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12 REASONS YOU NEED
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WORK FASTER IN YOUR FAVORITE APPS

Increase your application productivity with these tried-and-true formatting and tools shortcuts.

ACTION	Keystroke
Save the current document	<Ctrl>-S
Open a new document	<Ctrl>-O
Undo the last thing you did	<Ctrl>-Z or <Alt>-<Backspace>
Undo the last undo	<Ctrl>-Y
Select the entire current document	<Ctrl>-A
Delete the selection and move it to the clipboard	<Ctrl>-X
Copy the selection to the clipboard	<Ctrl>-C
View contents of the Office clipboard (see FIGURE 4)	<Ctrl>-C twice
Paste the clipboard's contents into the current program	<Ctrl>-V
Open the Print dialog box (see FIGURE 5)	<Ctrl>-P
Turn italics on or off	<Ctrl>-I
Turn bold on or off	<Ctrl>-B
Turn underlining on or off	<Ctrl>-U
Launch a program's search or find tool	<Ctrl>-F or <F3>
Launch a program's Go To dialog box	<Ctrl>-G or <F5>



FIGURE 4



FIGURE 5

GET MORE OUT OF INTERNET EXPLORER

Whether you use broadband or dial-up, these shortcuts will have you browsing faster than ever.

ACTION	Keystroke
Go to the Address bar	<Alt>-D
Add www. before, and .com after, what you're typing in the Address bar and go to that site	<Ctrl>-<Enter>
Refresh the current Web page	<F5> or <Ctrl>-R
Refresh current Web page regardless of time-stamps	<Ctrl>-<F5>
Stop downloading a Web page	<Esc>
Show or hide the Search bar	<Ctrl>-E or <F3>
Open the Find dialog box	<Ctrl>-F
Show or hide the History bar (see FIGURE 6)	<Ctrl>-H
Show or hide the Favorites bar (see FIGURE 7)	<Ctrl>-I
Toggle full-screen mode on or off	<F11>
Open the "Open" dialog box	<Ctrl>-N

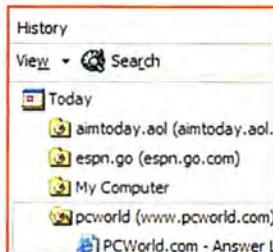


FIGURE 6

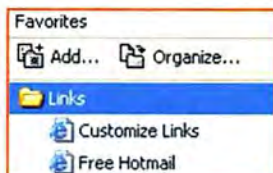


FIGURE 7

CLICK IN CONTEXT

Windows Tools Are a Right-Click Away

Speed up maintenance: In Windows Explorer, right-click a drive and choose *Properties*. In the General tab, click *Disk Cleanup*, or select *Tools* to open other system utilities. In Windows 2000 and XP, right-click *My Computer* and choose *Manage* to open Computer Management.

Reset your clock: Right-click the clock in your taskbar and choose *Adjust Date/*

Time (or simply double-click the clock).

Adjust your display: Right-click your desktop and choose *Properties*. (To view your desktop, right-click the taskbar and choose *Minimize All Windows*.)

Get to System Properties: Right-click *My Computer* and choose *Properties*, or if the *My Computer* window is already open, right-click the system menu icon in the

upper-left corner to see the same options.

Open Network Neighborhood: Right-click *Network Neighborhood* (My Network Places in Me) and choose *Properties*.

Map or disconnect network drives: Right-click *Network Neighborhood* (My Network Places in Me) or *My Computer* and choose *Map Network Drive* or *Disconnect Network Drive*.
—Scott Dunn

PC WORLD

Instant Reference Guide to Keyboard Shortcuts



Mice are nice, but the keyboard is faster. To get to your favorite Windows tools and application functions fast, let your fingers do the opening with these quick and simple keyboard shortcuts.

The Fast Track to Destinations in Windows, Your Apps, and the Web

SUPERCHARGE WINDOWS NAVIGATION

The shortest path to your favorite files and Windows tools runs straight through your keyboard.

ACTION	Keystroke
Open or close the Start menu	<Ctrl>-<Esc> or <Windows>
Switch back to a running program	<Alt>-<Tab>
Switch to another running program	Hold down <Alt>, press <Tab> repeatedly
Open Windows Explorer to My Computer (see FIGURE 1)	<Windows>-E
In Explorer, move to the current folder's parent folder	<Backspace>
Rename the selected folder or file (on the desktop, in an Explorer window, and in many dialog boxes)	<F2>
In Explorer, search for a file	<Ctrl>-F or <F3>
Search for a file in a new window (see FIGURE 2)	<Windows>-F
Search for a computer in a new window	<Ctrl>-<Windows>-F
Minimize open windows (or restore minimized windows)	<Windows>-D
Minimize open windows	<Windows>-M
Close an open window	<Alt>-<F4>
Close a folder and all its parents	<Shift>-<Alt>-<F4>
Restore windows minimized by <Windows>-M	<Shift>-<Windows>-M
Open the Run dialog box (see FIGURE 3)	<Windows>-R
Open the current window's Control menu	<Alt>-<Spacebar>
Open Task Manager	<Ctrl>-<Shift>-<Esc>
Open System Properties	<Windows>-<Pause>
Open the context (right-click) menu	<Shift>-<F10>
Open the Properties dialog box (of the selected item)	<Alt>-<Enter>
Delete without using the Recycle Bin	<Shift>-<Delete>
Go to the beginning	<Ctrl>-<Home>
Go to the end	<Ctrl>-<End>

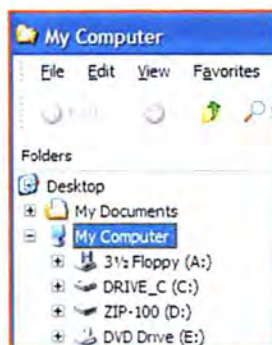


FIGURE 1

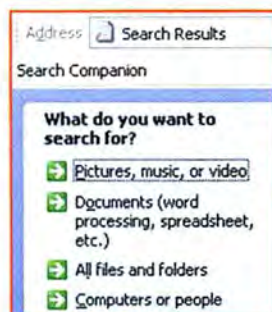


FIGURE 2

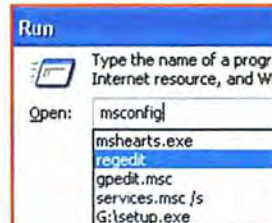


FIGURE 3

Continued on the other side.



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COOL



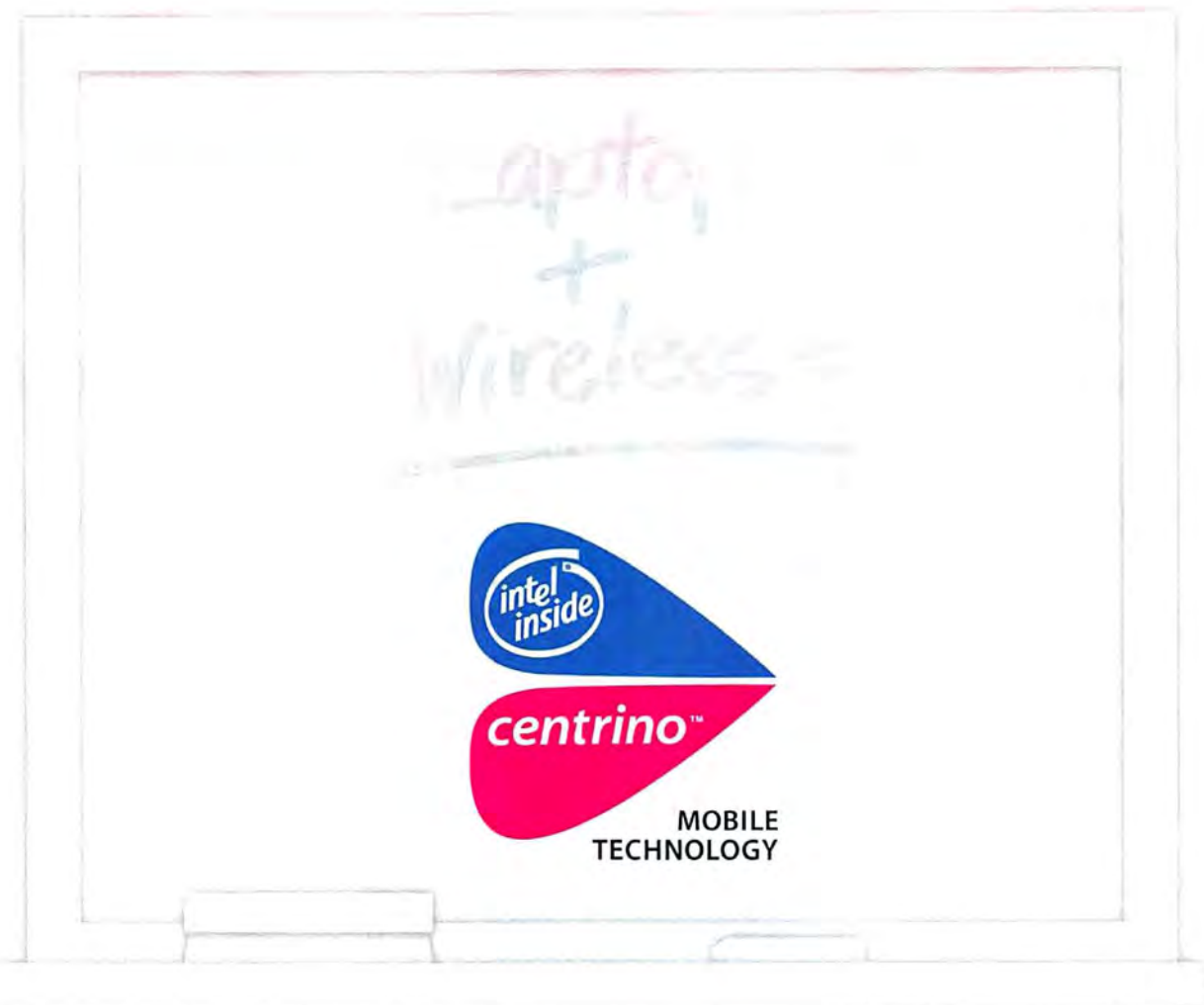
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FEATURES

CELL PHONES

94 Smart Talk

Most cell phone users have experienced the hair-pulling frustration of poor voice coverage, confusing service plans, and unsatisfying customer support. We sort through the phone options and plans for you, so you can find the best choices for your needs.

BACKUP GUIDE

111 Better Backups

A good backup strategy can help you avoid a lot of grief. To take the pain out of protecting your data, we focus on five common backup scenarios and evaluate eight hardware and ten software products for backup tasks.



WINDOWS

123 Windows XP's Big Fix

With Microsoft's Service Pack 2—the heftiest Windows update yet—the operating system gains notable improvements in security, wireless networking, and multimedia. Learn more about the new features, tweaks, and tools that make this patch a must-have.

ON THE COVER



ULTIMATE UPGRADES

76 Your Ideal PC

The perfect PC for you may be just a simple upgrade away. Or it may wait at the end of a build-it-yourself experience. Either way, we're here for you, explaining how to choose the right components—from case to motherboard to memory to drives—for your system, and providing step-by-step guidance on how to assemble the machine of your dreams.

Cover photography by Kevin Candland





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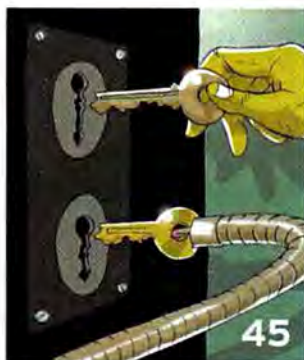
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TELL US WHAT YOU THINK

Visit www.pcworld.com/pcwinput and rate this issue—you could win a Canon i9900 Photo Printer, which currently sells for approximately \$480. You'll need the subscriber number from your mailing label to take this survey online. The site explains the official rules and also how to participate in the drawing if you're not a subscriber. You can enter from August 16 through September 17, 2004.

COMING UP IN OCTOBER

Technology Annoyances: How to fix a multitude of PC, Internet, and consumer electronics woes.
Simplify Your PC: Of course, the best way to avoid annoyances is to prevent them in the first place.

Lazy Person's Guide to... managing your digital photos, backing up, creating a Web site, and more.
Multifunction Printers: We look at inkjet and laser models and tell you which type is better for what.

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This emerging market provides access to online auctions, with brick-and-mortar convenience.
- 28 Hard Drives Get Smarter**
Drives equipped with NCQ technology promise more efficient—and speedier—performance.
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Michael Bove on the future of smart devices.

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- 60 Security**
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- 72 Remote Access**
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Watch video on a wireless network or on a PDA.
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ClearPlay filters racy movies as they play.

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- 168 Step-By-Step**
Tips on browser security and maintenance.
- 170 Internet Tips**
Detect and eliminate viruses that sneak through.
- 172 Hardware Tips**
Calibrate your monitor to get the best picture.

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I was pleasantly surprised that tech support got back to me quickly and their answers were courteous, accurate, and succinct. Great!

- Alan

I am very impressed with how fast you got back to me, I feel great knowing that I can e-mail you with a problem and know that I will receive a response within minutes.

- Susan

I can say without reservation that I have never received better support. Everything you did was timely and error-free.

- Bob

I just wanted to tell you how pleased I am with the software, training, and speed. It was much easier than I thought, and I could not be happier! Thanks!

- David

I'm really impressed with the fast service you guys provide and the polite way you deal with what must seem very basic questions to you. Brilliant service! Thanks!

- Sarah

I now have a few sites with you guys and believe me, I know the quality of your service, and it is a pleasure dealing with you. Your company is tops. Thanx again.

- Dusty

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Powerhouse Projector, Burly Backup Drives, and Elegant LCD TVs

FROM A TEST SCREENING of a fine new projector to a comprehensive review of backup hardware and software products to a survey of five new LCD TVs, the September *PC World* overflows with interesting new

products. In our *Top 100 Spotlight* this month are extreme notebooks: 4-pound ultraportable laptops, desktop replacements with 17-inch screens, a gaming model, and more.



- 70 Well-Appointed Travel Projector**
Casio's XJ-350 weighs just under 4 pounds but packs a lot of impressive features, including strong illumination and a 2X optical zoom lens.



- 111 Better Backup Options**
One star of our "Better Backups" feature is Maxtor's OneTouch, a \$300, 300GB external hard drive loaded with Dantz Retrospect Express 6.0.



- 140 Flat-Screen TVs Worth Watching**
The Editor's Pick in our *Next Gear* roundup of LCD televisions, Sony's LCD WEGA KLV-21SG2 handled standard TV and DVDs beautifully.

THIS MONTH'S CROP OF TOP PRODUCTS

DESKTOP PC

- 152 Amax Max64 3400+ ★★★★★

NOTEBOOK PCs

- 151 Acer TravelMate 8000 ★★★★★
151 IBM ThinkPad R51 ★★★★★
151 IBM ThinkPad T42 ★★★★★
151 IBM ThinkPad X40 ★★★★★
150 Sharp Actius MM20 ★★★★★
151 Toshiba Portégé M205-S810 ★★★★★

15-INCH LCD MONITORS

- 155 Sharp LL-T15G4 ★★★★★
155 ViewSonic VG510s ★★★★★

LCD TELEVISIONS

- 140 LG Electronics RU-23LZ20 ★★★★★
140 Sony LCD WEGA KLV-21SG2 ★★★★★

DIGITAL CAMERAS

- 159 Canon PowerShot Pro1 ★★★★★
159 Casio Exilim Pro EX-P600 ★★★★★
159 Olympus C-770 Ultra Zoom ★★★★★

SCANNERS

- 157 Epson Perfection 2480 Photo ★★★★★
60 Epson Perfection 2580 Photo ★★★★★
157 HP Scanjet 5590 ★★★★★

PORTABLE PROJECTOR

- 70 Casio XJ-350 ★★★★★

BACKUP HARDWARE

- 113 CMS Products ABSplus Portable ★★★★★
112 Iomega Rev 35GB/90GB Removable Hard Disk Drive ★★★★★
116 LG Electronics Super-Multi GSA-4120B ★★★★★
112 Maxtor OneTouch ★★★★★
121 Snap Appliance Snap Server 2200 ★★★★★
121 Ximeta NetDisk ★★★★★

FINANCIAL SOFTWARE

- 68 Best Software Peachtree Accounting 2005 ★★★★★

MOBILE OFFICE COMBINATION

- 72 EnKoo EnKoo-2000 ★★★★★

MONITOR CALIBRATION SOFTWARE

- 62 Pantone ColorVision ColorPlus ★★★★★

DRIVE RECOVERY SOFTWARE

- 72 GRC SpinRite 6 ★★★★★

BACKUP SOFTWARE

- 115 Acronis True Image 7 ★★★★★
115 Ahead Nero BackItUp 1.2 ★★★★★
115 Argentum Backup 2.1 ★★★★★
115 CMS Products BounceBack Professional 5.5 ★★★★★
115 Dantz Retrospect 6.5 ★★★★★
115 LI Utilities WinBackup 1.85 ★★★★★
115 NovaStor NovaBackup 7.1 ★★★★★
115 NTI BackupNow 3 ★★★★★
115 SimpleTech StorageSync Pro 1.4 ★★★★★
115 Stomp BackUp MyPC 5 Deluxe ★★★★★

THE HIGHEST-RANKING new products reviewed in this issue of *PC World* are listed above, together with the page number where

each product is reviewed and the star rating it received. See find.pcworld.com/10860 for more about *PC World's* Star Ratings.

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Bill Golden, CPA—eBay user ID: [bluskyhill \(81\)](#) ★
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Introducing WorldBench 5, PC World's next-generation system benchmark.

ONE AMAZING PLACE. Since its founding 12 years ago, that's exactly what our Test Center has been. On any given day, the stuff on its test benches represents a dazzling cross section of the latest, greatest tech gear—from towering desktop PCs to seriously tiny digital cameras.

But if you ask me, the least important thing about the PC World Test Center is that it happens to be a sizable physical facility here at our San Francisco headquarters. Nope, what makes the Test Center the Test Center is the people in it—namely, our talented team of technicians, led by Director Uli Diehlmann. It's also the array of tools they use to gather objective data. And it's our unwavering commitment to testing methodologies that are based on the way real people use tech products.

All of these elements are reflected in WorldBench 5, the latest update to the benchmarking software we use to test the speed of Windows PCs. Starting with this issue, our *Top 100's* system reviews include WorldBench 5 performance ratings; see page 146 for more information. In coming months, you'll find WorldBench data in *News and Trends*, *New Products*, and other sections as well.

WorldBench has come a long way since its debut in the March 1996 *PC World*. Back then, a 120-MHz Pentium PC qualified as a hot rod, and the mere fact that WorldBench 1.0 supported Windows 95 was something to boast about—so we did.

Eight years later, there's even more to brag about. So I will: Version 5 of WorldBench is a sensational upgrade, designed with today's potent systems in mind. "The PC keeps going and going, and it's still evolving," explains James Motch, whose official title is director of benchmark development, although *Mr. WorldBench*



WORLDBENCH WIZ James Motch in our Test Center.

would be just as appropriate. "The software is catching up with the hardware, and that's what we're showing in these tests."

Unlike "synthetic" benchmarks, WorldBench puts PCs through their paces by testing their ability to perform real tasks in popular Windows XP programs. Version 5's suite includes everything from workaday business apps (Microsoft Office) to professional graphics tools (Adobe Photoshop) to industrial-strength multimedia packages (3ds Max). For the first time, WorldBench runs programs in demanding multitasking scenarios.

These tests add up to a true *system* benchmark that does far more than simply exercise a machine's CPU. As James

notes, "We test the drive, the RAM, the video—everything we can measure reliably. Even the motherboard's chip set and the PC's software load have an impact."

For more on WorldBench 5, check out www.worldbench.com. One other note:

This is the first version that we've offered for sale, responding to years of requests from system tweekers, corporate IT types, and others who need to evaluate PC speed. Buying information is available at the site.

When you're *PC World*, "How fast is that new computer?" remains one of the most vital questions you can answer. But it's far from the only one.

In fact, at the same time that we were

wrapping up WorldBench 5, we were also knocking down walls and drawing up testing plans for some very forward-looking projects.

What we were doing was creating a consumer electronics lab, including a facility for testing high-definition TV sets and a "digital living room" where we can evaluate new-

fangled entertainment devices such as Media Center PCs. You'll find the results of this labor in upcoming reviews in both *PC World* and *Digital World*.

Waitaminnit... "Digital World"? That's right: We're about to launch a companion publication focused on products that blur the lines between the worlds of the PC, living-room electronics, and mobile communications. Watch this space for more details—or visit www.digital-world.com for a sneak peek right now. ■

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

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Net Phones Evolve

NEW SERVICES AND HARDWARE THAT LET YOU CALL CHEAPLY OVER THE INTERNET ARE ALL THE RAGE. BUT DO YOU REALLY WANT TO TROUBLESHOOT PHONES? **BY MICHAEL DESMOND**

DON'T LOOK NOW, but your telephone service is about to get a lot smarter—and more affordable. By the end of 2006, Forrester Research predicts, nearly 5 million U.S. households will adopt Voice over Internet Protocol phone service, which operates over both broadband cable and DSL Internet connections.

