4: CAPSULE SUMMARIES and thumbnails help you spot a document without having to open it.

still in the Deskbar) or click *more* at the bottom of the appropriate file type category to see the results in the usual MSN Desktop Search Results window.

Create and use aliases: In the November 2003 *Windows Tips* column (find.pcworld.com/46312), I explained how to launch applications and open files from the Windows Address bar. The Deskbar makes creating and deleting these shortcuts (which the Toolbar Suite calls "aliases") much easier. For example, if you expect to be working with the file "My Q2 Report.doc" for the next few weeks, you can open it quickly by typing a couple of characters (like **q2**) in any MSN toolbar. To create an alias, go to the Deskbar and type @ followed by the letters you want to use—a few characters that are easy to type and remember. Next, type a comma, followed immediately by the path to the document, folder, or Web address that you want to open; then press **<Enter>**. In our example, if you would like to set the alias "q2"

for "My Q2 Report.doc" in the folder "C:\work\reports," type **@q2,c:\work\reports\My Q2 Report.doc** in the Deskbar and press **<Enter>**. (Your path and alias name will vary, of course.) The next time you need to open the file, type **q2** (or the alias you devised) in the Deskbar and press **<Enter>**. When you no longer need the alias, just click in the Deskbar and type @ plus your custom alias name followed by **<Enter>** (in this case, **@q2<Enter>**) to delete it from the alias list.

You can add a command-line switch or parameter to the end of your alias by typing **$w** in the appropriate place. For instance, if you want to open Google and search for one or more keywords, type **@goo, http://www.google.com/search?num=50&hl=en&lr=&q=$w** and press **<Enter>** (your alias name may differ, of course). The next time you want to launch a browser and begin a Google search simultaneously, type **goo** (or whatever you named your alias) followed by a space and your keyword or words—say, **goo DVD**.

Application aliases require a comma and an equal sign. For example, type **@c,=calc.exe <Enter>** to launch Windows' Calculator app when you type **c<Enter>** in
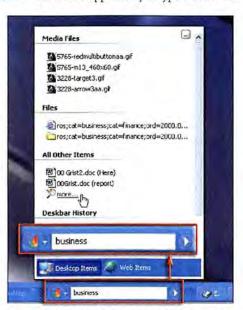
FIGURE 5: GET QUICK RESULTS without opening a full window by typing directly in the MSN Deskbar.

Look Farther and Wider With Copernic Desktop Search

THE MSN TOOLBAR SUITE isn't the only indexed searching game in town. Copernic Desktop Search provides many of the same features, including the ability to search local hard disks, the Web, and Outlook and Outlook Express e-mail. Copernic also lets you conduct searches using either an application window or a taskbar toolbar, choose the folders you want to have indexed, set indexing to occur in the background, and use Boolean operators to refine your search, just as you can with the MSN toolbars. But Copernic Desktop

Search also lets you filter search results based on such attributes as file size and date; and it gives you a preview pane for seeing a file's contents without launching a separate application to open it. In addition, you can store the index file in the folder of your choice; set the time and interval for index updating; and search Outlook contacts, as well as bookmarks and browser history in Internet Explorer, Firefox, Mozilla, and Netscape. And like the MSN Toolbar Suite, Copernic Desktop Search is absolutely free. Visit find.pcworld.com/46316 for the download.

the Deskbar. Finally, if you forget your aliases, type @ in the Deskbar to view a list of the aliases that you've created. ■

Send Windows-related questions and tips to scott_dunn@pcworld.com. We pay $50 for published items. Visit find.pcworld.com/31607 for more Windows Tips. Scott Dunn is a contributing editor for PC World.

Relax With the Best of the Internet's Lighter Side

ARE YOU WASTING precious time and computing resources by fooling around with some silly computer game when you could be a productive member of society? Good for you. Game breaks keep you rested and ready to dive back into the rat race.