VoIP phone services from companies such as 8x8 and Vonage helped launch this telephony revolution by offering sharply lower fees. Subsequently, consumer giants such as Cablevision, Comcast, and AT&T entered the fray, hoping to lure a flood of new subscribers. More recently, U.S. telecommunications giant Verizon jumped in with a national VoIP service of its own, called VoiceWing. And AT&T, in announcing in late July that it would no longer market traditional phone services to consumers, said it



would keep its feature-laden CallVantage Service and other VoIP offerings.

AT&T and Verizon appear to be competing on service and features rather than on price. While Vonage service costs \$30 a month, AT&T's CallVantage runs \$35 per

month for unlimited local and domestic long-distance calling, and VoiceWing's basic price is \$40 a month for similar service—rates that are still nicely below most traditional phone bill totals.

Meanwhile, next-generation VoIP services are starting to

appear, including some that use wireless 802.11b networks. Ultimately consumers may find themselves with a single, intelligent handset that combines Wi-Fi Internet phone and cellular access.

The crux of VoIP's attraction right now is the fact that

it lets you cut your phone bill significantly. Nevertheless, as tempting as that may be, the complexity of Internet telephony makes it a poor fit for most households and small businesses today. Every dollar saved by moving to an Internet phone service could be lost to unpredictable service outages, network configuration hassles, and spotty call quality. To put it simply, when was the last time you had to reboot your phone?

TALKING SHOP

WHAT BEGAN IN 1995 as a way for PC hobbyists and geeks to circumvent long-distance charges is now mainstream. With a service subscription, setup is simple, at least in theory. You're provided with a small box called a VoIP gateway, or adapter, that connects to the cable or DSL modem on one side and to the PC or network router on the other. Plug a standard phone into the jack on the adapter, and just start dialing.

Offering this level of service is a model that has worked well for Vonage. Now AT&T's feature-rich CallVantage and Verizon's entry are raising the profile of VoIP.

"Now Voice over IP is not some flaky, call-from-your-PC service, delivered by some brand name that you've never heard of," observes Charles Golvin, a principal analyst with Forrester Research.

More important, CallVantage delivers superior performance and features, adds Andy Abramson, an Internet phone industry watcher who publishes his own blog at find.pcworld.com/43598.

"The call quality of CallVantage clearly exceeds [that of] everybody else. If you upload a file while on a CallVantage call, you don't notice it, because they do quality of service [processing] in the box," says Abramson. Behind CallVantage's clear calls is an updated adapter that does all the work of translating voice signals into digital packets bound



NEW HOTSPOT ACCESSORY: Zyxel's Prestige 2000W VoIP Wi-Fi Phone.

for the Internet. The new D-Link DVG-1120 Gateway with two telephone ports incorporates service-quality features to prioritize and reserve bandwidth for phone calls. Without such processing, even a simple file upload—such as sending mail—can reduce call quality. CallVantage also touts a Personal Call Manager Web site that lets each subscriber fine-tune dozens of features—from standard fare like call forwarding and voice mail to extras like a "do not disturb" setting, calls that can reach you at multiple numbers, and multiparty conferencing.

Verizon's VoiceWing service was announced too late

for me to test, but will it legitimize VoIP? "Absolutely," says Abramson. Still, he faults Verizon for "charging more and delivering less."

WI-FI ENTERS

ANOTHER DEVELOPMENT in VoIP calling is a clutch of Internet phones that work with 802.11 Wi-Fi networks. Vendors such as Belkin, Pulver Innovations, and Zyxel are pushing hard to market these devices, which look a lot like typical cordless house phones. A Wi-Fi Internet phone, however, can sense Wi-Fi access points and link automatically to the Internet. Wander into a Wi-Fi hotspot location (where you have a subscription service), and your Internet phone can place and receive calls.

WALK THE TALK

SO HOW EASY ARE the latest phones and services to install and use? In my tests with two new products, I spent significant time troubleshooting.

With Zyxel's new Prestige 2000W VoIP Wi-Fi Phone, the first model that I received refused to work with any of the popular wireless routers I tried. The second behaved the same way until I obtained Zyxel's ZyAir B-2000 wireless router (this phone later worked nicely with a D-Link DI-614+ router, as well). Less than a minute after that, I was making calls.

The 2000W's range on my 802.11g network was only about 25 feet, and at that distance call quality was marginal. But business travelers may flock to these Wi-Fi phones, since they'll let users ►

IN BRIEF

Tidbyte



THE BODY ELECTRIC? You may not belong to Microsoft, but one of the company's latest patents involves using your body to network portable devices. Patent No. 6,754,472, filed in 2000 and awarded in June, envisions using the conductivity of "a body of a living creature" to distribute power and data between keyboards, watches, displays, speakers, and other portable devices. Welcome to the Matrix.

Product Pipeline

IPAOMANIA: Just in time for the fall buying season, HP has announced a bevy of new IPaq handhelds. Highlights include the first Pocket PCs to bundle Bluetooth and Wi-Fi with a GSM/GPRS cell phone (the H6300 line); the Rx3000 series and the Rz1700 series of so-called Mobile Media Companions (which also run the Windows Mobile Pocket PC OS) for digital entertainment enthusiasts; and a refreshed high-end Pocket PC with a touchpad (the Hx4700 series). Prices range from a high of \$649 for the Hx4705 to a low of \$279 for the Rz1715. www.hp.com



make calls on their unlimited Internet phone service dialing plan from public hotspots, whether in an airport, an office building, or a local café.

Launching CallVantage involved similar glitches. After signing up, I received a kit containing the D-Link adapter, which required just a few seconds to hook to the cable modem, home network router, and phone. Once I started everything up and logged in to the CallVantage Service site, however, the D-Link unit failed to complete an online registration step. After struggling on my own, I spent about an hour with technical support before learning that my Internet service provider blocks access to the network port that CallVantage relies on to communicate with the adapter.

The next day I tried the unit using a friend's DSL connection and was able to quickly complete the process.

Call quality was excellent, without the momentary voice-dropouts (very short lulls) common with my Vonage service. When I uploaded a 2MB file during a CallVantage call, the other party noticed no change in call quality. By contrast, trying the same upload with Vonage produced a blizzard of pauses and dropouts.

TRASH TALKING

AS A VONAGE subscriber for six months, I've found that Internet phone call quality can be wildly variable. One call is crystal clear, but on the next voices sound as if they're coming from the bottom of a swimming pool. Since I didn't have time to live with CallVantage for as long as I have with Vonage, I simply can't say whether its impressive

REALITY CHECK

HIDDEN COSTS: CONSIDER BEFORE SWITCHING

LOW RATES AND SLICK features are nice, but Net phone service remains a mixed bag for consumers and businesses alike. As the Federal Communications Commission and Congress continue to mull new taxes and regulations on these services, the savings from a switch seem likely to shrink. And frustrating network setup

issues—I probably spent 6 hours total trying to get AT&T's CallVantage to work—can overwhelm all but the most technically astute users.

What's more, Internet phone service call quality and consistency continue to trail that of traditional fixed-line service. VoIP is also more susceptible to outages—if you lose either power or your broadband connection, you're out of luck.

Consider, too, whether older products and services you use rely on standard phone lines. Digital video recorders commonly need a fixed



line to post updates from their central servers. And home security systems require a standard line for calling the central office when an alarm is tripped.

Other issues loom. For instance, providers have begun enabling the migration of existing phone numbers between service providers—the process is called *number porting*—

which can be both difficult and time-consuming. No mechanism exists for recovering phone numbers from a defunct Internet phone company.

"Imagine picking the wrong Voice over IP company," says Andy Abramson, an Internet phone industry watcher. "You migrate the phone number you've had for 20 years over to the wrong company, they go out of business, and nobody wants to buy them. What happens to your phone number? How do you get it back?" Today, unfortunately, nobody really knows.

performance holds up over time. In fact, the inconsistent call quality of VoIP is just one issue. To understand others, see the sidebar above. And if you opt to use VoIP and you have trouble, try these tips:

- **Check the connection:** If your VoIP service is on the blink, first check your modem status to see whether your PC can access the Internet. When your cable or DSL access goes down, so does VoIP.

- **Upgrade your modem:** Older cable modems—specifically, those that lack DOCSIS 2.0 capability—can struggle with efficient packet delivery. You may need a new modem to improve call quality.

- **Move the telephone adapter:** To eliminate crashes try placing your network router be-

tween your modem and your adapter, which allows the router to block intrusions. To improve call quality, place the adapter between the modem and the router, where it can set aside voice-call bandwidth.

MONEY TALKS

IF INTERNET PHONE service can be so difficult, why are customers flocking to it? In a word: savings. For instance, Vonage recently reduced its \$35 monthly fee for unlimited local and long-distance by \$5. And for as little as \$20 per month, you can find flat-fee, all-you-can-use local and long-distance dialing plans with advanced features like conference calling, call forwarding, voice mail, and caller ID. (Go to find.pcworld.com/43406 to

read our review of eight Internet phone services.) Similar services—though often lacking some advanced features—using a fixed-line connection from your local Baby Bell cost \$50 per month or more.

More-advanced networking hardware should minimize future Internet phone service installation problems. Then we could look for one smart handset to do it all: act as a VoIP cordless phone in the home, as a cellular phone on the freeway, and as a Wi-Fi Internet phone while you're sipping coffee. But it will take another two to three years, VoIPWatch's Abramson expects, for that vision to be realized. "We are only scratching the surface of what is possible with Voice over IP," he says.

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WHAT'S IT WORTH? LCD screens at an AuctionDrop storefront show you what items comparable to yours have sold for on EBay.

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GOING NATIONAL

MOST STORES are local, but several companies are now making a national push. AuctionDrop, which started with a few storefronts last year, recently made a deal with United Parcel Service, so you can

now take items you want to sell to any of over 3400 UPS Stores. PostNet, which has 500 national franchises that provide copying and shipping services, it expects 100 of its stores to be selling on EBay by year's end. And Circuit City is testing drop-offs in Atlanta and Pittsburgh with eight stores called Trading Circuit.

Do these services live up to their pain-free-selling promise? *PC World* put three to the test. We used an AuctionDrop storefront in California; a PostNet franchise in Georgia; and Sellers' Market, an independently owned store in Connecticut. We brought to each store a new, unopened \$100 GoVideo DVD+VCR Dual Deck and a \$60 Strait-Line Laser Tool System—all purchased at Costco. We also put the same items up on EBay ourselves (see the chart on page 26 for our results, and read the selling tips below).

TESTING, TESTING

WE WERE IMPRESSED with our experiences at all three. Not counting drive time, we spent less than 15 minutes at each store. We lugged in our booty, and filled out a short form after staffers explained the process. That was it.

The stores showed us online how comparable items had sold recently on EBay. Along with commission, our stores also charged up-front fees per item: nothing to \$8 for basic service, and up to \$20 for premium service if we wanted control over the starting price of our goods (the default is \$1 minimum). We chose premium service at AuctionDrop (\$20) and PostNet (\$15)—but at the latter, it backfired when we priced the player at \$75 and the item became the only one that didn't sell. EBay analysts and users later told us that bidders hate auctions ▶

SELLERS' TIPS

A SURVIVAL GUIDE TO DROP-OFF SELLING

INA STEINER, EDITOR OF auction news site AuctionBytes.com, offers a few guidelines to keep in mind when choosing a drop-off store.

Check feedback ratings: Get the store's EBay user ID, which may not be the same as the store's name. Then, look at its rating, a sign of how buyers have liked that store's service. Also note how long it has been an EBay seller.

Look at the store's auctions: Do you like the

presentation? Are the descriptions informative and persuasive? How good are the photos?

Research collectibles: If you know or suspect your item is rare or valuable, ask if the store has particular expertise in the subject—most won't. You will probably have to do a little legwork to get a good idea of a fair minimum selling price.

Get references: Follow up with a store's prior customers to learn about their experiences.

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Our auctions began about a week after we delivered the items; two stores e-mailed us when the items went up and again when the auctions concluded successfully. But for Sellers' Market, we had to regularly check the site to know our auctions' status; we had to follow up with PostNet regarding our unsold item, too.

We found AuctionDrop, the big kahuna in this arena, to be the most efficient store. At its new warehouse in Fremont, California, people's precious ex-posessions—from PCs to china to items as unusual as mounted deer heads—move on a giant conveyor system. They're scanned and tracked as they're checked in, tested (electrical goods only), photographed, evaluated by a lister who writes up auction text, and boxed for final shipment.

However, AuctionDrop asks that your goods be expected to sell for at least \$75, and it has



BEST FACE FORWARD: One of a team of photographers at AuctionDrop captures your items to enhance their sale on eBay.

size limits. The people at Sellers' Market who left a full-size glass-walled phone booth and a porcelain piggy bank as big as a real pig likely would have been rejected at AuctionDrop. Both Sellers' Market, founded as a drop-off store, and PostNet, for which auctions are a

side business that's funneled through its Nevada headquarters, ask only that items be in good, salable condition.

DIY DRUDGERY

OUR OWN auctions on eBay were far more cumbersome: They took us over 8 hours of

work, from photographing to boxing and mailing the items.

Of course, we pocketed all the proceeds from our own auctions, minus only the eBay and PayPal fees (about 10 percent). In contrast, we ended up with less than half of the money from the stores' auctions after the initial fee, sales tax, and commission were taken out. If all you want is a more lucrative alternative to Goodwill, give these services a shot; if you want to maximize your profit, do it yourself.

Remember, though: However useful these drop-off stores are, eBay has no ownership of them, explains Hani Durzy, eBay spokesperson. That doesn't mean eBay isn't happy to have the stores in action (more auctions ultimately mean more fees for the company). But if you have a dispute with a particular store, it's between you and them. eBay is not involved.

—Anne B. McDonald

FEATURES COMPARISON

STORES ARE CONVENIENT BUT COSTLY

AS EXPECTED, WE MADE THE MOST MONEY from the pair of items we sold ourselves, but we also spent 8 hours on our auctions as opposed to 15 minutes at each drop-off store. AuctionDrop was most efficient, while Sellers' Market yielded the best return. (Because we auctioned new items, we ended up buying high and selling low; you'll probably get a better return on items you already own.)

AUCTION SERVICE	Starting bid/final selling price		Total profit (both items) ¹	Listing fee (per item)	Commission policy	eBay fees paid by store	Comments
	Player	Hand tools					
AuctionDrop	\$50/\$69	\$1/\$35	\$54	\$20 for premium service, no fee for basic service	38% of first \$200, 30% of next \$300, 20% of remainder, plus 2.9% of total sale; \$20 minimum	No	National presence, e-mail updates on progress, most efficient. Has size limits and the highest fees, and charges 8.5 percent sales tax for California buyers. Item must be expected to sell for at least \$75 on eBay.
PostNet	\$75/Not sold	\$25/\$42	\$10 (tools only)	\$15 for premium service, \$3 for basic service	40% for items under \$500, 30% for items over \$500	Yes	No sales tax, takes oversize items, uses multiple auction sites, e-mail notifications. Product photos were so-so, and drop-off is not yet available at most stores. We had to follow up to relist the unsold item.
Sellers' Market	\$40/\$70	\$25/\$35	\$49	\$8	35% of first \$250, 25% of remainder	Yes	Owner-operated, friendly, sells odd-size items. Charges 6 percent state sales tax on fees and commission, provides no direct link to your auction, and sends no e-mail notifications of auction status.
eBay direct	\$5/\$70	\$1/\$54	\$111 (includes up-front fees)	See find.pcworld.com/43526	5.25% of first \$25, 2.75% of next \$975, 1.5% of remainder ²	n/a	Offers the most profit, but requires time-intensive, hard work.

n/a = Not applicable. FOOTNOTES: ¹ Excluding up-front fees. Does not factor in purchase price of test auction items. ² Does not include PayPal or other payment methods' fees.

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STORAGE

Hard Drives Get Faster, Smarter

NCQ TECHNOLOGY ALLOWS DRIVES TO PRIORITIZE A PC'S DATA REQUESTS.

HARD DRIVES ARE getting smarter. *PC World* tests suggest that a new technology designed to make drives operate more intelligently improves performance when it's combined with a larger cache.

Today's hard drives retrieve information in the order the PC requests it, so read/write heads fly all over to gather scattered data. New Native Command Queuing technology allows the drive to manage multiple outstanding commands more efficiently.

Part of the latest Serial ATA specification, NCQ requires an NCQ-capable hard drive and either a motherboard or a PCI adapter card with NCQ support. We tested a preproduction version of Maxtor's NCQ-ready 300GB DiamondMax 10 hard drive with a 16MB cache (\$259), using an NCQ-capable reference PCI card from Silicon Image.

We couldn't turn off the NCQ capabilities of the DiamondMax 10, so for comparison purposes we also tested Maxtor's next-closest drive—a shipping 250GB DiamondMax Plus 9 with half as much (8MB) cache (\$200).

The DiamondMax 10 outperformed the DiamondMax



MAXTOR'S DiamondMax 10 has NCQ smarts—and a 16MB cache.

Plus 9 across the board in our tests, but it's impossible to tell how much of the difference could be attributed to NCQ and how much to the DiamondMax 10's larger cache.

For example, the DiamondMax 10 completed our Copy Files and Folders test in 74 seconds, or about 23 percent faster than the DiamondMax 9's 91 seconds. In other tests, gains ranged from virtually none (Adobe Premiere) to 32 percent (Copy Large File). See find.pcworld.com/43362 for the complete results.

By the time you read this, NCQ drives should begin appearing in new PCs—at no extra cost to you. Otherwise, the performance gains alone probably don't justify the required upgrades. If you're shopping for a motherboard and hard drive, however, NCQ products are worth a look.

—Tom Mainelli

OPTICAL STORAGE

Latest DVD Burners Reach 16X

DVD DRIVES HANDLE DVD+R AT 16X, AND SOME GET THE FASTER SPEED FROM SLOWER MEDIA.

THE ALREADY ACTIVE DVD burner market is getting another speed upgrade, from 12X to 16X for write-once media. We looked at a drive with the new capability: BenQ's \$149 DW1600 DVD+ReWriter double-layer DVD burner, a shipping IDE unit that can write DVD+R at 16X and does it with a few brands of 8X media.

In *PC World* Test Center tests with bundled software, the device took a slothful 7 minutes, 45 seconds to write 4.35GB of data on preproduc-

tion 16X media. In our hands-on testing with Ahead Nero Burning ROM, however, the drive wrote a 4.35GB DVD movie structure in 6 minutes flat. Software and vagaries in preproduction discs are probably behind the speed difference. Alas, that 6 minutes rep-

resents only a 30-second boost over the speed of 12X drives.

The unit wrote a full double-layer DVD+R in about 46 minutes—on target for 2.4X. Note: DL discs must be fully written to have the right opacity for reliable reading, so you won't save any time by burning less data—not that you'd want to at today's \$10-plus per disc.

The DW1600 also performs 40X/24X/40X CD-RW and 4X DVD+RW chores; DVD-R/RW writing should be ready via a firmware upgrade by

the time you read this (we were unable to test it). Along with typical DVD software, you also get a handy utility that lets you change DVD+R/RW disc IDs to mimic the ones on a DVD-ROM, for compatibility with a wider range of players.

Users should like this drive's speed and its ability to work with cheaper, slower-rate media at advanced speeds—final 16X media is slated for late summer. Also coming soon are the first SATA burners, the Plector PX-712SA and the Pioneer DVR-A08 with 4X DL DVD+R and 16X DVD+/-R.

—Jon L. Jacobi



BENQ'S \$149 multiformat rewritable DVD drive.

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FUTURE TECH

Strobes for Phone Cams

HEAVEN KNOWS, we'll all be grateful for any camera improvement that produces a higher-quality photograph of us with food between our teeth at family picnics. And here it is. Look for strobe flash in your cell phone's camera soon, based on a design from Linear Technology. Jim Williams, Linear's staff scientist, says that most current camera cell phones use LED-based lighting, which gives "not a lot of light over not a lot of distance." His company's LT3468 photoflash capacitor charger system can efficiently recharge a very



small xenon flash lamp in as little as 1 second, producing "light hundreds of times brighter than LEDs," Williams says. Similar to larger systems

now used in film and digital cameras, strobe also provides lighting much closer to the natural spectrum. Any help in getting better photos from these devices will be most welcome. By 2008, 85 percent of all mobile phones sold are expected to

feature an embedded camera. Linear expects its system to be in consumers' camera phones within 3 to 12 months.

—Anne B. McDonald

PRICE CHECK

Affordable Camcorders

Average Monthly Price of Digital Camcorders Sold¹

¹Prices are a monthly average of video camcorders sold online as reported by PriceGrabber Market Reporter.

THE AVERAGE PRICE of digital video camcorders is now about what you paid for midrange digital cameras only a few years back. Consumer interest has motivated vendors to ramp up camcorder supply, which in turn has lowered prices. The cams' popularity is due, in part, to their small size and their ability to take digital stills.

—Ramon G. McLeod

THREE MINUTES

Will Your Walls Be Watching You?