I'm not into blood-and-gore games, but I do like the challenge of Tetris-like puzzles. Wherever I have an Internet connection, I can visit Neave Games (www.neave. com/games) to play online versions of classic games remarkably similar to Tetris and Space Invaders, lovingly re-created by site author and programmer Paul Neave using Macromedia's Flash animation. Or download Neave's games to play even when disconnected from the network umbilicus. None of the games cost you a dime; they do require Macromedia's free Flash player (find.pcworld.com/46330).

Not all Flash games are trapped in the 1980s, however. Shockwave.com's site brims with action and sports games, word games, fast-paced puzzles such as the Equilibria matching game (see **FIGURE 1**), and strategy classics such as chess and mah-jongg. Many of the diversions are also free to download, although some have built-in time limits and advertisements, and others omit higher levels. The company's downloadable games (most priced from $10 to $25) and monthly subscriptions to the site's Gameblast.com service (from $10 a month to $60 a year) let you bypass these limitations. Still, you can play for days at Shockwave.com for free without running out of time or levels.

For sophisticated flash, try Metanet Software's free, downloadable ninja action caper called N (find.pcworld.com/ 46332). You guide a short-lived but spry little ninja through 60 levels where lethal hazards await. The people at Metanet take their Flash seriously, even offering free programming tutorials. And their effort shows in a game that's faster and more responsive than other Flash programs.

My favorite Flash game is a guilty pleasure. In Wagenschencke's HomeRun game (find.pcworld.com/46334), your thankless and devilishly difficult job is to guide an inebriated Swiss partier down the *strasse*. The kids will love it. ("Daddy, why does the man keep falling down?")

TO MANAGE BOOKMARKS: DIY

YOU ALMOST certainly use bookmarks (called Favorites in Internet Explorer) to return to sites you visit often. All current browsers provide basic tools for bookmarking pages, and for deleting and organizing your list of bookmarked sites. But what are your options if you want to share bookmarks between two different browsers?

A quick search of Google reveals various utilities and online services that promise to replicate your bookmarks. But you don't need to spend money or entrust your browsing predilections to others to get organized: Your browser already has import and export commands that let you grab another browser's bookmarks.

In Internet Explorer (the Windows XP SP2 version), choose *File•Import and Export*, click *Next*, and select *Import Favor-*

ites. Click *Browse* to navigate to the location of your other browser's bookmarks file. Both Firefox and Mozilla store bookmarks in a file called "bookmarks.htm" that may reside in any of several locations on your hard disk; to locate it, choose *Start•Search*, enter the name in the text box, and press **<Enter>**.