FOR DECADES THE Massachusetts Institute of Technology's Media Lab has been the ultimate electronics toy shop. Heading its new Consumer Electronics Lab is Michael Bove, an expert in visual media and a self-described Media Lab "lifer." He sat down to discuss the future of handhelds and other smart devices.

What kinds of prototypes are you building?

One example is the smart architectural surfaces project we're doing with the Information and Communications University in Seoul, South Korea. A smart room generally consists of a room full of video cameras, projectors, microphones, and speakers, and a closet with a rack of servers, with cables running back to it.

The idea the ICU researchers had was, "You guys at the Media Lab have a good sense of how to build modular stuff; could you think about how to build a room like that?" And so, with them we created these [smart architectural surface] tiles.

Each tile is a computer, but it's also a display, camera, speaker, microphone, and a variety of sensors. The tiles snap into wall studs for power. They can talk to one another using wireless, and either work as a group or run applications individually.

What about fuel cells?

It's probably going to be a while before they're exactly what you need for very small things. You're probably better off looking at both improving traditional rechargeable-battery technology and figuring out how to use a lot less electricity.

As smart devices appear, where will the PC fit in?

It's not going to disappear, but it's going to be a partner in a bigger enterprise as opposed to being the enterprise. There's a reason to have a whole chunk of storage in one place, but it won't be your only storage, your only processor, your only access to broadband. That's really the point. There will be reasons to sit down with a keyboard and screen in a fairly traditional computing environment for a long time. As long as we have to do our IRS forms, we're probably going to do them on a thing like that. (To read an extended version of this interview, go to find.pcworld.com/43582.)

—Eric Bender ■

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TECH SUPPORT FROM THE INSIDE

HAVING PREVIOUSLY worked in tech support for AT&T Broadband, I have some insight into the problems Michael Desmond describes in "Misadventures in Tech Support" [July], particularly those regarding ISPs. I was often hindered by arbitrary rules—such as time limits—that were in place not to enhance customer

service but to create bogus numbers, aka "metrics," to show corporate bean counters that a department is doing its job. Add to that problem poorly trained, inflexible supervisors, and subscribers' needs were often secondary.

John C. Lind, Jacksonville, Florida

I CURRENTLY work as a customer service rep. Before, I worked for outsourced vendors doing tech support (and was paid significantly less).

Telephone tech support is obviously more difficult than office/home service because the tech on the phone can't see what you are doing and can't point out if you are hitting the wrong button or plugging in a cable upside down.

But if the IT community treated tech support reps with more respect (meaning higher wages and better training), customers would not have to suffer as much.

Sergio Carmona, Perris, California

THE SUGGESTION that most tech support is geared toward the newcomer is absolutely true. While I was doing tech support, 95 percent of the inquiries came from people who should not own a computer, or a car, or ever have children.

Remember, a tech support department receives an overwhelming volume of phone and e-mail traffic, and entry-level people, some with no computer background, fill most tech support positions.

If you need help, use the Web. Start with the company's site. Use Google and Usenet newsgroups. Call a savvy friend. If you have a legitimate issue, ask for the problem to be escalated (taken to the next level up)—even if you're just seeking help on lost orders or missing parts. Remain calm, document the details, and be prepared to tell your story over and over.

David Greditzer, via the Internet

E-MAIL MONITORING

IN YOUR JULY *Consumer Watch* ["When ISPs Think They Know Best"], you report how AOL blocked someone's e-mail to her friends about a funny Web video because the service had received many complaints about the linked file.

Where does it end? We all know we are losing more and more of our rights each day on the Web, but that doesn't mean we can't make it stop. What if I want to send a raunchy joke to my big brother in Tennessee, or a funny picture to my little sister in the next town over? If such filtering and monitoring is not halted early, these messages too could be blocked because they might offend someone, even though I know it would not offend my recipients!

If this trend continues, we will eventually do what we always do: Find some other means of communication.

Logan VanLandingham

Washington Court House, Ohio ▶

LETTER OF THE MONTH

Internet BPL and Radio Interference

IN THE JULY ISSUE ["Plug Into Easy, Cheap Broadband," *News and Trends*], Brad Grimes touts the wonders of broadband over power lines [BPL] for Internet access and barely mentions the possibility of radio interference from BPL.

However, BPL, an unlicensed service, wrongly uses HF (high frequency) radio frequencies that are already in use by licensed services such as the military and amateur radio.

Here are some real scenarios that could involve BPL: A commercial airliner crashes because its pilots don't hear a radioed warning. A model airplane, propeller still spinning, crashes into a schoolyard because of interference with the controller's

signals. A rural family watching weather on BPL Internet does not see a tornado approaching because BPL loses its signal due to an amateur radio operator's signal (BPL itself can be interfered with).

Bottom line: To save BPL it should be redesigned so it does *not* use the same frequencies as other already-in-use services. Otherwise, it should be cancelled and not deployed anywhere.

*Jim Cox, licensed amateur radio operator,
Springfield, Oregon*

Editor's response: As our story noted, the Federal Communications Commission is considering rules to forestall radio interference by BPL. *PC World* will continue to follow the issue.

THE EVIL OF SPYWARE

YOUR ARTICLE ON Utah's anti-spyware law left me fuming ["Striking Back at Spyware," *News and Trends*, July]. Would anyone for a moment feel it acceptable for someone to listen in on your phone conversations, feed every word into a database, and then sell the data so marketers could target you? I believe the Utah law does not go far enough. I believe jail time should be included, the same as for someone who entered your home and planted electronic bugs, and then sold that feed to interested parties. Someday, spyware will be classified with viruses, Trojan horses, and other such criminal programs.

Dewayne Clinton, via the Internet

SPREADSHEET PIONEER

THOUGH VISICALC IS a famous program, I believe you overlooked the true innovator of spreadsheets on a computer ["Godfathers of the Spreadsheet," *find*.

pcworld.com/42544]. In 1985, I came across Joseph Hilsenrath, of the National Bureau of Standards [now the National Institute of Standards and Technology], who was conducting classes in his program Omnitab. This was a spreadsheet application for information specialists, devised by him for the NBS and the Naval Ordnance Lab in the 1960s. It migrated eventually to the personal computer.

Before his NBS stint, Hilsenrath had been my high school math teacher. For more on Omnitab, see "1966: An Early Spreadsheet" [*find*, pcworld.com/43368].

Paul L. Chessin, Lake Worth, Florida

'WATER IS WATER...'

AS A BIOCHEMIST, I was amused by the July *Letter of the Month* ["Water, Water Everywhere..."] claiming that the water in computer chip production "is so pure that if you drank it, it would corrode the iron in your blood and kill you." The physical and chemical properties of water are de-

termined solely by molecular structure, and water does not magically become toxic when insoluble impurities are filtered out. Water is water is water.

Ron Payne, Ph.D., Newfoundland, Canada

Editor's response: The *Letters* editor pleads guilty. At least readers are reading.

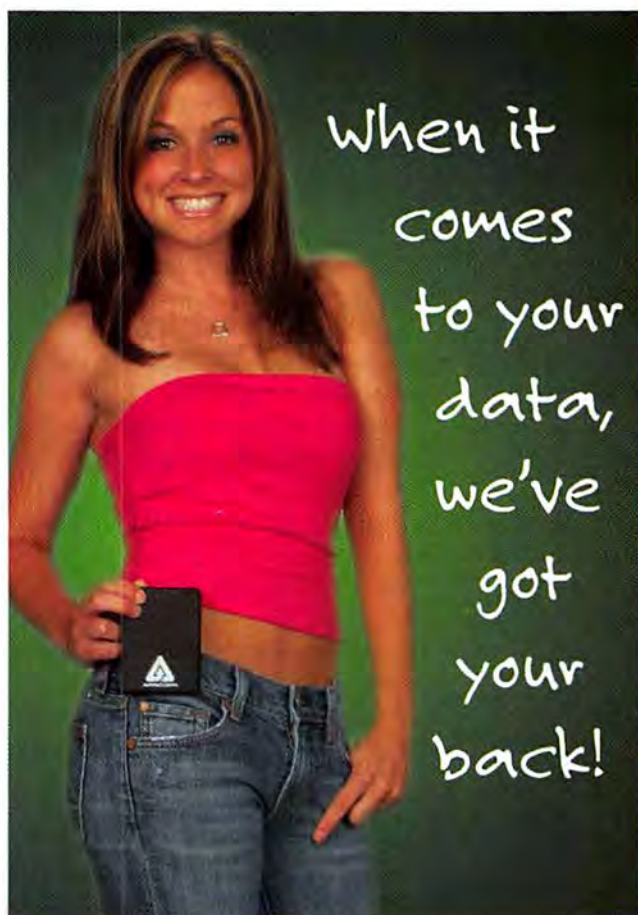
PC World welcomes letters to the editor. We reserve the right to edit for length and clarity. Send e-mail to letters@pcworld.com. ■

CORRECTIONS

CONTRARY TO August's "The Best Free Software," you don't need to register to download OpenOffice.

In July's *Answer Line*, the item titled "Slow Shutdowns" should have noted that the procedure described for opening the Group Policy tool in Windows XP Professional and 2000 will not work in XP Home, as it lacks that feature.

PC World regrets the errors.



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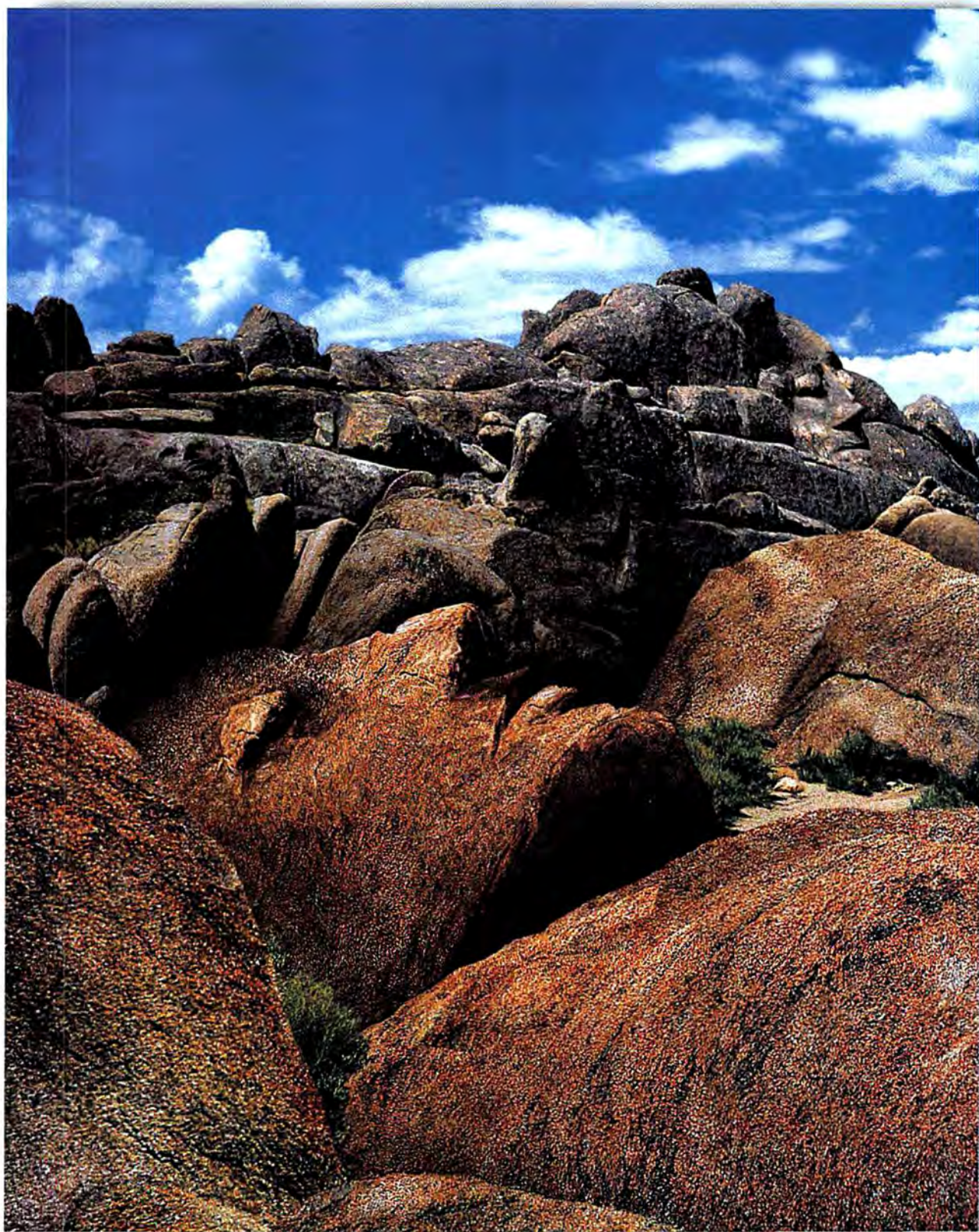
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PLUGGED IN

STEVE FOX

Movies on Demand—Via the Internet

Plus: Creative's iPod killer, the Firefox browser, and double-core processors.



1 Wired Video on Demand

The Buzz: "In 20 years, you'll be receiving most of your media over the Net," says Steve Shannon, founder of Akimbo, a service that delivers videos as downloads for \$10 per month. That day might come sooner than Shannon predicts: RealNetworks and Starz have launched a \$13-per-month subscription service that uses the Internet's pipes to pump movies to your PC; MovieLink offers downloadable flicks for \$5 or less a pop; and TiVo will offer streaming video sometime in the future. Akimbo, slated for a summer launch, will send content to set-top boxes, and even

the stodgy old BBC has announced a pilot program to make its broadcasts available online. All of these services require fast connections, and though download times for a movie can range from 15 minutes to an hour or more, you can start watching the video as soon as there's a reasonable buffer—say, 5 to 10 minutes or so.

Bottom Line: Today 25 million homes have broadband connections, and the cost of delivering video online has dropped to about 50 cents a gigabyte. That combination makes IP-based video unstoppable.

2 iPod Killer

The Buzz: Creative's new Zen Touch, a hard-drive-based MP3 player that manages to sustain a staggering 24-hour battery life, may be the most drool-worthy addition of the season. The slick unit has 20GB of disk space (that's enough room for 10,000 songs in WMA format or 5000 in MP3) as well as a touch-sensitive control pad that rivals the iPod's. Even better, the player boasts remarkable sound quality (97dB signal-to-noise ratio) and costs \$269—\$130 less than a 20GB iPod.



3 Firefox Turns 1.0

The Buzz: We've mentioned Firefox (no relation) before in *PC World*, but with the release of version 1.0 around the corner, the open-source browser graduates from toy for alpha geeks to mainstream productivity tool. This polished, cross-platform browser makes migration from IE a snap. The elegant Firefox interface disposes of Web nuisances, from pop-ups to spyware, and adding functionality via extensions is effortless.

Bottom Line: XP Service Pack 2 may offer a few updates to IE, but Firefox is where the innovation is happening.

4 Dualing Chips

The Buzz: It won't arrive until mid-2005, but AMD has designed a 64-bit, dual-core Opteron—two processor cores on a single chip. Intel has dual-core plans, too, but AMD should be first to market. The cores communicate with each other at CPU frequency, so they're fast. To take advantage of the dual-core architecture, you need multiprocessor-aware apps; if they're multithreaded and CPU-intensive (like CAD or databases), all the better.

Bottom Line: These chips will hit servers first, but you may get a supercharged desktop sooner than you think. ■

NAGGING QUESTION

Why Do Apps Keep Expanding?

AMERICANS KEEP getting larger, and so does software. You can blame it on feature creep—the need to add new stuff just to stay ahead of the competition. But according to Gartner analyst Yefim Natis, it's mostly a matter of practicality: In the past, developers focused on crafting compact code that squeezed more functionality into



each byte. Today, cheap storage and ever-increasing processor power make that kind of parsimony a waste of time. Besides, users get furious when vendors fail to maintain at least some degree of backward compatibility with older versions in updated software. The result: loads of extra code. Good thing CD-ROMs are cheap.

Contributing Editor Steve Fox covers buzz-worthy products, ideas, and trends. Contact him at steve_fox@pcworld.com. Visit find.pcworld.com/31643 for more Plugged In.

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DIGITAL HOME

Congratulations. You've made the decision to join the rapidly growing ranks of home entertainment enthusiasts by investing in home theater equipment, promising you hours of audio and video pleasure. If you are a really wise consumer, you're going to make your purchases at Best Buy, the specialty retailer of consumer electronics, entertainment software, and appliances (www.BestBuy.com).

Of course, you want everything you plan to buy to work right out of the box according to your specifications, with perfect dynamics for the room where the equipment will be placed. Like a lot of people, you might not consider yourself very handy when it comes to "hooking it all together." Or maybe you just don't have the time to fuss with it. In either case, you want the system to work perfectly the first time and every time you use it.

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CONSUMER WATCH

ANNE KANDRA

**HOW TO PICK A WIRELESS
INTERNET SERVICE**

**PRIVACY WATCH:
DOUBLE PASSWORDS**

**ON YOUR SIDE: IS IT
FROM AMAZON OR NOT?**

Don't Get Burned Paying for a Hotspot

Public Wi-Fi connections are great, but do your homework before you log on.



OKAY, NO MORE EXCUSES. Don't even try telling your boss that your report is late because you couldn't find an Internet connection. Wireless hotspots are proliferating faster than, well, Starbucks cafés in the suburbs. The state of Texas is even planning to install Wi-Fi connections at highway rest stops, figuring that if you turn off the road every so often to check your e-mail, you'll be less likely to fall asleep behind the wheel.

But as Wi-Fi goes mainstream and the number of players increases, it's a good idea to take a critical look at some of the

current service plans. Here's how to find the most reliable, affordable, and secure way to get online when you're beyond the reach of your ethernet cable.

Nothing's more affordable than free, and free Wi-Fi service exists. But you might have to do some snooping to find it. At least two national restaurant chains—Schlotzsky's Deli and Panera/St. Louis Bread Co.—offer free service at many of their franchises, with expanded availability in the works. Many local cafés offer Wi-Fi for free to draw customers away from the Starbucks next door, where the

grande low-fat macchiato crowd ponies up about 10 cents per minute to surf and sip. As Candy Liu, owner of the Java Room café in Chelmsford, Massachusetts, says, "We have the connection for business anyway; why not share it?"

Go to www.wififreespot.com for a list of locations with free hotspots. It's tough to knock free Wi-Fi, but, remember, if there's a problem with your connection you're out of luck—unless the guy who steams milk moonlights as a support rep.

HAVE A PLAN

A FREE HOTSPOT at your corner café is great, but it doesn't cover all the times when you may need a connection—in an airport, at a hotel, or just in between appointments. For connections in those situations, you'll likely have to pay a wireless Internet service provider to tap into a commercial public hotspot.

WISPs generally charge by the hour, day, or month. Rates vary by provider and region; but typically, you can expect to pay between \$4 and \$8 per hour or between \$7 and \$12 per day for using a public hotspot (daily service generally expires at midnight of the day it's activated).

Your other option is to sign up for a monthly rate plan. A monthly contract with a major national provider such as SBC or T-Mobile, or with an aggregator such as Boingo or Wayport that expands its geographic reach by joining many WISPs into one network, will give you unlimited access to any hotspot within range in the company's system. Worldwide, Boingo has partnerships with 75 wireless service companies and offers about 3400 active hotspots, 2400 of ▶

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PRIVACY WATCH

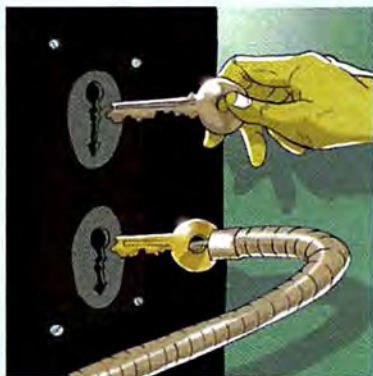
Two Passwords Double Your Privacy

THE PASSWORD, AS IT EXISTS TODAY, is a dinosaur—a throwback to a time before automated worms existed that could log every keystroke computer users make, and before phishing messages emerged that trick people into sending their passwords to a con artist. But though one password is insufficient, a lot of companies are starting to believe that two passwords may be just the ticket.

Businesses call the arrangement "two-factor authentication," but it boils down to having one password that you make up for yourself and another password that you get from someplace else. This is the computer equivalent of the security provided by a safety deposit box: Your key alone can't open the box, and neither can the bank's key; both parties need to use both keys at the same time.

Here's how one method might work: Your bank includes, with your monthly statement, a card with 50 passwords printed on it. Each password hides behind the same silvery stuff that obscures the numbers on a scratch-off lottery ticket. When you want to log in to your bank account online, you scratch off the silvery stripe covering one password, and then log in to the Web site with your user name, the password you created, and the password on the scratcher card. After you've used the scratched-off password, you can never use it again.

The security benefits here are clear. Even if someone guesses the password you made up for your bank account, they still can't get in unless they hold your card of passwords. If someone finds your pass-



word card, they can't get in unless they can also guess the password you invented. Some banks in Sweden already use this method; no U.S. bank uses it yet for consumer accounts.