Opera stores its bookmarks in a proprietary format that other programs can't import, but you can export bookmarks from it to an HTML file that the other browsers can read; choose *File•Export• Bookmarks as HTML* to do so. Internet Explorer lets you do the same thing with its Favorites: choose *File•Import and Export•Next•Export Favorites*, and click *Next* twice to export a bookmarks.htm file to the My Documents folder. To import
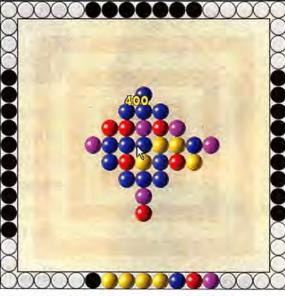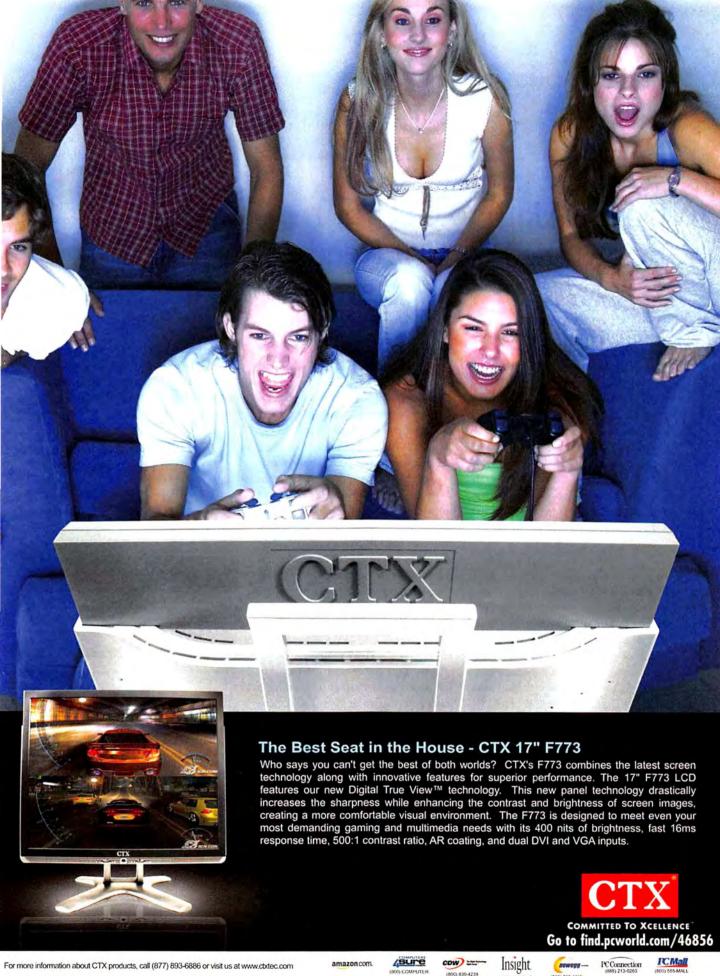
FIGURE 1: TRY TO MATCH BALLS OF THE same color in Shockwave.com's free Flash-based Equilibria game.

bookmarks into Firefox, choose *Bookmarks• Manage Bookmarks•File•Import* (*Tools•Import* in Mozilla). To move your bookmarks into Opera, select *File•Import*, and then choose either *Netscape bookmarks* (for Firefox or for Mozilla/Netscape) or *Internet Explorer favorites* (for IE). ∎

Send your questions and tips to nettips@ spanbauer.com. We pay $50 for published items. Go to find.pcworld.com/31523 for more Internet Tips. Scott Spanbauer is a contributing editor for PC World.

The Best Seat in the House - CTX 17" F773

Who says you can't get the best of both worlds? CTX's F773 combines the latest screen technology along with innovative features for superior performance. The 17" F773 LCD features our new Digital True View™ technology. This new panel technology drastically increases the sharpness while enhancing the contrast and brightness of screen images, creating a more comfortable visual environment. The F773 is designed to meet even your most demanding gaming and multimedia needs with its 400 nits of brightness, fast 16ms response time, 500:1 contrast ratio, AR coating, and dual DVI and VGA inputs.

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HARDWARE TIPS

KIRK STEERS

Do the Math to Get Your PC All the Power It Needs

YOUR PC MAY BE dying of starvation. CPUs, graphics cards, and other components have a voracious appetite for power; and an overtaxed power supply can cause performance hiccups, sudden freeze-ups due to memory errors, and even premature death from overheating.

When you add memory, a second hard drive, or a high-end graphics board to your system, you risk pushing it over the edge. Even a midrange PC can be stressed by a demanding upgrade: The GeForce 6800 Ultra graphics card from NVidia can draw over 100 watts at peak, leaving a system equipped with a power supply of 300 watts or less severely undernourished.

UNDERPOWERED UPGRADES

TO CALCULATE how much power your PC needs, total the wattage requirements for each of its components, and then add a safety margin of 30 percent. The chart at right shows the typical energy use of common components. For a more detailed summation of your system's wattage needs, use the numbers in the Power Wattage Calculator at the JS Custom PCs Web site (find.pcworld.com/46248).

Compare your total to your power supply's maximum wattage rating, which should be printed on the outside of its case. The rating can also be found in your PC's manual or on the vendor's Web site.