Businesses have relied on RSA Security's SecurID devices for years. The SecurID Key Fob, about the size of a car alarm remote, displays a new six-digit code every 60 seconds. Anytime you want to log in to an RSA SecurID-protected computer or site, you must enter your user name, your password, and the RSA SecurID code displayed on the device at the moment you log in. Microsoft recently announced that it will build support for RSA SecurID into every Windows machine.

Using two passwords solves a great many security problems. It won't matter whether a keystroke logger records what you type, because one of your passwords will expire the moment the hacker gets it. Want to use your new puppy's name as a password? No problem. You won't have to invent elaborate—and easy to forget—passwords, and your finances will remain safe.

—Andrew Brandt

them located within the United States.

Many WISPs offer discounted monthly rates if you commit to a long-term contract. For example, Wayport charges \$30 per month with a one-year contract, but a hefty \$50 per month with no contract. And as in the case of wireless phone contracts, penalties are steep—as much as \$200—if you bug out early. If you're considering signing a long-term contract,

make certain that the service provides a fast, reliable connection in all the areas where you'll need one, and that its customer support is responsive. Many services, including T-Mobile, offer a free "day pass" that lets you test-drive the system before you commit to a plan. If you can't get a freebie test, pay by the day at the places you frequent to make sure the network will work for you.

If the places you frequent happen to be airports, you're in a bind. So far, no single service dominates U.S. airports, which means you're probably stuck paying for a more-expensive daily pass.

WHICH WISP?

IF YOU DECIDE that you want a monthly wireless plan, research WISP candidates as you would cell phone companies. Focus on services that offer hotspots in the areas where you need them most.

If you just want to get out of your home office and work at the corner café every so often, go with the café's service provider. If you're on a budget and don't need access to a lot of different hotspots, consider a smaller WISP that offers unlimited monthly connection time (prices can be less than \$9 a month)—but keep in mind that your access is limited to the locations that the WISP serves. If you travel frequently to different parts of the country, a larger, national WISP such as T-Mobile or Wayport may be your best bet.

One warning: Remember that security is even more of a concern at a public hotspot than in your own home or office. Maximize security by disabling your Wi-

Fi card's peer-to-peer mode and by turning on data encryption if it's available (for tips on how to do this, visit find.pcworld.com/43052). Avoid working in public settings on financial transactions that require sensitive information. And if you must enter a credit card or account number at a Web site, look for "https" in the URL or for a closed lock symbol at the bottom of your browser.

Finally, always run a firewall and an antivirus application, and be sure to update your operating system and other applications with security patches when they're available.

No doubt about it—hotspots are hot. But if you do a little homework and know how to use them wisely, they don't have to burn a hole in your pocket. ■

Anne Kandra is a contributing editor and Grace Aquino and Andrew Brandt are senior associate editors for PC World. You can send them e-mail at consumerwatch@pcworld.com. If you would like 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.

ON YOUR SIDE

Amazon's Confusing Return Policies

 I TRIED TO return an IBM ThinkPad R50 notebook under Amazon.com's product satisfaction guarantee. When I bought the laptop, I noticed that Office Depot handled the transaction as a merchant for Amazon.com. But what I didn't—and couldn't—know is that Office Depot then handed the sale to Tech Depot (Office Depot's computers and technology store), which has a no-refunds policy on IBM computers. The Office Depot section of Amazon.com provided no opportunity to drill down to Tech Depot's well-buried return policies. I went through the cycle of contacting Amazon, then Office Depot, then Tech Depot, and back again. Any recourse?

Michael Desmond, Colchester, Vermont
On Your Side responds: Desmond, a writer and

frequent PC World contributor, wasn't alone on this issue. Barbara Cole, Office Depot's director of e-commerce, says the company "received a handful of complaints from other customers." During our research, Office Depot combined the policies for Tech Depot and Office Depot on the Amazon.com shopping site. Nevertheless, the titles on every page refer only to Office Depot, so a shopper may erroneously assume the policies don't apply to Tech Depot. The bottom line is this: Office Depot and Tech Depot do not accept returns on any technology products unless they're defective or damaged, in which case you must return them within 14 days. After my inquiries, however, Amazon.com and Office Depot promised to give Desmond a refund. —Grace Aquino

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A Two-Pronged Spyware Defense

Keep the torrent of snooping software off your PC before and after it strikes.

WHY IS MY blood boiling? I just removed 20 spyware programs from my mother's computer. The insidious stuff slowed down her PC so badly I thought she had done a 386 retrograde.

So for my mom—and everyone else feeling vulnerable—I'll explain how I keep these creeps off my system, and how I find and zap the few that get through.

The best spyware defense is to keep the vermin off your PC in the first place. Before you download a program, browser toolbar, or ActiveX application (the kind that runs from the Web), enter its name in your favorite search engine to find out if it's spyware. You can also go to find.pcworld.com/42942 and enter the name in PestPatrol.com's encyclopedia of snoop apps.

For goodness' sake, use a firewall. It may spot a new type of spyware trying to phone home. For instance, Zone Labs' free ZoneAlarm firewall recently started kvetching, warning me that a file named "inetinfo.exe" wanted access to the Internet. I hadn't a clue what the program did (I know, you thought I knew everything). ZoneAlarm said it was benign, but I felt safer knowing that I had another layer of spyware security in place. Browse to find.pcworld.com/43032 to download your copy of ZoneAlarm.

My favorite ounce of snoop prevention is SpywareBlaster, a free tool for Internet Explorer and Mozilla that changes your system (with your permission, of course) to block nefarious ActiveX downloads, Internet dialers, and adware. Go to find.pcworld.com/42948 for the download.

Another weapon for your spyware arsenal is CWSHredder, which is designed specifically to remove CoolWebSearch, an insidious browser-hijacker spyware app

that goes by a dozen names. Visit find.pcworld.com/42950 for the download.

Even the most security-conscious PC users—me included—can end up with a hard drive full of spyware. After all, the programs are designed to install themselves without your knowledge. And they usually leave no telltale signs that they're



running on your system, unless, as in my mom's case, the watchers interfere with the machine's performance.

Unlike a virus, which can delete some of your files or perform other nasty tricks, spyware doesn't cause your computer to melt down. Nevertheless, the trackers have no business being on your PC.

TWO FREE SPY-CATCHERS

THE ONLY TWO spyware-removal programs you need to consider are both free: Lavasoft's Ad-aware and Patrick M. Kolla's Spybot Search & Destroy, the latter our World Class winner. Spybot is my favorite for its speed and thoroughness. It automatically creates a System Restore point before fixing problems, and it lets you link to Windows' Scheduler to create timed scans. If you're a tinkerer, click

Spybot's *Tools* button to find an array of utilities, including one for scouring your system of such Internet threats as ActiveX components, Browser Helper Objects, and Layered Service Provider drivers. Quick aside: Ad-aware features a free plug-in that will remove Windows' insistent Messenger program (not to be confused with the MSN Messenger IM client).

I found a slick trick for reducing the scan time in Ad-aware: Click the Settings icon (the gear in the toolbar on the top right), choose *Click here to select drives + folders* under Scan Settings, and make sure that your external drives are unchecked. (I also exclude two extra hard drives on my system from the scans because I don't use these devices to store any of my data files.) Click *Proceed*, and then make certain that both 'Scan within archives' and 'Skip non executable files' are unchecked.

I also speed up my scans by ignoring cookies: In Ad-aware, perform a scan, right-click in the 'Scanning results' window, choose *Select all "Tracking Cookie" objects*, right-click the results again, choose *Add selection to ignore list*, and click OK. In Spybot, choose *Mode: Advanced mode* (if it isn't already selected). Click *Yes* at the warning. Then select *Settings* from the tool panel on the left, and choose *Ignore Cookies*. Right-click the list of cookies on the right and choose *Select all*.

I'll be writing about more ways to protect yourself from spyware—including Registry hacks and online scanners—in an upcoming newsletter. Browse to find.pcworld.com/38942 to sign up. ■

Contributing Editor Steve Bass is the author of PC Annoyances, published by O'Reilly. Contact him at homeoffice@pcworld.com.

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BUGS & FIXES

STUART J. JOHNSTON

Microsoft: Cripple IE to Protect Your PC

The company says that you should disable one of the browser's features.



This latest targeted attack scenario, which uses malicious code dubbed "Scob" or "down-lad.ject," exploits three flaws: two in Windows and one in Internet Explorer. One of the holes involves JavaScript; targeting this flaw, the Scob code lets a hacker attach a program written in JavaScript to Web pages. If you visit an infected Web site, the program automatically executes in IE, and voilà, you're infected.

Taking advantage of these multiple flaws, a group of Russian crackers recently mounted attacks on several hundred Web sites—aimed at putting lots of visitors at risk. Included on their hit list were some very reputable sites.

Some Scob virus strains installed keystroke-logging software on users' PCs—apparently to steal financial

data (head to find.pcworld.com/43152 for more details).

Microsoft says that your PC will be protected if you're running the beta version of Windows XP Service Pack 2. (Visit find.pcworld.com/43286 for a link to the close-to-final version of SP2). The company says it is still working on a patch to deal specifically with this combination of flaws.

Microsoft also wants you to take the extreme step of disabling JavaScript. Many sites use JavaScript—to display video, say—and without this programming language, some sites, including Microsoft's own Windows Update site, won't even function properly.

If you want to go this far—and I recommend that you do—you need to adjust your IE settings. To disable JavaScript in IE, click *Tools•Internet Options* and choose the *Security* tab. Click the *Internet* icon, click the *Default Level* button, and move the slider to *High*. To get around any problems with sites not loading, in IE click *Tools•Internet Options* and choose the *Security* tab. Click the *Trusted Sites* icon and add the sites you want to access. Your machine is still protected. (For Microsoft's full list of safety measures, visit find.pcworld.com/43218.)

If all this sounds like too much hassle, you might want to consider switching to a

browser like Mozilla or Opera. You can have JavaScript turned on in these browsers, yet remain safe from IE-like attacks. At least, for now. ■

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

IN BRIEF

Security News Feed

MICROSOFT IS making the content of its security bulletins in Really Simple Syndication, or RSS, format. If you're set up with an RSS reader, this means that you can receive notifications as soon as new information is posted by Microsoft. Go to find.pcworld.com/43160 to subscribe to the RSS feed.

RealPlayer Update

REALNETWORKS patched two big security holes in its media players that could let a bad guy take over your PC. The updates (at find.pcworld.com/43162) repair RealOne Player, RealOne Player v2, RealPlayer 8 and 10, and RealPlayer Enterprise.

BUGGED?

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

MICROSOFT IS doing something unprecedented: It wants you to break one of Internet Explorer's key features. Why? Because only by limiting the browser's functionality can you be sure of stopping a sneaky—and dangerous—new breed of Internet virus.

HP RECALL: SHAKY LAPTOP MEMORY

HEWLETT-PACKARD is fixing 900,000 HP and Compaq notebooks because of a bug in some of the memory modules. The faulty memory may be present in eight Compaq Evo models (N610c and N610v; N620c; N800c, N800v, and N800w; and N1000c and N1000v); four Compaq Presario models (1500, 2800, X1000, and X1200); and HP Compaq Business Notebook Nx7000 and HP Pavilion Zt3000 models (see find.pcworld.com/43150 for PC World's news story). HP is replacing all the affected modules.

The modules aren't in any HP notebooks currently on the market. But if you bought your laptop from March 2002 through June 2003, check whether your unit is affected. HP released a set of diagnostic programs to do just that (via find.pcworld.com/43220). You can also call 800/474-6836 or 800/652-6672 to talk to HP.

PRESENTATIONS:

SEEING THE LIGHT

>> Know your needs before deciding on the right projector

SOMETIMES too much of a good thing can be a problem. Take projector technology. It is characterized by myriad outstanding features, rock-solid engineering, portable and boardroom options, and, of course, regularly falling prices. Buyers can feel overwhelmed by the choices.

"You really need to zero in on two or three key features that suit your individual requirements in order to narrow down the choices," says Clement Burroughs, a Falls Church, Va.-based manufacturers' representative who has delivered "thousands" of PowerPoint

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presentations. "But first you have to understand the fundamental

differences among the product offerings available. There's no good or bad really, just different.

For starters, Burroughs recommends that buyers understand the difference between the two main categories of projector today, namely LCD (liquid crystal display) and DLP (digital light processing). Each refers to the internal workings of the projectors and specifically to the way the image is composed.

But there's no need to get into the guts of the projectors, says Burroughs. Just know the differences. For example, DLP projectors in general are more portable because they need fewer compo-

Continued on page 3

SMART TIPS

Matching a Projector to Your Needs



RON GILLIES, senior vice president and general manager of the Visual Systems Division of NEC Solutions America, Inc., offers some advice for choosing the right presentation solution.

There are so many portable projectors available, how do I determine what's best for my application?

Your decision centers largely on two factors. First, what is the environment? And second, how sophisticated do you want your presentations—do you plan on using computer data only, video, HD or DVD?

I'm a user who frequently travels and delivers presentations in boardrooms and meeting rooms. What projector would be appropriate?
One requirement is a lightweight projector. Today "lightweight" does not mean light on performance. There are superb projectors that weigh less than 3 pounds, deliver brilliant images, and offer high resolution. These projectors are also highly versatile to accommodate the variety of conditions you confront on the road. NEC's LT10 lightweight projectors will meet these challenges.

I would like to hook up my projector to my network and present wirelessly. What projector would you suggest?

You should consider a portable projector that features built-in wireless or wired networking capabilities, as well as extensive input options that provide freedom and flexibility along with conveniences like automated keystone correction. Of course, multilevel security is important with such networking capabilities. NEC's new LT245 and LT265 fit the bill here.

I am looking for a projector that can give me huge images at home. Any recommendations?

NEC can transform your living room into the ultimate entertainment experience with large-screen displays that support HDTV, to satellite and cable TV, to DVDs, computers, and video games. NEC's Showcase Series™ HT1100 projector delivers larger-than-life images in a compact, 7-pound package.

■ To learn more about NEC large area display solutions, click now on www.necvisualsystems.com.

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PRESENTATIONS: SEEING THE LIGHT

Continued from page 1

nents. They produce less color saturation, which is more of a problem with data than with video. And typically DLP projectors are available with higher contrast than LCD projectors. So if you are going to lace your presentations with lots of video, DLP is probably right for you.

Because LCD projectors generally produce more saturated colors than DLP projectors, they may therefore appear sharper or at least more vibrant to viewers. This perceived sharpness, however, can be a disadvantage for video, where LCD tends to make pixellation more obvious. LCD projectors also are typically more bulky than DLP projectors, giving an advantage to DLP for presenters who want to travel extra light. But where color reproduction for still images is essential, it's "advantage LCD."



With the InFocus LP600's LitePort, users can easily project .jpg images from a USB flash drive.

THE POWER OF ONE

Mobile professionals know that a typical client presentation involves two pieces of hardware, namely the projector and a laptop or PC. But for users of the recently introduced LP600 from InFocus Corp. (www.infocus.com), the projector alone will get the job done in spades, offering users world-class presentation potential without a laptop.

The innovative LP600 comes equipped with the InFocus LitePort, an embedded PC-free playback system allowing users to easily project .jpg images from a USB flash drive—no computer or CD or DVD drive required.

Brilliant performance for any presentation is virtually guaranteed by the LP600's DLP technology, which provides 2000 lumens and a contrast ratio of 1000:1 for exceptional sharpness and clarity of projected images. And because mobile professionals must be able to adapt their presentations to a wide range of conditions at different client sites, the LP600 has automatic vertical keystone and ceiling detection. These allow the LP600 to be easily transported or installed in a range of business, government, or education settings.

Additionally, the LP600 can be loaded with the kinds of productivity-enriching options that InFocus customers have come to rely upon

for getting the job done right. These features include wireless interaction through an optional wireless module; networked control via optional software; intuitive controls plus a remote; automatic projection orientation; and fully color-coded inputs.

So that the focus is on the presenter and not the projector, the LP600 comes in a lightweight, slim profile, and it performs with superquiet operation. For more information on this exciting breakthrough in portable projector technology, click now on www.infocus.com.

WIRELESS WORLD

If you are a person who regularly needs to update presentations—

often on the fly—with the latest sales or product information, for instance, then you should consider the increasing range of wireless and wired options for projectors. Many projector vendors seeking to build wireless data download capabilities directly into the projectors—without the need for a PC intermediary—have embraced the



The LP600 offers the productivity-enriching options customers have come to rely upon.

emergence of the so-called 802.11g wireless standard. With more and more boardrooms equipped with wireless capabilities, the freshest data for your presentations is just a quick download away with these projectors.

And if there is one feature most mobile professionals need to examine carefully, it is true ease of use. All the snazzy and jazzy features in the world are useless if you can't figure out how to access and deploy them in the first place. Also, most presenters simply want to deliver a sharp, crisp image—still or video—and to do so in a variety of lighting conditions. And the ability to access and use advanced features is directly proportional to the technical skill of the presenter.

"Until the day comes when you can talk to your projector and tell it what you want it to do, you need some degree of comfort level and familiarity with technology to really push more advanced projectors to their limits," says Burroughs. "Be honest about your technology comfort zone and you'll be happier with what you ultimately buy."

3 OPEN THE VICTIM'S AIRWAY



Open the victim's airway by tilting his/her chin gently with one hand, while pushing back on his/her forehead with the other hand. If you suspect a neck injury, put your fingers behind the jawbone just below the ear, and push the jaw forward to open the victim's mouth.



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 - Intuitive controls
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NEW PRODUCTS

EDITED BY TOM MAINELLI

First PCI Express Graphics Cards Arrive

Cards based on the new bus perform well, but early tests offer no clear reason to upgrade just yet.

GRAPHICS CARDS

TEST Center LOVERS OF high-end PC graphics rejoiced at news of the recent launch of desktops with PCI Express-based chip sets that promise dramatically faster graphics throughput than today's AGP 8X standard. But a preliminary look at two of the first PCI Express cards suggests that the spec will have more impact on future graphics headroom than on immediate performance gains.

In fact, our tests showed practically no performance difference between graphics cards using the AGP 8X interface and those using PCI Express. Though PCI Express 16X supports concurrent transfers of up to 4 gigabytes per second compared with AGP 8X's 2.1 GBps of shared bandwidth, even today's most graphics-intensive PC games have yet to turn the AGP conduit into a bottleneck.

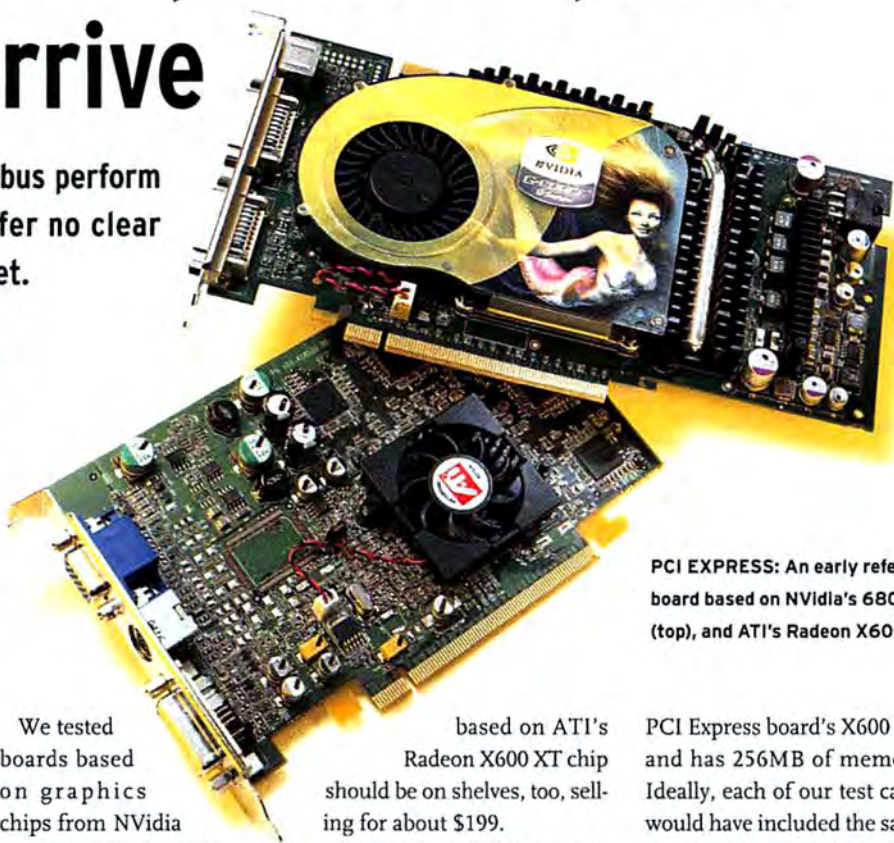
We tested boards based on graphics chips from NVidia and from ATI. NVidia sent us an early PCI Express reference board using its **GeForce 6800 GT** chip and 256MB of memory; ATI provided a preproduction version of its board using the **Radeon X600 XT** chip and 128MB of memory. Retail cards based on the NVidia GeForce 6800 GT chip should be shipping by the time you read this and will sell for about \$399. Cards

based on ATI's Radeon X600 XT chip should be on shelves, too, selling for about \$199.