If the number of watts your PC needs (plus the 30 percent safety buffer) is less than the maximum wattage rating of your power supply, your system *may* be adequately powered. However, wattage numbers don't tell the whole story. Different components require power to be delivered at different voltages: 3.3V, 5V, or 12V. If electricity were water, the voltage streams would correspond to an eyedropper, a household water tap, and a high-pressure fire hose. Today's power-hungry components need more 12V power than older hardware does, so a power supply must provide adequate 12V current. A supply's capacity to provide 12V power is measured in amperes, or amps. Its specs should tell you the amps the product can deliver at 12V, 5V, and 3.3V.

Adding up the 12V power requirements of each component is difficult, however. Vendors rarely publish this data, and some components use power at more than one voltage. For example, a hard drive may use 12V power to spin its disks and 5V power to operate the disks' circuitry. Browse to find.pcworld.com/46250 for more information on calculating the voltage requirements of your equipment.

POWER LIFTS

TO REPLACE A POWER supply, first unplug the PC's power cord, ground yourself with a wrist strap or by touching a water pipe or other grounded object, and open the case. Disconnect the power supply's lines from the motherboard and other components, remove the screws holding it in place, and lift it out. Then reverse the process to install the new unit.

Don't pinch pennies: PC components need consistent power that's free of distortion and noise. Power supplies priced at less than $40 are likely to be more prone to voltage fluctuations than models costing $60 or $70. Paying more for a unit from a well-known maker such as PC Power and Cooling (www.pcpowerandcooling.com) or Antec (www.antec.com) can save you both time and money in the long run.

Get a good fit: Most desktops made in the last six years fit either the ATX case style or the smaller SFX style. If you're unsure which type of case you have, check your PC's manual, or remove the old power supply and make sure the new power supply's measurements are the same.

Count your connections: The new power supply must have the same connectors as the old one, plus any connectors needed for future upgrades. Note that ATX motherboard connectors can have either 20 pins or 24 pins. Again, check your PC manual or the motherboard maker's Web site for this information. ∎

Go to find.pcworld.com/31511 for past Hardware Tips columns. Send your tips and questions to kirk_steers@pcworld.com. We pay $50 for published items. Kirk Steers is a PC World contributing editor.

Hardware Power Numbers

DETERMINE THE OVERALL power requirements of your PC by adding the wattage needs of each individual component, and then tack on a safety buffer of at least 30 percent.

COMPONENT	Watts
CPU	
AMD Athlon 64/64 FX	90-110
AMD Thunderbird	50-60
AMD Athlon XP	50-80
AMD Duron	40-60
Intel Pentium 4	60-100
Intel Pentium III	25-40
Intel Celeron	30-60
GRAPHICS CARD	
Basic	25
High-performance	35-100+
OTHER	
Motherboard	18-28
Optical drive	25-35
Hard drive	25
Memory module (each)	7-12
Unpowered USB/FireWire device	5-10
PCI sound card	5-10
Additional PCI card	5
Floppy drive	5
Fan	3
Keyboard and mouse	6

STEP BY STEP

ARIN HAILEY

Give a Site Blog Appeal

YOU AND YOUR Web site used to have a great relationship, but lately you just can't express yourself online as freely and spontaneously as you want to. Rekindle your site's immediacy by giving it a Web log, or blog. A blog lets you add new content quickly from almost anywhere. Others can participate via comments to your postings or as full-fledged contributors.

Google's Blogger service (blogger.com) permits you to create and maintain blogs that are hosted for free on Blogger's servers. Alternatively, with just a few simple tweaks to your Blogger account, you can use Blogger to add a Web log to an existing Web site and make it look like that site's other pages. Hosting the blog on your site rather than on Blogger's servers allows you to integrate your blog with the other components of your site, such as your portfolio and your collection of family photos. It also enables regular visitors to find your blog postings easily. ∎

Arin Hailey is a freelance writer and editor based in the San Francisco Bay Area.

THE ABCs OF FTP

1 Get started: Go to Blogger.com and click *Create Your Blog Now*. The user name and password you choose will sign you in later to alter your blog. On the 'Name your blog' screen, give your blog a title and click *Advanced Blog Setup*. Reenter the blog's name and provide the address of your site's FTP server, FTP protocol, and FTP path (the directory in which you will

Server Details

FTP server	ftp.mywebsite.com
Protocol	⊙ FTP ○ SFTP
FTP path (optional)	public_html/blog
Blog filename	index.html
Blog URL	http://mywebsite.com/blo‹

publish your blog, as shown above right). If you don't already have this information, ask your Web hosting service for it. Your best bet is to publish your blog in a dedicated directory. For example, if your Web

site's FTP directory were "public_html," you would set your FTP path to **public_html/blog** to prevent overwriting existing files in your site's server directory. Finally, enter a file name (such as **index.html**) and a URL (for example, **http://mywebsite.com/blog**). You can upload the HTML and image files destined for your blog to any FTP server. (Some other blog-creation tools, such as Movable Type, require that you set up a separate database on a server, but Blogger has no such requirements.) For more about FTP, visit the Blogger.com home page and click *Help•FTP*.

CUSTOMIZE YOUR BLOG

2 Find the look you like: After you've named your blog, you need to choose a template to pattern its layout on. Remember that you can always switch to another template design later. If you feel comfortable working with HTML code, you can modify Blogger's standard templates, or you can create a completely original look for your blog. Scott Spanbauer's "Instant Web Sites" feature (January 2004, find.pcworld.com/46376) includes a sample blog template, as well as instructions for editing templates at Blogger.com.

3 Make your statement: Now you're ready to begin adding content: Click *Start Posting* to open the Create page, which is located under the Posting tab. Publish a test post to make sure that everything is working (you can delete the post later if you wish). Enter your FTP user name and password; you'll need to do this the first time you publish during each Blogger session. You can preview, edit, or save your initial post as a draft before you publish it. When everything is in order, you're free to post away.

4 Create a profile: Now personalize the placeholder text accompanying the template. First click the *Settings* tab on the Blogger account

```
<!-- Sidebar -->
<div id="sideBar">

    <$BlogMemberProfile$>
```

home page to enter your blog description. To change your blog's profile, go to the Blogger Dashboard and click *Edit Profile*. You can choose not to display your profile at all if you like. On the Dashboard, click your blog's name. Then click *Template•Edit Current*, scroll to '<!– Sidebar –>', and delete the following text: **<$BlogMemberProfile$>** (see above). The wording of options and HTML code in different templates varies, and the template you're working with may not have all the options described here. To deploy the changes on your site, click *Save Template Changes* followed by the *Republish Index* button.

5 Add links before you publish: If your template includes links in a sidebar section, you can personalize them by scrolling in the template window to the section set off with '<h6>Links</h6>'. Edit these links so they match the template's sample (see below). When you're done, click *Save Template Changes* and then *Republish Index*.

Later you can add multiple authors and photos to the blog, in addition to enabling e-mail

```
<h6>Links</h6>
<ul>
    <li><a href="http://www.nytimes.com/">NYT</a></li>
    <li><a href="http://EDITME!">Edit-Me</a></li>
    <li><a href="http://EDITME!">Edit-Me</a></li>
</ul>
```

and even mobile-phone posting. As you learn Blogger's tools you'll regain mastery of your domain in no time. And who knows—your blog might get you to fall in love with your Web site all over again.

ANSWER LINE

LINCOLN SPECTOR

EASY OUTLOOK E-MAIL SORTING　　**SECURE FOLDERS IN WINDOWS XP**　　**CAPTURING HARD-WARE SETTINGS**

Why Won't Windows Boot With a New Motherboard?
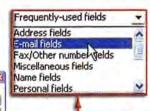
I BOUGHT AND installed a new motherboard. Now Windows won't boot at all. Nothing has changed on the machine's hard drive. What happened?