We used two AGP comparison boards. One was Leadtek's \$400 shipping **WinFast A400 GT** board with the NVidia GeForce 6800 GT chip (the same chip that the NVidia PCI Express board uses) and 128MB of memory. The other was VisionTek's \$200 shipping **Xtasy 9600 XT**, which is based on ATI's Radeon 9600 XT chip (a chip different from but comparable to the ATI

PCI Express board's X600 XT) and has 256MB of memory. Ideally, each of our test cards would have included the same memory allotment, but supply constraints left us with mismatched amounts of memory.

Comparing the AGP graphics cards with their newer PCI Express cousins proved dicey because there's no way to test both kinds of boards in the same PC (though at least one chip set vendor is contemplating producing a dual AGP/PCI Express product). Instead, the PC World Test Center



PCI EXPRESS: An early reference board based on NVidia's 6800 GT (top), and ATI's Radeon X600 XT.

58 PCI EXPRESS GRAPHICS CARDS
ATI Radeon X600 XT, NVidia GeForce 6800 GT

60 SCANNER
Epson Perfection 2580 Photo
SECURITY SOFTWARE
Zone Labs ZoneAlarm Security Suite

62 IMAGE EDITING
Ahead Software Nero PhotoShow Elite
MONITOR CALIBRATION
Pantone ColorVision ColorPlus

62 DIGITAL CAMERA
Canon PowerShot S60

68 TABLET PC
Itronix GoBook Tablet PC
FINANCIAL SOFTWARE
Best Software Peachtree Accounting 2005

70 PROJECTOR
Casio XJ-350
GPS SERVICE
TeleNav

72 SOFTWARE UTILITY
GRC SpinRite 6
REMOTE ACCESS
EnKoo-2000



70

matched comparably configured systems from the same vendor: one using Intel's PCI Express-based 915G chip set, and another using Intel's 865G chip set with 8X AGP.

Since the ATI and NVidia chips are geared toward different buyers (the NVidia GeForce 6800 GT is a higher-end chip), we compared only ATI with ATI and NVidia with NVidia. The two companies also differ in their method of implementing PCI Express. ATI chose a "native" implementation tailored to PCI Express from the ground up, while NVidia's early products (including the 6800 GT) use a bridge technology between the PCI Express interface and the company's existing AGP-based chips. Each company claims its approach makes more sense; our tests—using preproduction drivers—do not permit us to resolve that matter conclusively.

TEST RESULTS

IN MOST OF our tests, the PCI Express boards finished in a virtual tie with the AGP boards. For example, in our Halo test, conducted at a resolution of 1024 by 768, the ATI-based VisionTek AGP card reached 34 frames per second while ATI's PCI Express card notched 35 fps. The two NVidia-based cards were separated by just 1 fps (59 versus

TEST REPORT

PCI Express, AGP Boards Run Neck and Neck

COMPARABLE GRAPHICS CARDS based on the next-generation interface offer about the same performance as similar AGP products in our PC games-based benchmarks.

GRAPHICS BOARD	FRAMES PER SECOND IN: <small>Faster</small>		
	Halo	Splinter Cell	Unreal Tournament 2004
ATI-BASED			
ATI Radeon X600 XT, 128MB of RAM (PCI Express) find.pcworld.com/43272	35	41	48
VisionTek Xtasy 9600 XT, 256MB of RAM (AGP) find.pcworld.com/43274	34	36	50
NVIDIA-BASED			
NVidia 6800 GT reference, 256MB of RAM (PCI Express) find.pcworld.com/43276	59	75	49
Leadtek WinFast A400 GT, 128MB of RAM (AGP) find.pcworld.com/43270	58	74	51

All tests performed at 1024 by 768 resolution, 32-bit color, and no antialiasing. **HOW WE TEST:** Go to find.pcworld.com/42954 for testing details.

58) as well. The same test run at 1600 by 1200 resolution netted precisely matched results from both cards. (For complete test results and information on how we test, see find.pcworld.com/42954.)

The only significantly different results we saw came in our tests of the ATI cards using Splinter Cell: The AGP card notched 36 fps versus 41 fps for the PCI Express version at 1024 by 768 resolution; the same AGP card reached 23 fps and the PCI Express card hit 27 fps at 1600 by 1200 resolution. The higher-end NVidia produced generally higher frame rates throughout, with scores of 74 and 75 fps for the AGP and PCI Express versions, respectively, at

1024 by 768; it scored 9 fps lower on each at 1600 by 1200.

The AGP cards had a negligible advantage over their PCI Express counterparts in our Unreal Tournament 2004 test at the lower resolution. At the higher resolution, scores for the NVidia cards stayed exactly the same; but ATI's PCI Express card slowed dramatically to just 34 fps versus 46 fps for the AGP card. This result may be due to differences in memory capacity and chip sets, or to driver issues.

SKIP PCI EXPRESS?

OUR TEST RESULTS do not mean that you should plan to pass over PCI Express-based desktops and graphics cards, but there's clearly no need to

rush out and buy a new PCI Express-based PC just for the graphics. Going forward, many systems will integrate PCI Express by default, which means you won't pay anything extra to get it. And once software begins to use the extra bandwidth, you'll likely be glad you have it.

In the meantime, making a choice between NVidia and ATI products—whether based on AGP or PCI Express—has become largely a matter of taste, as noted in our August review of AGP boards (find.pcworld.com/43290). If you're already on the PCI Express bandwagon, you won't be disappointed by either company's newest offerings.

—Tom Mainelli

Epson's Hands-Free Scanner

SCANNERS

IF YOU'RE LOOKING for a fast and easy way to digitize loads of 35mm negatives, Epson's new **Perfection 2580 Photo** scanner may be just what you need. This innovative \$149 flatbed model has an automatic film loader—a nifty device that scans individual frames of 35mm filmstrips at the touch of a button.

Perfection 2580 Photo

Epson

★★★★☆

Affordable flatbed scanner features an automatic film loader perfect for home photographers. Street: \$149

find.pcworld.com/43242

With most flatbeds, scanning negatives is a cumbersome chore that involves lifting the lid and then carefully mounting each strip in a special adapter. But with the 2580, the procedure is almost as simple as inserting a bank card into an ATM. You just open the film loader door—right on top of the scanner lid—insert the positive or negative film, and push the start button. The 2580 automatically scans and saves each frame in a strip of up to six shots, and lets you use the bundled image editing software (ArcSoft's PhotoImpression 5) to easily view or edit them.

Until now, only dedicated



EPSON

Perfection 2580.

film scanners that cost several hundred dollars could scan negatives this easily. And unlike those models, the versatile 2580 can also scan photo prints, documents, and even books (processing slides requires an included adapter).

The shipping version I tested did an excellent job of scanning film and produced fine results from prints. Various

test scans featured vibrant colors and good tonal details, and the 2580's USB 2.0-based speed matched that of other 2400-dpi scanners I've tested.

The Perfection 2580 Photo is an affordable choice for anyone who wants to scan scans of film negatives with minimal effort while also enjoying the flexibility of having a standard flatbed scanner.

—Richard Jantz

New ZoneAlarm Disappoints

SECURITY

ZONE LABS' **ZoneAlarm Security Suite** combines the latest version of the company's firewall with new privacy-protection features and Computer Associates' ETrust EZ Antivirus. Unfortunately, the \$70 suite doesn't provide the level of

security that it should, and in the process the company has made the ZoneAlarm firewall less useful than before.

During installation, the suite checks for installed antivirus programs and prompts you to enable its own protection if it doesn't find any run-

ning. Unfortunately, it searches only for products from Computer Associates, McAfee, Symantec, and Trend Micro, overlooking products from dozens of other vendors and risking conflicts as a result.

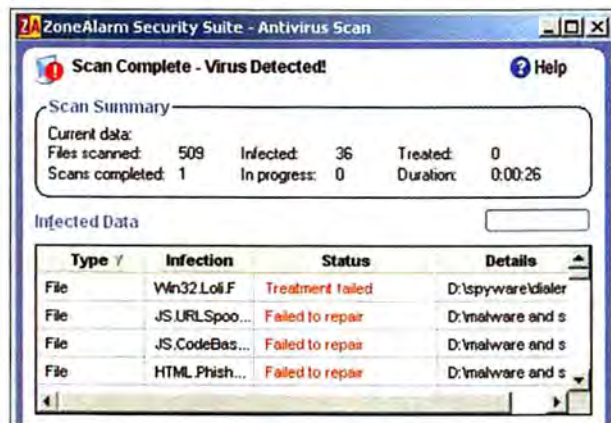
To gauge ZoneAlarm's anti-spyware prowess (a must in any security suite worth its mettle), I tested a shipping version against spyware used in the June issue's "Bigger Threats, Better Defense" (find.pcworld.com/43238). No suite offers the same protection as stand-alone tools such as Spybot Search & Destroy and Lavasoft's Ad-aware (which detected 57 percent of the active infectors), but ZoneAlarm failed to detect a single one. And when I used the suite to scan a disc containing 200 spyware samples, it detected just 36, a shockingly low 18 percent of them.

Zone Labs' revamp of the

firewall's program-access settings was also disappointing. A new feature that makes access decisions based on a database of known good applications is handy for novices but will quickly annoy advanced users, and disabling it triggers a flood of alerts.

Zone Labs made its name by offering a solid firewall with excellent access controls. This suite alters those controls and adds features that don't work all that well. If you want a single security package, try Trend Micro's PC-cillin Internet Security 2004 instead.

—Mary Landesman



ZONE LABS ADDED virus protection to its new ZoneAlarm Security Suite by incorporating Computer Associates' ETrust EZ Antivirus.

ZoneAlarm Security Suite

Zone Labs

★★★★☆

New suite lacks effective spyware protection and mangles its own firewall's usefulness.

Street: \$70

find.pcworld.com/43240

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New Nero Does Photos



PHOTOSHOW'S Manage screen offers easy access to all your photos.

IMAGE EDITING

AHEAD SOFTWARE, maker of the well-regarded Nero Ultra CD and DVD burning software, is trying its hand at digital photo management. The \$50 **Nero PhotoShow Elite** presents photo organization tools and some interesting options for sharing your favorite pictures, though some users may find the application's simple

approach a bit too limiting.

The program's interface is clean and easy to navigate. With a couple of clicks, you can capture images from your camera or card reader, assign keywords and ratings to photos, and add photos to albums.

Most of PhotoShow Elite's extras appear in its image editing and sharing options. The editing tools include color and

red-eye correction, as well as an impressive passel of filters that distinguish it from other entry-level packages.

The package is preloaded with tunes, jazzy frames, and animated clip art to make slide-show creation a snap. When you're done, you can save the show as an executable file or burn it onto a CD.

Though PhotoShow Elite's editing features work well, the program keeps things a little too simple when it comes to photo management, particularly for users who have large image libraries. For instance, it lacks the ability to display albums or photo folders in a file tree—a feature that can be very helpful if you're dealing with thousands of images.

Nero PhotoShow Elite

Ahead Software

★★★★☆

A basic photo-management app that's best suited to new users.

List: \$50

find.pcworld.com/43258

QUICK TAKES

Canon PowerShot Line Evolves

CANON'S new \$500 **PowerShot S60** camera retains the 5-megapixel CCD and manual exposure controls of the former *PC World* Best Buy PowerShot S50, but it weighs less, offers a nicer lens, has easier-to-use buttons, and includes a better battery.

find.pcworld.com/43260

—Alan Stafford



PhotoShow Elite will appeal to novice users who want a quick way to print and share pictures. If you're a more advanced user looking for a powerful image manager, consider Jasc's comparably priced Paint Shop Photo Album 5 Deluxe instead.

—Kathleen Cullen

Easy Monitor Calibration

MONITORS

IF YOU'VE EVER spent hours tweaking your vacation photos on the PC, only to have the kids sport Shrek-tone tans when you print, your monitor

settings are probably out of whack. Pantone ColorVision's **ColorPlus** calibration package puts the color back in their cheeks by ensuring that what you see on your CRT, LCD, or notebook screen is what you get in your prints.

Known for its \$249 Spyder-Pro package for pro photographers, the company offers ColorPlus as its first product for consumers. Included are a hardware sensor and wizard-based calibration software; though ColorPlus has fewer options than its sibling, at \$99 it's a steal.

After installing the latest driver updates for my graphics card (a must), along with the software and the sensor (a USB-based device that attached to the front of my display), I began calibrating my 19-inch Samsung SyncMaster 955DF CRT. The software walked me through some manual adjustments and then made changes as it automatically cycled through a range of colors. The entire process took less than 5 minutes.

The results were impressive. The calibration noticeably improved the accuracy and appearance of my test images. And the software supports the International Color

Consortium (ICC) specification, meaning that when you employ ICC-friendly image editing software (which most major packages are), your colors should be spot-on.

Because monitor settings drift, experts recommend recalibrating every two weeks. With this easy-to-use package, that shouldn't be a problem.

—Tom Mainelli

ColorPlus

Pantone ColorVision

★★★★☆

Affordable calibration package is simple to use and ensures picture-perfect photos.

Street: \$99

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saveeverything.com

Based on DDS-4 tape comparison. Compressed capacity assuming 2.6:1 data compression with "high" compression on Iomega Automatic Backup Pro software. This capacity may vary since compression is data and software dependent. Iomega, REV, SAVE EVERYTHING, and the stylized "i" are trademarks or registered trademarks of Iomega in the U.S. and/or other countries. Copyright © 2004 Iomega Corporation. All rights reserved.

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IBM ThinkPad R Series

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CNET Editors Choice Award, March, 2004
IBM ThinkPad X40

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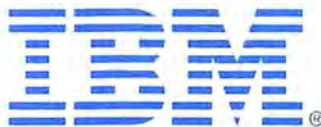


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- 256MB DDR SDRAM⁴
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- Ultrabay™ Enhanced CD-RW/DVD-ROM combo
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NavCode: 28832XU-M419

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IBM ThinkPad T42

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- 32MB ATI Mobility RADEON 7500
- 256MB DDR SDRAM
- 30GB hard drive
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- IBM UltraConnect Antenna for increased signal strength
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IBM ThinkPad T42

System Features:

- Intel Centrino Mobile Technology
 - Intel Pentium M Processor ULV 1.5GHz
 - Intel PRO/Wireless Network Connection 802.11b
- Microsoft Windows XP Professional⁴
- 15" XGA TFT display (1024x768)
- 32MB ATI Mobility RADEON 7500
- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- Ultrabay Slim CD-RW/DVD-ROM Combo
- Only 1" thin, 4.5-lb travel weight
- 1-yr system/battery limited warranty¹²

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- Microsoft Windows XP Professional⁴
- 12.1" XGA TFT display (1024x768)
- Intel Extreme Graphics 2
- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- Legendary IBM fullsize keyboard¹⁵
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IBM ThinkPad T42

System Features:

- Intel Centrino Mobile Technology
 - Intel Pentium M Processor 735 (1.70GHz)
 - Intel PRO/Wireless Network Connection 802.11b
- Microsoft Windows XP Professional⁴
- 14.1" XGA TFT display (1024x768)
- 32MB ATI Mobility RADEON 7500 graphics
- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- IBM Ultrabay Slim CD-RW/DVD-ROM combo
- IBM UltraConnect Antenna for increased signal strength
- 1-yr system/battery limited warranty¹²

NavCode 2378FTU-M419

THINK EXPRESS MODEL
PRICED AT

\$1,749

With Microsoft Office Small Business Edition 2003: \$1,989

ServicePac Service Upgrade:
4-yr Depot Repair #69P9195 **\$249**

IBM ThinkPad T42

System Features:

- Intel Centrino Mobile Technology
 - Intel Pentium M Processor 735 (1.70GHz)
 - Intel PRO/Wireless Network Connection 802.11b
- Microsoft Windows XP Professional⁴
- 15" SXGA+ XGA+ TFT display (1400x1050)
- 64MB ATI Mobility RADEON 9600 graphics
- 512MB DDR SDRAM
- 60GB hard drive
- Integrated Gigabit Ethernet and modem
- IBM Ultrabay Slim CD-RW/DVD-ROM combo
- IBM UltraConnect Antenna for increased signal strength
- 3-yr system/1-yr battery limited warranty¹⁸

NavCode 2379DXU-M419

THINK EXPRESS MODEL
PRICED AT

\$2,399

ServicePac Service Upgrade:
3-yr Onsite Repair/9x5/Next Business Day Response #30L9195 **\$243**

IBM ThinkPad X40 Solution Pack

IBM ThinkVantage Technologies:

- Longest standard battery life of any leading-brand notebook

System Features:

- Intel Centrino Mobile Technology
 - Intel Pentium M Processor LV 1.20GHz
 - Intel PRO/Wireless Network Connection 802.11b
- Microsoft Windows XP Professional⁴
- 12.1" XGA TFT display (1024x768)
- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- 7.5-hr Li-Ion battery
- 3-yr system/1-yr battery limited warranty¹⁷

Accessories Included:

- ThinkPad X40 UltraBase Dock
- IBM Ultrabay Slim CD-RW/DVD-ROM combo

NavCode 23826UU-M419

THINK EXPRESS MODEL
PRICED AT

\$2,199

ServicePac Service Upgrade:
5-yr Onsite Repair/9x5/Next Business Day Response #69P9200 **\$449**

NavCode® Get the latest pricing and information fast. Use NavCode on the phone or on the Web.

¹Availability: All offers subject to availability. IBM reserves the right to alter product offerings and specifications at any time, without notice. IBM is not responsible for photographic or typographic errors. **Pricing:** does not include tax or shipping and is subject to change without notice. Reseller prices may vary. **Warranty:** For a copy of applicable product warranties, write to: Warranty Information, P.O. Box 12195, RTP, NC 27709. Attn: Dept. JDJA/B203. IBM makes no representation or warranty regarding third-party products or services. **Footnotes:** (1) **Embedded security system:** requires software download. (2) **Mobile Processors:** Power management reduces processor speed when in battery mode. (3) **Wireless 11a, 11b and 11g:** based on IEEE 802.11a, 802.11b and 802.11g, respectively. An adapter with 11a/b, 11b/g or 11a/b/g can communicate on either or any of these listed formats respectively; the actual connection will be based on the access point to which it connects. (4) **Included software:** may differ from its retail version (if available) and may not include user manuals or all program functionality. License agreements may apply. (5) **Memory:** For PCs without a separate video card, memory supports both system and video. Accessible system memory is up to 64MB less than the amount stated, depending on video mode. (6) **Hard drive:** GB = billion bytes. Accessible capacity is less; up to 4GB is service partition. (7) **Limited warranty:** Support unrelated to a warranty issue may be subject to additional charges. (8) **Microsoft Office XP:** Certain Microsoft software product(s) included with this computer may use technological measures for copy protection. IN SUCH EVENT, YOU WILL NOT BE ABLE TO USE THE PRODUCT IF YOU DO NOT FULLY COMPLY WITH THE PRODUCT ACTIVATION PROCEDURES. Product activation procedures and Microsoft's privacy policy will be detailed during initial launch of the product, or upon certain reinstallations of the software product(s) or reconfigurations of the computer, and may be completed by Internet or telephone (toll charges may apply). (9) **Travel weight:** includes battery and optional travel bezel instead of standard optical drive in

IBM recommends Microsoft® Windows® XP Professional.



(Monitor not included)



(Monitor not included)



(Monitor not included)

Why IBM ThinkCentre PCs?

Only IBM offers these features to protect your users, connect them, and keep them working. Each ThinkCentre[®] desktop featured here can give them the efficiency, productivity and edge they need with the following ThinkVantage Technologies.

NEW! Rescue and Recovery with Rapid Restore:

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 resources and assistance.