(Name withheld by request)

FIRST, MAKE SURE that the hard drive is attached to the motherboard, and that the motherboard recognizes it. You can do this in your PC Setup program, but the options in this program vary from BIOS to BIOS, so I can't tell you exactly how.

Enter PC Setup by pressing a particular key before Windows loads; a message telling you which key to press appears soon after you turn the system on. Search PC Setup's menus to find listings for hard drives, and then make sure that your drive is in the program's boot sequence. You may have to tell the BIOS to search for hard drives (it should do so automatically).

If PC Setup can't recognize the drive, try reopening your computer, checking all of the connections on the motherboard and hard drive, and rebooting again.

Here's another possibility: Your power supply may be inadequate for the new motherboard. Peruse your motherboard's documentation to find the wattage the vendor recommends. For more on calculating your system's power needs, see this month's *Hardware Tips* on page 144.

If the hardware checks out, boot your machine from a floppy to see whether all the necessary files are accessible on your hard drive. If it uses the FAT32 file format, any bootable floppy disk will do. If it uses the NTFS format, go (on another system) to find.pcworld.com/46254 to download NTFS.com's free NTFS Boot Disk utility, which will prepare a bootable floppy that can read NTFS hard drives.

If you can access the data on your hard drive but you still can't boot from it, you may have to grit your teeth and reinstall Windows. Consult "Windows Rejuvenated!" (find.pcworld.com/46256) from last month's issue for instructions.

FIGURE 1: SORT YOUR OUTLOOK E-MAIL easily by creating the appropriate custom view for "Contacts."

SORT BY OUTLOOK ADDRESS

HOW CAN I SORT my Outlook address book by e-mail address so I can easily find the name attached to a particular address? Doing this in Outlook Express is an easy matter.

Alan Rabe, Mentor, Ohio

YOU NEED TO CREATE a special view. Here's how to do so in the 2000, 2002, and 2003 versions of Outlook:

Open Outlook's Contacts view and select *View•Current View•Define Views* (in Outlook 2003, it's *View•Arrange By•Current View•Define Views*). Click *New*, name the new view **E-mail sort**, and select *Table* as the type of view. Click *OK*.

Choose the *Fields* button to open the Show Fields dialog box, and double-click *E-mail* in the Available Fields list (if it isn't there, click the 'Select available fields from' list and choose *E-mail fields*; see **FIGURE 1**). Click the *Move Up* button until 'E-mail' is near the top of the list. (The field order in the window controls the order in which items on the list appear.) Click *OK* to return to the View Summary.

Click *Sort* and select *E-mail* from the Sort dialog box's 'Sort items' menu (again, select *E-mail fields* from the 'Select available fields' menu if it isn't there). Click *OK* twice, and then *Close*.

To view your contacts sorted by their e-mail address, select *View•Current View• E-mail sort* (*View•Arrange By•Current View•E-mail sort* in Outlook 2003). The first time you do this, you may want to increase the width of the E-mail column by dragging its border to the right.

PROTECT SHARED FOLDERS
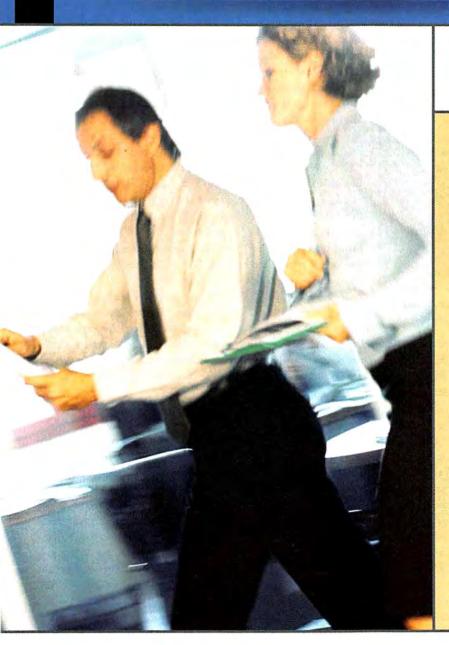
PASSWORD-PROTECTING a shared folder on a network was simple in Windows 98. How do I protect my shared folders in Windows XP?