ImageUltra™ Builder:

Need to roll out new systems? Image and copy your operating system across your network in a flash. (Order separately)

NEW! IBM ThinkCentre A50

System Features:

- Intel® Pentium® 4 Processor 520 with HT Technology
- Processor speed 2.80GHz
- 800MHz FSB
- Microsoft Windows XP Professional
- 256MB DDR PC3200¹
- 40GB hard drive • CD-RW
- Integrated 10/100 Ethernet
- Norton AntiVirus™ with 90 days of virus definition updates
- Lotus® SmartSuite™ Millennium license
- 1-yr parts/1-yr limited onsite service limited warranty¹⁴

NavCode 814812U-M419

THINK EXPRESS MODEL
PRICED AT:

\$699

IBM ThinkCentre A50

System Features:

- Intel Pentium 4 Processor with HT Technology 2.80GHz
- Microsoft Windows XP Professional
- 62% smaller than a standard desktop
- 256MB DDR PC2700
- 40GB hard drive • CD-ROM
- Integrated 10/100 Ethernet
- Norton AntiVirus with 90 days of virus definition updates
- Lotus SmartSuite Millennium license
- 3-yr parts limited warranty with 1-yr limited onsite service¹⁴

NavCode 841933U-M419

THINK EXPRESS MODEL
PRICED AT:

\$749

ServicePac Service Upgrade:

4-yr Onsite Repair/9x5/Next Business Day Response #69P9158 **\$198**

NEW! IBM ThinkCentre A50

System Features:

- Intel Pentium 4 Processor 530 with HT Technology
- Processor speed 3.0GHz
- 800MHz FSB
- Microsoft Windows XP Professional
- 256MB DDR PC3200
- 40GB hard drive • CD-ROM
- Norton AntiVirus with 90 days of virus definition updates
- Integrated 10/100 Ethernet
- Lotus SmartSuite Millennium license
- 3-yr limited warranty with limited onsite service¹⁴

NavCode 814721U-M419

THINK EXPRESS MODEL
PRICED AT:

\$899

IBM ThinkCentre S50

System Features:

- Intel Pentium 4 Processor with HT Technology 2.80GHz
- Microsoft Windows XP Professional
- 62% smaller than a standard desktop
- 512MB DDR PC2700
- 40GB hard drive • CD-ROM
- Norton AntiVirus with 90 days of virus definition updates
- Gigabit Ethernet-integrated
- 3-yr limited warranty with limited onsite service¹⁴

NavCode 818336U-M419

\$1,079

With Microsoft Office Small Business Edition 2003: \$1,319

ServicePac Service Upgrade:
4-yr Onsite/9x5/4-hr Response
#69P9162 **\$250**

IBM ThinkCentre M50

System Features:

- Intel Pentium 4 Processor with HT Technology 2.80GHz
- Microsoft Windows XP Professional
- 512MB DDR PC2700
- 40GB hard drive • CD-ROM
- Intel Extreme Graphics 2
- Gigabit Ethernet-integrated
- 3-yr limited warranty with limited onsite service¹⁴

NavCode 8187EJU-M419

\$1,049

With Microsoft Office Small Business Edition 2003: \$1,288

ServicePac Service Upgrade:
3-yr Onsite/9x5/4-hr Response
#41L2734 **\$129**



IBM ThinkExpress Program:

We've designed and priced many of our products specifically for small and medium businesses. And best of all, they're available direct from IBM or through select IBM Business Partners.

IBM ThinkPad Accessories

Belkin Components Universal Notebook Travel Surge Protector

#22P7127 **\$20**

Targus Deluxe Mobile Essentials Kit

#22P7437 **\$60**

ThinkPad Carrying Case¹¹ - Leather Attache

#73P3600 **\$129**

ThinkPad 72W AC/DC Combo Adapter

#22P9010 **\$99**

ThinkPad Port Replicator II

#74P6733 **\$179**

IBM ThinkCentre Accessories

IBM 128MB USB 2.0 High-Speed Memory Key

#22P9229 **\$59**

Lexmark X5270 All-In-One Printer

#22P8008 **\$140**

IBM ThinkVision™ L150 15" Flat Panel Monitor with system purchase

#W9SPAB1 **\$379**



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UltraBay bay, if applicable; weight may vary due to vendor components, manufacturing process and options. (10) **Thinness:** may vary at certain points on the system. (11) **ServicePac services:** are available for machines normally used for business, professional or trade purposes, rather than personal, family or household purposes. Service period begins with the equipment date of purchase. Service levels are response-time objectives and are not guarantees. If the machine problem turns out to be a Customer Replaceable Unit (CRU), IBM will express ship the part to you for quick replacement. Onsite 24x7x2-hour service is not available in all locations. For ThinkPad notebooks requiring LCD or other component replacement, IBM may choose to perform service at the depot repair center. Calls must be received by 5pm local time in order to qualify for Next Business Day Service. (12) **Full-size keyboard:** As defined by ISO/IEC 15412. (13) **Battery life:** Based on manufacturer's published figures or CNET.com results for the top 5 vendors in 2003 notebook sales based on IDC data, as of 1/29/2004. (14) **Systems with limited onsite service:** are designed to be repaired during the applicable warranty period primarily with customer-replaceable parts provided by IBM. IBM will only send a technician onsite to perform a repair if (a) remote telephone diagnosis and/or customer part replacement are unable to resolve the problem, or (b) the part is one of the few designated by IBM for onsite replacement. For a list of onsite replaceable parts, contact IBM. Support unrelated to a warranty issue may be subject to additional charges. (15) **Certain IBM logo products:** are not manufactured, warranted or supported by IBM; IBM logos and trademarks used under license. Contact IBM for details. (16) **Wireless capability:** requires compatible wireless-enabled options, sold separately. (17) **Battery:** These model numbers achieved the Ziff Davis Media, Inc.'s Business Winstone® 2002 BatteryMark™ Version 1.0 Battery Runtime Time of at least the time shown. This test was performed without independent verification by the VeriTest testing division of Lionbridge Technologies, Inc. ("VeriTest") or Ziff Davis Media, Inc.; neither Ziff Davis Media, Inc., nor VeriTest makes any representations or warranties as to these test results. Winstone is a registered trademark and BatteryMark is a trademark of Ziff Davis Publishing Holdings, Inc., in the U.S. and other countries. A description of the environment under which the test was performed is available at ibm.com/pc/ww/thinkpad/batterylife. Battery life (and recharge times) will vary based on many factors including screen brightness, applications, features, power management, battery conditioning and other customer preferences. **Trademarks:** The following are trademarks or registered trademarks of IBM Corporation: IBM, the IBM logo, ImageUltra, Lotus, NavCode, Rapid Restore, Rescue and Recovery, SmartSuite, ThinkCentre, ThinkPad, ThinkVantage, ThinkVision, UltraConnect, UltraBase, Ultrabay and UltraNav. Microsoft and Windows are registered trademarks of Microsoft Corporation. Intel, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Intel SpeedStep and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Other company, product and service names may be trademarks or service marks of other companies. © 2004 IBM Corporation. All rights reserved. Visit www.ibm.com/pc/safecomputing periodically for the latest information on safe and effective computing.

Tough Tablet Lacks Punch

TABLET PC

TEST Center THE NEW ITRONIX GoBook Tablet PC is aimed at rough-and-tumble users who spend more time working outdoors than they do behind a desk. The rugged device has some useful and unique features, but its sluggish performance means that it's not for everyone.

My shipping version of this light, compact device (3.7 pounds, 10.6 by 7.2 by 1.7 inches) came with a strap to let me grip it securely in one hand while I used the tethered stylus to enter

data on the 8.4-inch display.

Unfortunately, the \$2995 unit's 866-MHz Intel Pentium III processor appeared to be ill-equipped to keep pace with Microsoft's Windows XP Tablet PC Edition operating sys-

tem. I could enter data via the OS's virtual keyboard, but it was very slow going, and the device's jumpy response to stylus taps was frustrating.

The unit's PC World benchmark results further illustrate its lackluster performance: It managed a score of just 39 on our new WorldBench 5 test suite. A nonruggedized HP

Compaq Tablet PC tested for the "Specialized Notebooks" chart

(see page 149) scored 53. Also, the GoBook's battery lasted a modest 2 hours and 31 minutes.

Itronix, though, wasn't attempting to create a high-

performance tablet, and you'll still find plenty to like here, including the weatherproof design, the sturdy magnesium-wrapped chassis, and the array of connectivity options.

If you work outdoors, or you just tend to be rough on your equipment, the Itronix GoBook Tablet PC may be a good fit. If you value performance, however, then this somewhat pricey unit is not for you.

—Victor R. Garza



THE ITRONIX
GoBook Tablet PC.

GoBook Tablet PC

Itronix

★★★★☆

Tough tablet is for outdoor types who don't require top-notch processor performance.

List: \$2995

find.pcworld.com/43188

Latest Peachtree Offers Few Additions

FINANCIAL SOFTWARE

THE Peachtree Accounting 2005 line of small-business software provides several worthwhile enhancements for businesses that sell products. But if you're in a service industry, you may find that there's not much new in it for you.

A key product-related feature in the newest version is serialized inventory. Available only in the \$500 Premium edition, it helps businesses selling big-ticket items track individual product serial numbers

for service, warranty, and other purposes. Also new in the Premium and Complete editions is the ability to automatically generate purchase orders anytime your inventory falls to a specified level, ensuring that you don't run out of stock.

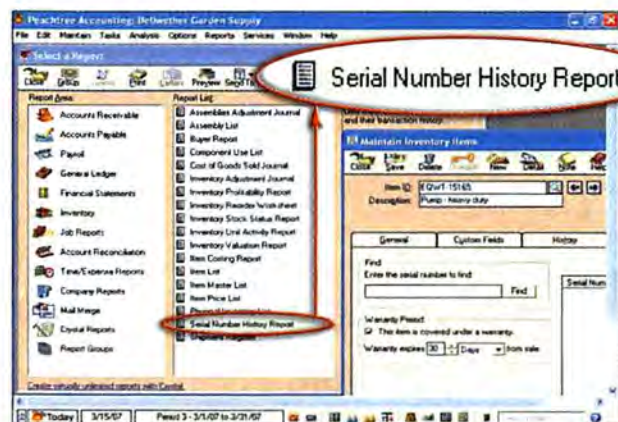
Other Peachtree improvements, such as the capability to e-mail accounting reports and financial statements, are useful for all businesses. Integration with Microsoft Word lets you copy accounting data into a Word document. For example, you can easily generate a letter requesting payment for overdue invoices.

I tested shipping versions of three Peachtree editions. The \$200 Standard Peachtree Accounting is a basic application with good overall accounting functionality for small businesses that have fewer than 25

employees. The \$300 Peachtree Complete features more-advanced inventory and job-costing capabilities, as well as

budgets, and consolidation of multiple financial statements.

Peachtree has a utility that can convert and import data from Intuit's QuickBooks and Quicken. But if you are happy using QuickBooks, there are



PEACHTREE PREMIUM ACCOUNTING can now track serial numbers, which is useful for companies that do big-ticket product sales.

fixed-asset tracking. And the \$500 Peachtree Premium edition builds on Complete by adding the serialized inventory tool, extended three-year

few reasons to move to Peachtree, since the latest comparable products offer virtually the same capabilities.

—Richard Morochove

Peachtree Accounting 2005

Best Software

★★★★☆

Solid small-business accounting package offers few new tools.

List: Standard \$200, Complete \$300, Premium \$500

find.pcworld.com/43190



I want to be

paid as fast as my business moves.

There's nothing more frustrating than trying to get your company's cash flow to catch up with day-to-day operating expenses. Fortunately, when you accept Visa®, your days of waiting for payments to arrive will become a thing of the past. You'll receive payments quickly and securely. So you can spend less time and money handling paperwork and tracking down payments. And best of all, as more and more customers choose businesses that accept Visa payment cards in lieu of cash or checks, it'll help you meet increasing customer demand; something every company can appreciate. For more information, contact us at GetPaidFaster@visa.com

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Casio's First Projector

PROJECTOR

CONSUMER electronics giant Casio enters the increasingly crowded projector market with its new **XJ-350** model for travel. This bright, well-designed product will suit both home and business users.

I tested a shipping version with everything from PowerPoint presentations and digital photos to DVD movies and broadcast TV—and I found plenty to like. Although the

XJ-350

Casio

★★★★★

Powerful projector is a great buy for both business presentations and home theater use.

Street: \$2299

find.pcworld.com/43184

3.9-pound, \$2299 XJ-350 is slightly heavier than the ultraportable 2.2-pound models *PC World* recently tested for the July *Top 100 Spotlight* article, "Small, Svelte Digital Projectors" (find.pcworld.com/43256), it boasts additional features that will make the extra weight worth enduring for some users.

The most impressive feature of this native XGA resolution (1024 by 768) projector is a powerful 2X optical zoom lens that enables it to display larger images than models with fixed-focus lenses can. The XJ-350 can project a sizable 4.5-foot-diagonal image at just 5 feet from the screen, and a huge 7-foot-diagonal image at a distance of 8 feet.



CASIO'S
XJ-350.

The XJ-350's brightness rating of 2200 ANSI lumens (an industry-standard measure) makes it brighter than most lightweight projectors, which generally top out at roughly 1800 ANSI lumens. As a result, it's ideal for delivering colorful presentations with vibrant graphics and sharp text, either with the lights on in a small room or with the lights off in a larger room or small auditorium. These same capabilities (plus a low-noise mode) also make the unit a solid choice for home theater viewing (although picky users will want to get Casio's \$49 op-

tional component-video cable).

The XJ-350's remote has no laser pointer, and its built-in speaker is weak, but these are about the only drawbacks.

Medium-priced among projectors that weigh less than 4 pounds, the XJ-350 is suitable for both the conference room and the living room, and its strong illumination and powerful zoom lens make it quite a compelling option.

—Richard Jantz

Let Your Cellular Phone Do the Driving

GPS SERVICE

NOBODY LIKES a backseat driver, but a mobile phone that gives driving directions could come in handy, especially for business travelers and for tourists visiting unfamiliar ter-



THE
TELENAV
service on
Nextel's i730.

ritory. Televigation's new **TeleNav** service provides directions across the continental United States and Hawaii. The service has great potential, but it's too glitchy to recommend for now.

TeleNav requires a Nextel phone with GPS and a subscription to Nextel's Total Connect data plan (the TeleNav service adds \$10 a month to the plan price). Nextel's cellular network enables the service, so if you don't have a signal, the GPS can't find you and can't give you directions.

I tried out TeleNav using Nextel's i730 phone in Los Angeles and in the San Francisco Bay Area. There are three ways to input locations for which you want direc-

tions: Dictate your destination address into the phone, type it in via the keypad, or access the service via a Web-connected computer first.

TeleNav's voice recognition method sounds convenient, but the service often didn't understand the street names I dictated. And typing in an address using the dial pad was even more cumbersome, not to mention time-consuming. Accessing the service by PC in advance requires more planning, but it's also the most straightforward method, and it worked the best.

TeleNav has BizFinder for locating businesses, too, but I found the yellow-page information terribly outdated. Despite such hang-ups, once

I provided my destination address, TeleNav's mapping database was usually good enough to get me there with turn-by-turn instructions. The most helpful part: If I missed a turn, TeleNav recognized that I had gone off-route and offered to reroute me with a fresh set of directions.

Televigation's TeleNav service still has too many rough edges at the moment, but with some work this phone-based navigation tool could become a real travel aid.

—Grace Aquino

TeleNav

Televigation

★★★★★

An almost-handy navigational tool that's brought low by poorly implemented input options.

Street: \$10 a month (plus Nextel)

find.pcworld.com/43192



WIRED

WIRELESS

- ROUTERS
- GATEWAYS
- ADAPTERS



- MULTIMEDIA

- VOICE OVER IP



MP 101

Wireless Digital Music Player

The Player's Player

Set your MP3, WMA and Internet radio music free from the confines of your PC with NETGEAR®'s MP101 Wireless Digital Music Player. Built for those serious about playing music, the MP101 lets real players play real music where it belongs – on their stereo. The attractively designed, easy to install MP101 is compatible with 802.11b and 802.11g wireless networks, and comes with a remote control, a crystal clear four-line display and easy to install software that finds all your music files by title, artist, album, genre or play list – automatically. So quit playing around with tinny PC sound, and start booming high fidelity music right from your stereo... wirelessly.

Music files from PC to stereo is one click away. To learn more about the MP101 and how to get a 30-day free trial of Rhapsody™ Digital Music Services, go to

www.netgear.com/go/mp101ad



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MP101704

SpinRite 6 to the Rescue

UTILITIES

SO YOUR HARD drive bit the dust before you got around to creating that backup you've been putting off for, oh, a year or so? Download a copy of Gibson Research's **SpinRite 6** drive recovery and maintenance software, and it might be able to bring your data back from the brink.

Version 6, the venerable application's first overhaul since 1998, comes through with improved functionality and much-needed support for the NTFS file system: It finally works with Windows XP. Like its predecessors, it has the unique ability to

access the surface of a hard drive (or other magnetic drive) without engaging the OS. As a result, it can manipulate data at lower levels than can other maintenance programs such as ScanDisk, enabling it to perform more-rigorous maintenance, to predict failures,



TO RUN SPINRITE version 6, you must first install it on a boot-up floppy disk, disc, or USB flash drive.

and even to recover data from badly damaged drives.

I downloaded the \$89 full version—upgrades run from \$29 to \$69—and installed it on a bootable CD (alternatively, you can put it on a USB key flash drive or a floppy). The new edition launches from within a self-contained version of FreeDOS, and navigation is fairly straightforward.

In my tests, performing basic maintenance on a 31GB partition took about 6 hours and returned a seemingly clean bill of health. The software fails to explain most of its results, however; and as we went to press, GRC was still finishing the documentation.

Fortunately, Spin-

Rite 6 is less ambiguous when it encounters a distressed drive. I put the app to work on four magnetically damaged floppy disks, and it lit up the screen with flashing graphics as it worked to recover my data. It saved three of the four.

SpinRite 6 is no substitute for regular backups. Still, having the software around for maintenance—and knowing it's there in an emergency—makes it worth the price.

—Tom Mainelli

SpinRite 6

GRC

★★★★☆

Savvy disk saver gets the job done, but cryptic results and a lack of documentation make it less than perfect—for now.

Street: \$89 first-time purchase, upgrades from \$29 to \$69

find.pcworld.com/43194

EnKoo Offers Secure Remote Access

MOBILE OFFICE

FOR YEARS companies have sought a way to open their office networks to remote employees without jeopardizing security. The **EnKoo-2000**—a rack-mountable Linux PC—looks to solve this problem by offering secure access to everything from files and applications on the network to individual PCs, without the hassles of traditional remote-access software and services.

EnKoo-2000

EnKoo

★★★★☆

Hardware/software combo makes remote access easier.

Street: \$3000 for hardware and 25 software licenses

find.pcworld.com/42620

I had little trouble setting up the EnKoo-2000, and the administration was straightforward. My biggest complaints: a few rough spots in the software interface and a noisy system fan. Next, I installed EnKoo's software on the computer that I wanted to access remotely. Then, using another Web-connected PC, I accessed the first system via a Web browser and a password.

EnKoo's hardware/software combination offers full access to your company's internal files, e-mail, and Web apps via the PC running the EnKoo software. You can even operate that PC from afar. This approach is safer than traditional VPN setups—which can act

as a conduit for worms and viruses—and it should cost less over time than packages such as GoToMyPC, which charge ongoing service fees.



THE ENKOO-2000 offers plenty of ports to make setup easy.

The EnKoo-2000 encrypts all communications between the client browser and itself; and since you don't have to install software on the accessing PC, you can connect from restricted venues such as Internet cafés. Following authentication, the EnKoo-2000 sends the necessary client-side soft-

ware in the form of Java applets and temporary Windows executable files.

The EnKoo-2000 includes 25 software licenses and sells for \$3000; larger companies can purchase additional units (enough hardware and soft-

ware for 500 PCs is \$10,000). Smaller companies can get the EnKoo-1000, which includes 10 licenses, for \$1000.

The EnKoo-2000 is a simple and secure remote-access system. Though it requires some investment up front, it should pay dividends later in remote worker productivity.

—Jamie Fenton

Indulge yourself.



Add stylish ViewSonic® ViewMate® Desktop Collection accessories for the ultimate desktop.

You deserve the visual experience that's the professionals' choice. And now you can get this grand view for under a grand. ViewSonic's luxurious 20" VP201b has ultra-high 1600x1200 resolution not even found on smaller LCDs. So indulge yourself in the screen with sharper text and more brilliant color, in the size that means less scrolling and searching, and in the style designed with your comfort in mind, including tilt, swivel and height adjustments and a sleek ThinEdge™ bezel ideal for multi-screen arrays. All from ViewSonic, the #1 display brand in the US* for price/performance.

Find out **Where to Buy** at **ViewSonic.com** or call **800-888-8583**

ViewSonic®

*See ViewSonic.com for detailed awards list. Leading stand-alone, branded monitor by sales (CRT and LCDs combined, Supply/Stanford Resources Monitorak™ and Flat Panel Monitorak™, 2Q04 report). Specifications, availability and pricing subject to change without notice. Copyright © 2004 ViewSonic Corporation. All rights reserved. [12035-00E 07/04]

THE
SOHO
REPORT

WEB *of* SURPRISE

Establishing
an online
presence
delivers the
goods

For technology writer and small business owner Alan Radding, the decision to establish a presence on the Web was initially driven by a desire to gain greater exposure to more potential clients. What he hadn't anticipated are the actual cost savings he has realized.

"I used to spend a lot of time and money photocopying samples of my work and then mailing them out to clients and prospects," says Radding (www.technologywriter.com), who has worked as a freelance technology writer for 25 years. "I've saved plenty just directing them to my site, where they can also view a lot more work than I could ever send to them. I'm sure my Web presence has resulted in more work for me because they can more fully grasp my potential to serve their needs."

Like so many other small business owners, Radding has discovered the Web's best secret: There's a lot more to it for small business than meets the eye. But in order to leverage that potential, you first have to set yourself up with a Web site and email presence.