J. Bankston, White Oak, Texas

THIS CHORE, which was easy in earlier Windows versions, is difficult and poorly documented in XP Professional and theoretically impossible in XP Home. But there's a workaround: When someone accesses your computer over a local network, XP provides access through the Guest account, even if that account is ▶

turned off. So if you password-protect the Guest account, you effectively password-protect network access to your PC.

On your XP system (which I'll call the "host"), select *Start•Run*, and type **net user guest** *password*, replacing *password* with something less obvious (browse to find. pcworld.com/46480 for advice from the October 2003 *Internet Tips* column on how to create hard-to-guess passwords). Press **<Enter>** and reboot your system.

From now on, visitors trying to log on to the host from another PC will run into a dialog box asking for the password. Without it, they can't log on. There are a couple of caveats, however.

FIGURE 2: CAPTURE YOUR HARDWARE settings by taking snapshots of your BIOS if your printer lacks a parallel port.

First, visitors must first access your PC through Windows (rather than through an application), which opens a password dialog box automatically. They won't be able to access the folder on the host through another program until they've done so with Windows Explorer, the desktop, or another Windows resource.

Second, the host's Guest account must be turned off—that's the default setting. If it's on, select *Start•Control Panel• User Accounts•Guest•Turn off the guest account*.

READ YOUR HARDWARE SETUP

I'M TRYING TO optimize my PC, and I constantly have to refer to my BIOS settings. Is there a way to print the settings, output the information to a file, or view the BIOS within Windows?

Brian Carr, Arlington, Virginia

YOUR HARDWARE settings are stored in the CMOS chip and are accessed through a special program on the BIOS chip called PC Setup. You can launch your PC Setup program only at the beginning of the boot process (when your system starts), by pressing a particular key that is probably identified on screen when you turn on the machine. But it's a pain to reboot every time you need to access these settings.

The best solution would be a program that clearly and accurately shows all of your hardware settings. Unfortunately, I haven't been able to find such a program (if you've discovered a utility that provides this data, please let me know about it).

The next-best solution is to print the settings. But this entails having a printer connected to your computer through the parallel port—USB and network connections will not work for this task. If your printer has a parallel port that you're not using, you can buy the cable for as little as $10; of course, the printer and computer have to be near each other, too.

To print your settings, boot into your PC Setup program. Now, move through the menus, and—at every screen that you may at some time want to refer to—press **<Print Screen>**. After the last page, press your printer's eject button. If you can't find it, press **<Print Screen>** one last time.

Unfortunately, many modern printers don't come with a parallel port. If you can't establish a parallel connection so you can print the screens, photograph them instead. It's cheaper and quicker to use a digital camera, but a film camera will work if need be. If it's digital, use the camera's lowest resolution. Shoot the pictures at a direct angle (see **FIGURE 2**). Take the picture without a flash, and with as little ambient light as possible; wait until dark, if you can. You don't need a tripod, but it makes taking the shots easier, and the resulting images will be better. Be prepared to retake some photos, especially if you don't have a tripod.

RECOVER DELETED E-MAIL

IF AN E-MAIL message is deleted, is there a way to recover it?

(Name withheld upon request)

YOU CAN EASILY undelete recently axed messages from an e-mail program's Deleted Items or Trash folder. But even if you've emptied this folder since tossing the message, you may still be able to retrieve it, with the right software.

The free demo of DTI Data Recovery's $49 E-Recovery for Outlook Express (find. pcworld.com/40571) will show you what messages are recoverable but won't recover them—you'll have to pay for that. DTA is working on a version for Outlook but won't say when that will be available.