Ignore the Naysayers: Web Sites Are Easy

What can keep a small business on the sidelines while its competitors build leads in the race to capitalize on the burgeoning online marketplace? Surveys routinely find that fear of complexity paralyzes many small business owners from leveraging the tremendous potential of the Web. The prospect of

designing, launching, and maintaining a Web site can seem daunting and expensive to businesspeople whose time and resources are limited.

Help is here. Since the company's launch in 1994, Register.com (www.register.com) has helped small businesses grow by exploiting the Web, providing numerous Web services such as domain name registration, professional email service, do-it-yourself Web site packages, and Web hosting. By maintaining a focus on making Web presence *easy and affordable*, Register.com has become an industry leader, helping thousands of small businesses build and run commercial Web sites.

Among its most popular services, Register.com's template-based, do-it-yourself Web site builder is designed to allow Web beginners to create, launch, and edit their own sites by following simple, intuitive steps. Today more than 50,000 customers use this package to operate professional-quality Web sites without using HTML or transferring files. Thanks to Register.com's Web-based interface, these sites can be updated quickly, 24 hours a day, from any computer with Internet access,

making them ideal for businesspeople who spend most of their days away from the office.

There's more. With Register.com, you won't have to worry about support. Register.com's toll-free, 24/7 telephone, email, and online support provide expert help whenever customers need it. And Register.com prices its services aggressively. For example, a complete Web site including domain registration and email service can cost less than \$10/month.

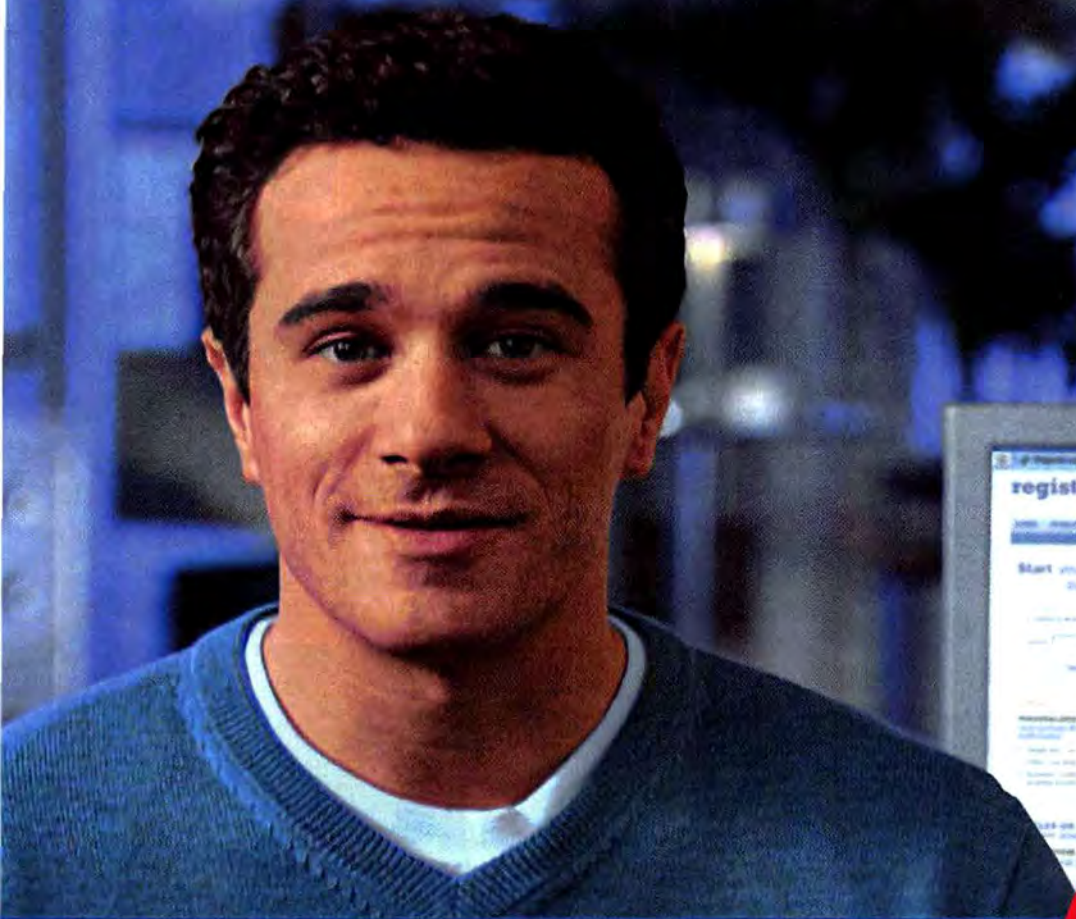
To give your small business a much-deserved boost, click now on www.register.com.

Global Opportunity

Of course, it isn't only service-oriented businesses like Radding's that stand to benefit greatly from a Web presence. The Web today is literally a marketplace of the billions, with people flocking to it from all over the globe to buy anything and everything. With the big retail buying season fast approaching, keep in mind that online holiday shopping last year surged 42%, according to Forrester Research, to more than \$12 billion in the United States. Small businesses account for much of that growth, says eMarketer, an Internet research firm.

There is no time like the present to step quickly into the present and help launch your small business into a more prosperous future by making the move to the Web.

"We're a small business. We don't have IT guys!"



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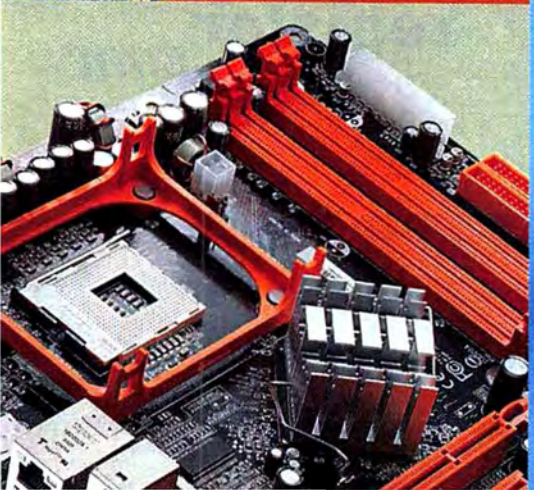
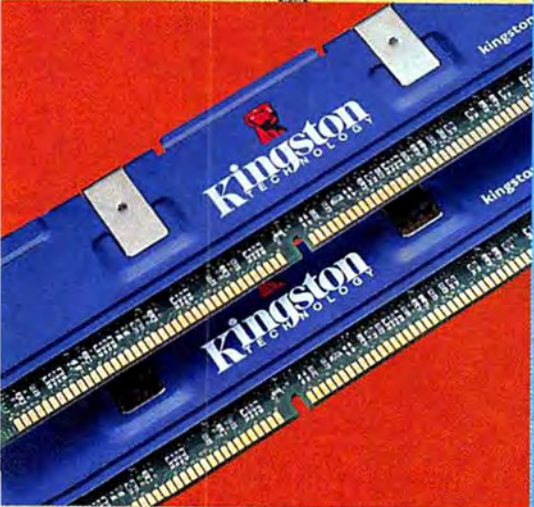
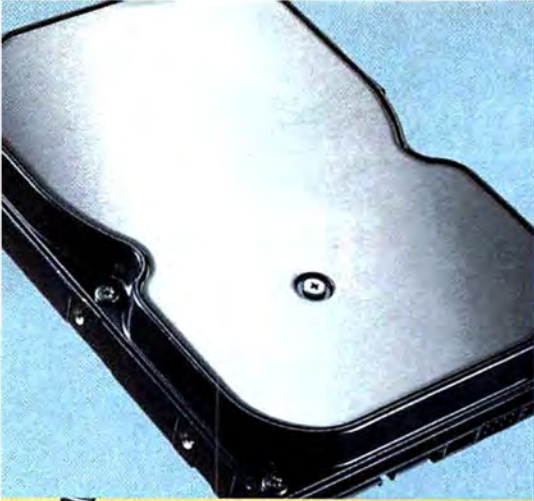
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IDEAL PC

Your Ideal PC

By Eric Dahl



Whether you're upgrading your machine or building one from scratch, we show you how to choose the right parts and put them all together.

THE COMPONENTS

The Case	79
CPU and Motherboard	80
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THE BUILD

A Step-by-Step Guide to Building Your Own PC	88
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It's easy to forget just how good we PC and technology fans have it. Sure, the cryptic acronyms, evolving standards, and boneheaded salespeople can be annoying, but if you think they're bad, try shopping for furniture some time. This sofa's almost perfect, but the color doesn't match your décor. This other one's the right color, but the style's all wrong. Want to add on another seat to accommodate a growing family? Forget it.

With PCs you can get what you want at any time by upgrading your current PC or by building one from scratch. A few simple upgrades can make the system you already have more productive and more pleasurable to use. Short on hard-disk space? Add a new drive. Getting creamed in the latest games because they run so slowly? Time for a new graphics board. But maybe you need a whole new system. With just a little more technical know-how than a typical upgrade requires, you can build a PC yourself from hand-picked parts. And you might even save a little money along the way.

Choosing the right components is critical to ensuring

that you end up with the perfect PC. To get you started on the right track, we've assembled a guide to the main components in a PC, including recommendations for each part (based on what you intend to do with your machine), along with shopping tips and advice on installing or upgrading each piece.

BUILD IT YOURSELF

IF YOU'D LIKE TO assemble your own, "The Build" will show you how to put everything together, step-by-step. We made four special-purpose PCs for this article: a loaded power system, a mainstream system built for maximum value, a computer designed to operate as silently as possible, and a media PC that can serve as a living-room entertainment hub. You'll find complete lists of components and prices for these four systems on our Web site (see find.pcworld.com/43170).

A few rules of thumb can help you decide whether it would be more cost-effective to upgrade your existing PC or to acquire a new one by buying it ready-made or by building it from individual components. ▶

To decide which way to go, use our guide to each of the components, make a list of the parts you want to upgrade to, and then add up their cost. If the total comes to more than about \$600—or to more than four components in need of upgrading—it's time to think about getting a new system instead. For around \$700 you can pick up a new system like the Dell Dimension 4600 that probably runs faster than your current system would after upgrading.

Building your own PC can save money, but you're unlikely to save a huge amount in these days of stiff competition between PC vendors. Still, by building your own you'll get exactly the system you want, and gain insight into how PCs are put together.

One drawback of building a PC is that you won't get an overall

Value PC Shopping List

COMPONENT	PRICE
AOpen AK89 Max motherboard	\$115
AMD Athlon 64 3000+ CPU (retail version)	\$230
Corsair 512MB PC3200 DDR SDRAM DIMMs (two) ..	\$110
Seagate Barracuda ST3200822A hard drive	\$130
Lite-On SOHW-812S DVD±RW drive	\$90
Abit Radeon 9600XT graphics board	\$195
Antec SLK3700-BQE case	\$90
Windows XP Home (OEM edition)	\$87
Total	\$1047

warranty. PC vendors offer warranties and tech support on the whole system when you buy one; but if you build your own, you'll have to rely on the warranties offered with the individual components, which may be shorter or have conditions attached. For instance, if you damage a processor while building a PC, you may have trouble getting a free replacement CPU.

In every section that follows, you'll find a list of the components

we selected for each of the four systems we built, plus guidelines on what to look for while shopping. We picked the best components we could find for each type of system, but our recommendations are merely starting points; in your quest to build the ideal PC, you may find parts that better suit your needs.

OUR HAND-BUILT SYSTEMS: COST AND PERFORMANCE

**TEST
Center**

WE CUSTOMIZED OUR homegrown systems for four different primary purposes: a power PC for video editing or games, a value PC for general use on a budget, an especially quiet PC, and a media PC for living-room use. You'll see our picks in the guide to each component, or go to find.pcworld.com/43170 to see the full shopping list for each system.



Value PC

Total cost: \$1047
WorldBench 5 score: 91
Bottom line: Hits the sweet spot between price and performance; highlights include lots of memory plus room to expand and upgrade the system.

Media PC

Total cost: \$1128
WorldBench 5 score: 79
Bottom line: Styled for the living room, this system has enough muscle to record and play back all sorts of digital media in a compact case.

Power PC

Total cost: \$2590
WorldBench 5 score: 107
Bottom line: Delivers plenty of performance for gamers. There are faster systems on our *Top 15 Desktop PCs* chart, but those models cost a lot more.

Quiet PC

Total cost: \$1227
WorldBench 5 score: 82
Bottom line: This machine uses special components that deliver performance without noise. The system wouldn't bother even the prickliest librarian.

CHART NOTES: Total cost does not include a monitor, keyboard, or mouse. WorldBench 5 scores are not comparable with PC WorldBench 4 scores from previous issues; see page 146.

THE COMPONENTS

Cases: Different Shapes, Different Sizes

WHEN YOU CHOOSE a case, you're buying a home for your PC. The right one can make working with your system a dream, but picking the wrong one will come back to haunt you. Though you can find a case plus power supply for less than \$50, we recommend that you invest a bit more to obtain a case that will last through many upgrades and that you'll enjoy looking at.

Pick the right form factor: Most cases and motherboards use the ATX form factor—a set of design standards that specify things such as the size of the motherboard and the connectors on the power supply. It's critical that your motherboard match the form factor of your case. Be aware of other standards—for example, Shuttle-style cube-shaped systems that come with their own custom motherboard.

What's it made of? Steel cases weigh more than aluminum ones, they cost less, and they muffle the noise from components such as hard drives better than aluminum cases do. On the other hand, aluminum boxes tend to be more stylish, and they are certainly easier to carry around.

It's what's inside that counts: Even the best-looking case will seem ugly if installing your components becomes a pain. Look for helpful features like a removable motherboard tray, tool-less drive carriers, and multiple fan locations for cooling the system.



OUR PICKS

• **Power PC:** **Aspire X-Alien ATXA7AW** (\$91, find.pcworld.com/43294). This alien-inspired aluminum tower case includes a 420-watt power supply, six lighted case fans, and a window that shows off all of the expensive components.

• **Quiet PC:** **Antec P160** (\$110, find.pcworld.com/43296). This case, specifically designed for quiet computing, uses rubber mountings to help muffle the hard drive. We paired it with a 400-watt fan-less power supply from Coolmax (the Coolmax CF-400, \$120, find.pcworld.com/43298) that runs silently.

• **Value PC:** **Antec SLK3700-BQE** (\$90, find.pcworld.com/43300). This moderately priced case comes with a good power supply and plenty of drive bays; its design is easy to work with, too.

• **Media PC:** **Shuttle XPC SN41G2V2** (\$270, find.pcworld.com/43302). It's pricey, but this compact case includes a motherboard and a power supply.

Does this come with a power supply? Cheaper cases often come with cut-rate power supplies that may not be up to the task of powering a high-end PC. Some expensive cases don't come with a power supply, which lets you choose your own. ▶

POWER PICKS AND UPGRADES

Choose the Right Power Supply

IF YOU'VE ADDED a lot of new components to your PC, you may be overtaxing your existing power supply, so look at getting a bigger, better one. Power supplies can cause problems—including random crashes or even component failure—if they are asked to produce more power than they are designed to generate.

Most power supplies are rated according to their maximum output (in watts). Online tools such as PC Power and Cooling's

Power Supply Selector (see find.pcworld.com/43122) can provide a quick ballpark estimate of the wattage you need, based on the components in your system. To calculate your wattage requirements more precisely, use the table at right to tally the power drawn by all your components; then tack on at least 30 percent more for headroom and the upgrades that you'll add over time. For more details, see "Power to Your PC" (find.pcworld.com/43146).

COMPONENT	Wattage required
Motherboard	15-30
Low-end CPU	20-50
Midrange to high-end CPU	40-100
RAM	7 per 128MB
PCI add-in card	5
Low to midrange graphics board	20-60
High-end graphics board	60-100
IDE hard drive	10-30
Optical drives	10-25

Source: Various component manufacturers

CPU: AMD or Intel

THE MOTHERBOARD AND the CPU are the brains of your PC, so selecting these components is probably the most important decision you'll make.

Choose the processor first: Despite running at slower clock speeds than their Intel-based rivals, AMD-based systems have maintained a significant performance lead in our World-Bench testing for a while now. At the high end, Athlon 64 FX CPUs are the fastest around.

Choose the motherboard next: This choice is mainly determined by the processor you select: Motherboards are designed to work with specific CPUs, indicated by the type of socket that the processor fits into. Socket A, Socket 939, and Socket 940 are designed to work with Athlon processors, while Socket 478 and the new LGA socket 775 are for Intel CPUs. Many dealers offer bundles consisting of a processor, a motherboard, and memory; these can be a good way to save some money. The system chip set (the chips that pass data between the peripherals and the CPU) is the other component that differs among motherboards; it determines which integrated components (graphics, sound, ethernet, and so on) will be included. Though integrated graphics aren't generally as good as dedicated cards, they're usually adequate for simple tasks.

New technologies to watch: Several influential new technologies and chips are making their way onto motherboards. On the Intel side, the new 915 and 925 chip sets support both PCI Express (see find.pcworld.com/43166) and DDR2 memory (see page 81). Boards using these chip sets are designed to work with processors that fit the LGA775 socket. These motherboards weren't

OUR PICKS

• **Power PC:** AMD Athlon 64 FX-53 processor (\$800, find.pcworld.com/43304) and Asus SK8N motherboard (\$180, find.pcworld.com/43308). If you want the fastest system you can buy, AMD's Athlon 64 FX-53 CPU is the way to go.

• **Value PC and Upgrade:** AMD Athlon 64 3000+ CPU (\$230, find.pcworld.com/43310) and AOpen AK89 Max motherboard (\$115, find.pcworld.com/43312). Intel has several good, low-cost processors, but we chose the cheaper AMD chip for its performance.

• **Quiet PC:** 2.6C-MHz Intel Pentium 4 CPU (\$150, find.pcworld.com/43314) and Gigabyte GA-8IPE1000-G motherboard (\$95, find.pcworld.com/43316). A fanless Zalman CNPS7000-AICu quiet heat sink cools the processor.

• **Media PC:** AMD Athlon 64 2500+ CPU (\$80, find.pcworld.com/43318) and Shuttle XPC SN41G2V2 motherboard (integrated into case). CPU speed isn't paramount for most dedicated media PCs; the graphics card does much of the heavy lifting.

available when we built our systems, but they will be by the time you read this. Meanwhile, new chip sets that support the newer 939-pin Athlon 64 processors are starting to arrive and will be among the first to support PCI Express on the AMD side.

An OEM CPU is cheaper; can I use one? Yes—but OEM (for "original equipment manufacturer") chips have much shorter warranties (15 days), and they lack a cooling heat sink and fan.



AMD'S Athlon 64 FX processor.

BUYING TIPS

Keep Your CPU Quiet and Cool

THE STOCK HEAT SINKS and fans that accompany retail CPUs do an adequate job, but they're noisy. For truly silent cooling, swap out the standard heat sink and fan for quieter ones.

For our quiet PC, we selected a Zalman heat sink and fan (pictured at right): the CNPS7000-AICu (\$35, find.pcworld.com/43320). This is a great choice, but it won't work with all motherboards; see find.pcworld.com/43172.



Thermalright (www.thermalright.com) and Spire (www.spirecoolers.com) make

heat sinks that adjust to accommodate larger, quieter fans. You can reduce the speed—and hence, the noise—of any fan by adding a simple \$5 device known as a fan speed regulator. Just make sure

that you use a utility such as Motherboard Monitor (mbm.livewiredev.com) to keep track of your CPU's temperature.

UPGRADE FOCUS

Can I Upgrade My Motherboard?

SURE, AS LONG AS you're ready to add a new CPU and RAM with it. Your drives, AGP graphics card, and PCI add-in boards will work fine on almost any new motherboard (PCI Express motherboards without AGP slots are the exception). If you've kept the other components of your system up-to-date, a new motherboard will give you a faster machine for as little as \$300. See find.pcworld.com/43360 for pointers on when to upgrade and find.pcworld.com/43168 for details on making the switch.

Memory: Get the Most You Can

BECAUSE IT'S AN EASY upgrade to perform and can significantly improve performance (see below), boosting a PC's RAM is one of the most popular hardware enhancements people undertake.

This 5-minute procedure can let you keep more programs open, accelerate memory-hungry graphics programs and games dramatically, and sharpen your PC's responsiveness.

The memory modules that most recent systems accept are 184-pin DDR DIMMs of varying speeds, such as DDR333 or DDR400; the number describes the RAM's clock speed. You'll sometimes see memory referred to by the bandwidth it offers, such as PC2700 (DDR333) or PC3200 (DDR400). The type you should buy depends on the motherboard and processor you choose: For



RAM comes in modules.

OUR PICKS

- **Power PC:** Two 512MB PC3200 Corsair Registered XMS3200 double-data-rate dual inline memory modules (\$155 each, find.pcworld.com/43322). The AMD Athlon 64 FX processor that we selected for our power system requires a pair of registered DDR modules.
- **Media, Quiet, and Value PCs, and Upgrade:** Two 512MB PC3200 DDR SDRAM DIMMs (\$110 each, various manufacturers).

ADDING RAM

More Memory, Faster PC

IF YOUR SYSTEM HAS 256MB or less of RAM, it's a good candidate for a RAM upgrade. Though most current PCs come with 512MB or more, just 18 months ago systems often had 256MB—not enough to run today's memory-hungry programs.