If you're on a Microsoft Exchange Server network, Outlook offers another way to recover deleted e-mail: Check your Tools menu for a 'Recover deleted items' option.

Iolo Technologies' $40 Search and Recover 2 (also part of the company's System Mechanic Pro suite) restores messages deleted from OE, Outlook, Eudora, and Netscape Messenger. Go to find. pcworld.com/40574 for the download. ■

Send your questions to answer@pcworld. com. We pay $50 for published items. See find.pcworld.com/31577 for more Answer Line columns. You'll find Contributing Editor Lincoln Spector's humorous and other writings at www.thelinkinspector.com.

KILL THE .NET LOG-IN

IF YOU'RE THE ONLY person using your computer and you've installed Microsoft's .Net Framework upgrade, you can no longer boot into Windows without stopping at the log-in screen. To remove this step, select *Start•Run*, type **control userpasswords2**, and press **<Enter>**. In the User Accounts dialog box, select your own log-in name from the four listed (the others will be Administrator, ASPNET, and Guest), uncheck *Users must enter a user name and password to use this computer*, and click *OK*. In the resulting dialog box, make sure that your log-in name is in the user name field, leave both password fields blank, and click *OK*.

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Service: Improving, No Fooling?

I'M A BATTLE-SCARRED VETERAN of support calls, so I know to steel myself for the familiar drill: Grab the speakerphone. Suffer through half an hour's worth of Muzak and ads. Reach a clueless agent. Scream silently.

And I lend a sympathetic ear to people like my dad. He once spent much of a day on the phone with morons at his Internet service provider who couldn't diagnose an e-mail problem I nailed in 5 minutes.

But if my recent experiences are any evidence, customer service seems to be moving in the right direction. I shudder to say this for fear my luck will turn, but I see lots of hints that companies are beginning to get the idea that good service is good business. I'm hearing encouraging tales from various friends and colleagues, too. I couldn't tell you whether this has some relation to global warming or whether it's just random—but whatever it is, I'll take it.

Back in the bad old days last summer, when a little piece of plastic broke off my Handspring-labeled Treo 600 and I phoned the support number listed on the Web, things got stupid fast. After long holds, three successive people in India kept giving me different numbers to call. Luckily, a fourth support rep finally set things right.

Things were different when the replacement unit broke in exactly the same way. This time, one quick call did the trick. I

When tech fails, you want help fast. And you just might get it.

again had to offer a credit card number, as security against the possibility I might not send back the old one, but the new unit turned up fast. My latest Treo has the PalmOne logo, apparently came out of a more robust mold, and is doing fine.

When I put the first Treo on T-Mobile's network, I ran into glitches with the data service: Sometimes the phone could connect with the system but not with the Internet. T-Mobile's support people were almost too polite as they got the data flowing again. Friends tell similarly positive stories about Verizon's service-desk staffers.

I'm always running into weirdness with hotel Internet services. This hit a new low last year when I had trouble at one hotel and called for help—and two guys in overalls came up to my room with pipe wrenches to see if maybe the cable had fallen out of the wall jack. It hadn't, and neither they nor a toll-free service hotline had any idea how to solve the problem. But recently when a connection at a different hotel failed the second time I tried it, the hotline answered quickly, diagnosed what was wrong, and fixed it in minutes.

Back when AT&T owned my local cable system and the Internet connection went down, you wanted to wring necks, particularly when you had to suffer through messages inviting you to consult the Web site for help. But since Comcast took over, support personnel seem to have a better idea of what they're talking about. And during increasingly rare outages, the support system knows where you're phoning from and alerts you if there's an area-wide problem it already knows about.

There's still plenty of fifth-rate support. Many firms continue to treat you as an irritation, not a potential repeat customer. In a perfect world, though, support calls would never happen in the first place—so it's nice to see that some companies are working to make them useful and pleasant instead of fruitless and obnoxious. ∎

ILLUSTRATION: JOHN CUNEO

File Edit View Create Page Text Window Help

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