To see what sort of difference a RAM upgrade makes, the PC World Test Center evaluated the speed of a test system (a machine from Velocity Micro) on our new WorldBench 5 benchmark, using first 256MB and then 1GB of DDR400 RAM. Our test system got a significant speed increase from the extra memory; we found that the video editing, 3D rendering, and multitasking tests all showed at least a 10 percent increase. That's not bad for an upgrade that costs less than \$200. —Richard Baguley

TEST REPORT

Memory Matters

ADDING MEMORY to a newer PC boosts performance.

INSTALLED RAM	WORLD BENCH 5 SCORE
256MB	72
1GB	78



HOW WE TEST: We tested a Velocity Micro system running a 2.8-GHz Pentium 4 processor with 256MB and 1GB of DDR400 RAM.

best performance, opt for the fastest type of memory module that works with both. A new type of memory (called DDR2) offers even speedier performance, but this can be used only on new systems equipped with the latest Intel chip sets.

Get at least a gig: Sure, you can save money by installing less, but 1GB of RAM puts you comfortably above the point at which most speed gains occur, and it should enable you to run the most demanding applications and increase the speed of your system when you keep more than one program open at a time.

Go dual-channel if possible: If your motherboard supports it, use dual-channel memory. This type of memory boosts performance by increasing the speed at which data can be read and written. But for it to work, you have to install matched RAM modules in pairs. Some early dual-channel boards came with only three RAM sockets. If two of those sockets are already filled, you must either upgrade with a single DIMM (and lose some performance) or replace your two existing DIMMs.

Don't buy cheap memory: RAM prices go up and down every day, but no matter how high they get, don't purchase cheap, no-name memory. Dodgy RAM can create many confusing, hard-to-diagnose problems, so it's worth spending a bit more for RAM from a well-established brand, such as Corsair or Viking, to avoid these problems. You should also buy all of the memory you'll need at once: Although memory from different manufacturers should work together, we advise you not to count on it. ▶

UPGRADE FOCUS

What Type of Memory Should I Buy?

TO UPGRADE YOUR RAM, you must know what type of memory your system takes. Manufacturers like Crucial (www.crucial.com) and Kingston (www.kingston.com) offer automated memory selectors that will identify the right type for your PC.

Graphics Board: Pick Your Features

GRAPHICS BOARDS have become the high fashion of computing. As new, superfast graphics chips emerge every six months, trendy techsters don't want to get caught checking out the latest 3D game with a board that's "so last season." But you needn't spend a fortune to get good performance.

No need to buy the fastest: At the high end ATI and NVidia have been flirting with designer pricing, as loaded enthusiast parts go for upward of \$500. At those prices, only the most hard-core gamers will pay to keep up with the latest styles; but even if your needs are relatively modest, you can easily find an affordable board that boosts your PC's 3D graphics speed.

Features matter: Most graphics boards today let you connect a second display to your PC. If you'd like to use your PC to record TV, a board with an integrated TV tuner (like the ATI All-In-Wonder line) is a good choice. EVGA (www.evga.com) makes a competing set of TV tuner-equipped graphics boards based on NVidia's Personal Cinema chip set.

PCI Express—the next generation: The latest graphics cards now use PCI Express, an improved version of the AGP slot on most PCs. Our tests of new PCI Express graphics cards (see page 58)

OUR PICKS

• **Power PC:** ATI Radeon X800 XT (\$480, find.pcworld.com/43326). ATI had the performance edge in our graphics tests when we built our system (see find.pcworld.com/43328).

• **Quiet PC:** Gainward Silent FX PowerPack Ultra/980XP Professional (\$180, find.pcworld.com/43330). This graphics board uses a large heat sink to silently cool the NVidia GeForce FX 5700 chip.

• **Value PC and Upgrade:** Abit Radeon 9600XT (\$195, find.pcworld.com/43332). This graphics board



GAINWARD'S Silent FX graphics card.

offers strong performance for games, at a moderate price.

• **Media PC:** ATI All-In-Wonder 9600 XT (\$190, find.pcworld.com/43334). This multipurpose card combines a fast graphics board with an integrated TV tuner.

detected no significant speed gains as a result of upgrading from AGP to PCI Express, though that will surely change as graphics chip speeds increase and as games get more complex. ▶

INSTALL A NEW GRAPHICS CARD

Will a New Graphics Board Mean Faster Games?

AN INTEGRATED graphics processor is like a suit bought at Wal-Mart: It does the job, but it doesn't look great. The PC World Test Center tested a PC with integrated graph-

ics on a number of 3D games, and found them virtually unplayable. But when we installed a \$220 Radeon 9800 Pro graphics card, the games ran much faster.

This upgrade isn't difficult. First, find out who makes the graphics chip you already use: Right-click your desktop, choose *Properties*, and select the *Settings* tab. Your graphics board will be listed under 'Display'.

All graphics cards based on chips from NVidia now use the same set of drivers, so if you're upgrading from one NVidia-based card to another, download and install the latest NVidia drivers. The same is true for ATI-based boards. If your new card switches graphics chip brands, you should uninstall the graphics drivers before you upgrade.

Shut down your PC, unplug it, and open the case. Remove the old graphics board (if any), insert the new board into its slot, and secure it with a screw. Plug your PC back in, turn it on, and follow the manufacturer's directions to set up the new graphics board.

TEST REPORT

Integrated vs. Dedicated Graphics

A DEDICATED GRAPHICS BOARD can produce significantly higher frame rates in the latest 3D games than an integrated graphics chip can manage.

GRAPHICS BOARD	FRAMES PER SECOND IN: <small>Faster</small>		
	Splinter Cell	Wolfenstein-Enemy Territory	Unreal Tournament 2004 Demo
Intel integrated Extreme Graphics 2	4	10	5
Radeon 9800 Pro with 256MB of RAM	52	61	39

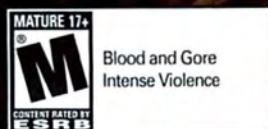


HOW WE TEST: We ran tests on a Velocity Micro system with a 2.8-GHz Pentium 4 processor and 512MB of RAM. All games were run at a resolution of 1600 by 1200 pixels.

The background of the entire page is a dark, atmospheric scene from the game Doom 3. It features several demonic enemies. In the foreground, a large, pale, skull-like creature with a wide, toothy grin is prominent. Behind it, a more humanoid demon with a screaming face and a glowing orange and yellow energy field around its head is visible. Other demonic figures are scattered in the background, some with grotesque, multi-eyed faces. The overall color palette is dominated by dark reds, oranges, and blacks, creating a sense of hell and horror.

PAIN SUFFERING DEATH

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Hard Drives: Two Improve Performance

THE CAPACITY OF hard drives continues to increase: You can now hold 400GB of data on a single drive, which is great news for digital media pack rats and video editors. But though you don't have to compromise on the drive's size, you still have a few choices to make when picking a hard disk.

Is RAID the right choice? This has nothing to do with keeping bugs out of your PC. RAID, which stands for Redundant Array of Independent Disks, lets you use multiple hard drives to boost disk speed or to keep a mirrored backup of your data in case a drive fails. Either setup requires multiple identical drives, and configuring them calls for a little mental gymnastics. An increasing number of systems on our *Top 15 Desktop PCs* chart use a configuration called RAID 0, which can significantly increase system speeds for data reading and writing. If you would like to try it, first select a pair of drives that match the storage capacity you want. With 120GB hard drives available for under \$90 and with RAID support included on most new motherboards, RAID can be a great value. The storage company AC&NC offers a guide to RAID setups at www.acnc.com/04_00.html.

Should I go with Serial ATA? If you're building your own PC from scratch, the answer is simple: Yes. Even bargain-priced motherboards now include SATA support, and going with an SATA drive will make your system easier to set up and your drive simpler to move to a future PC when the time comes.

OUR PICKS

• **Power PC:** Western Digital WD Raptor WD740GD 74GB hard drives (two; \$210 each, find.pcworld.com/43336). We installed a pair of these hard drives in a RAID 0 configuration to provide super-speedy storage.

• **Quiet PC:** Samsung SpinPoint P SP1614N 160GB hard drive (\$105, find.pcworld.com/43338). Silent PC Review (www.silentpcreview.com) picked this as the quietest 3.5-inch hard drive it tested, and we found it to be extremely quiet in use.

• **Value and Media PCs, and Upgrade:** Seagate Barracuda ST3200822A 200GB hard drive (\$130, find.pcworld.com/43340). This hard drive balances capacity and value, making it a good choice for various uses.



WESTERN DIGITAL'S WD Raptor WD740GD.

If you're looking to boost the storage capacity of an older PC, the answer gets more complex: To use a SATA drive, you must add a SATA controller card. Many SATA controller cards, such as the Promise FastTrak S150 TX2plus (\$60, find.pcworld.com/43342), give you the option of adding RAID support to your system, too. Is it worth it? Well, if you do a great many tasks that involve a lot of disk access (such as video editing), it can be. But otherwise, just add a second parallel ATA drive. ▶

TRANSFERRING YOUR DATA

Move Your Data to a New Drive

WHEN YOU ADD a new hard drive to an older PC, it's almost always faster than the drive already in use. But simply installing the new drive on your PC will strand your OS on the slower drive, forfeiting some benefits of upgrading. Make sure you use the new, faster, hard drive as your boot drive.

Retail hard-drive upgrade kits usually come with software that you can use to clone your existing drive to the new one, making the faster drive your boot drive.

Alternatively, you can use a program like Spearit Software's MoveMe to move data over a network from an older PC to a new one (see find.pcworld.com/43236).

But before you do this, pause and consider whether it may be time to start over.

Over time Windows fills up with discarded files, drivers, and other crud. Adding a hard drive can be just the excuse you need to reinstall Windows from the system restore CD that came with your PC.

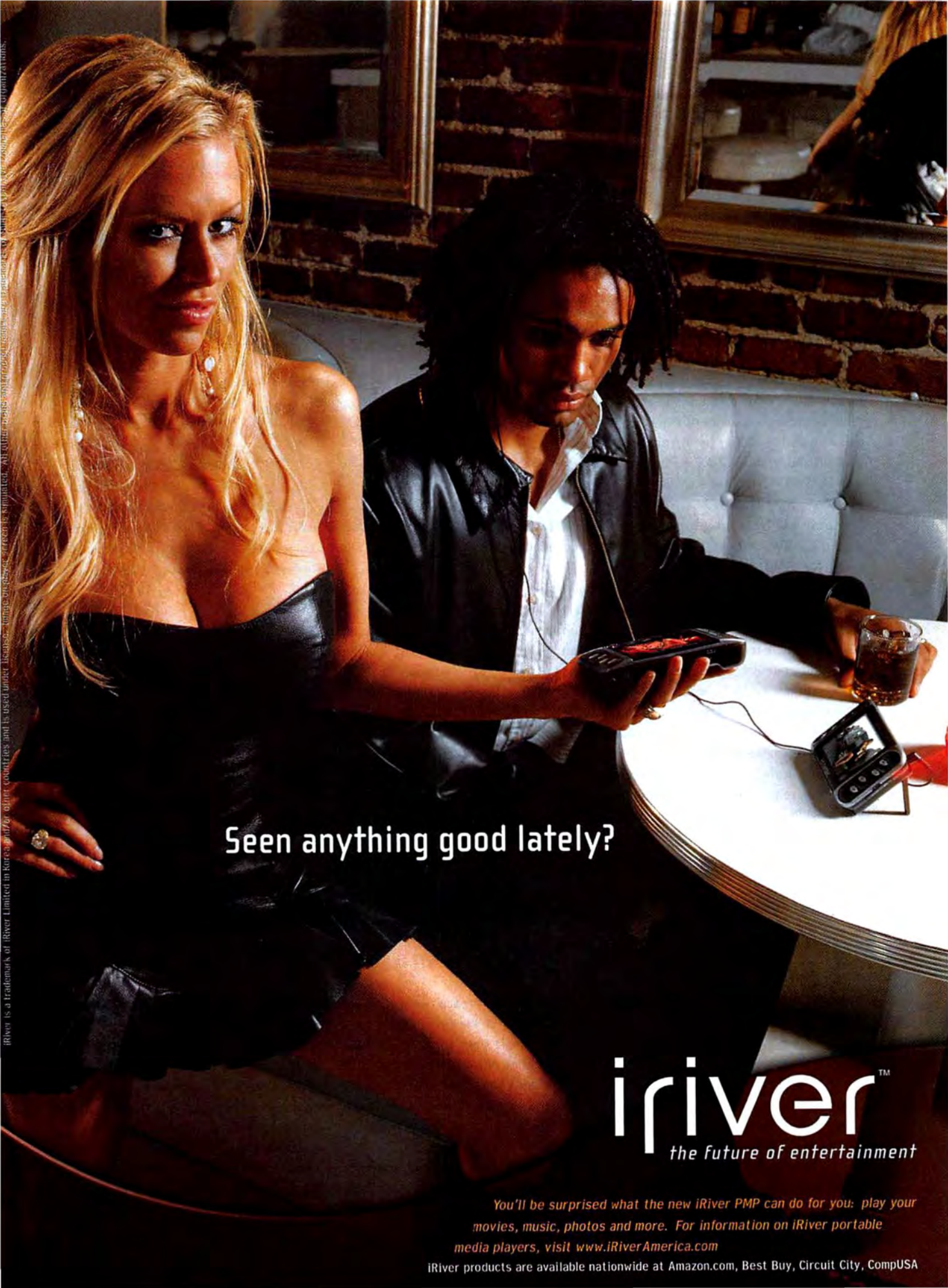


UPGRADE FOCUS

Break the 137GB Barrier

MANY PEOPLE WHO HAVE added a large hard drive to an older PC report that it mysteriously failed to show its full capacity. That's because, without a technology update, operating systems older than Service Pack 1 of Windows XP are unable to recognize more than 137GB of available space on a hard drive.

If you use an older OS, you can work around this problem in several ways. Visit your hard-drive manufacturer's Web site for instructions. XP users can visit find.pcworld.com/43086 for information on what to do after installing SP1.



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Optical Drives: Speedy and Cheap

WHETHER YOU upgrade or build a new PC, adding a fast optical drive can increase its flexibility. And even if you're on a budget, drives that read and burn any format under the sun won't break the bank.

One drive'll do ya: No need to worry about whether your drive supports DVD+RW or DVD-RW—just plunk down \$90 for an 8X DVD combination drive that writes to all major formats of rewritable DVD. For example, the Lite-On SOHW-812S, which we use in our value PC configuration for this story, shows its adaptability by burning DVD+R and -R discs at 8X, both rewritable DVD formats at 4X, CD-Rs at 40X, and CD-RWs at 24X. You'd save only \$40 by scaling back to a simple CD-RW/DVD-ROM combo drive, so you might as well spring for a DVD burner that does it all.

How much speed do you need? Even no-longer-top-of-the-line 8X DVD burners can write an entire disc in less than 10 minutes, and CD burning speeds these days are sufficiently fast at the upper end that the difference between 48X and 52X is negligible. Consequently, if you're on a budget, there's no reason to pay a premium for a 12X or 16X DVD burner or to insist on buying the fastest CD-RW drive you can find.

Lose that bulky data cable: The flat, wide ribbon cables that Parallel ATA drives use to carry data can restrict airflow inside your case, robbing your system of valuable cooling; and functionality aside, they're just plain ugly. Rounded data cables available at your local PC store look much nicer, and they don't impede airflow. For a geekier solution, check out Plextor's \$200 PX-712SA, the first optical drive to use Serial ATA instead of parallel ATA.



PLEXTOR'S PX-712SA.

OUR PICKS

• **Power System:** Plextor PX-712SA (\$230, find.pcworld.com/43346). This new 12X dual-format rewritable DVD drive uses the Serial ATA interface for easy installation.

• **Media and Value PCs, and Upgrade:** Lite-On SOHW-812S (\$90, find.pcworld.com/43348). This 8X multiformat rewritable DVD drive provides an excellent balance of price, performance, and adaptability.

• **Quiet PC:** Asus CRW-5232AS (\$35, find.pcworld.com/43350). Unfortunately, we discovered that really quiet CD and DVD drives are surprisingly difficult to locate. This Asus model ranks as one of the quietest CD-RW drives we've tried, though it still makes noise when you access it.

Get a storage boost: What's 12 centimeters in diameter and can hold 8.5GB of data? A dual-layer DVD disc, that's what. We tested some of the first for this month's "Better Backups" on page 111. Most stand-alone DVD players can play the dual-layer discs that these drives burn, boosting the amount of video that will fit on one disc. You'll pay a small price premium for early dual-layer drives, however, and compatible media may be hard to find at first. In addition, writing to dual-layer discs is slower than writing to single-layer ones—2.4X for the former, as opposed to 8X, 12X, or 16X for the latter. We recommend waiting until the prices of drives and media fall before switching to dual-layer unless you're desperate for the extra storage space. ▶

ADDING EXTRA DRIVES

One Cable, Two Drives: Master and Slave Demystified

ADDING A DRIVE TO an older PC isn't always a question of simply plugging it in. Most older PCs use parallel ATA technology, where two drives share one cable (this is referred to as a channel; most PCs come with at least two IDE channels for a maximum of four drives). Setting a jumper designates each drive as either a master or a slave, which permits a single cable to connect two drives to one IDE channel. The

jumper settings for each designation are usually labeled on the drive itself.

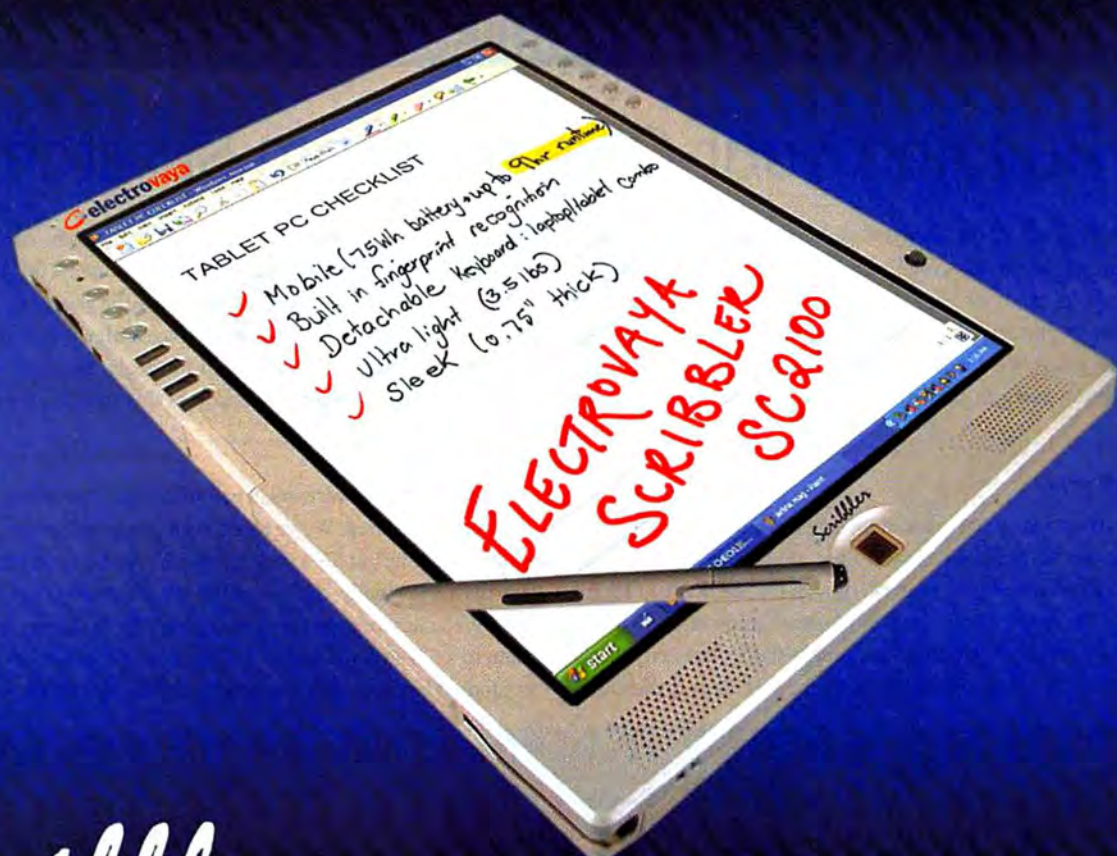
A few simple rules should guide your configuration choices. If possible, each drive should sit on its own IDE channel configured as a master drive. If you have two drives on one channel, always make the faster drive the master drive.

For example, suppose that you wanted to add a second hard drive and a DVD burner

to a PC equipped with one hard drive and one CD-RW drive. In that case, you would want to set the new, faster hard drive as master on the primary IDE channel. Your older hard drive should be the slave drive on the primary channel, with the two optical drives as master and slave on the secondary channel. PC Guide has a detailed overview of the ins and outs of configuring IDE devices (see find.pcworld.com/43144).

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THE BUILD

Building Your Own PC From Scratch

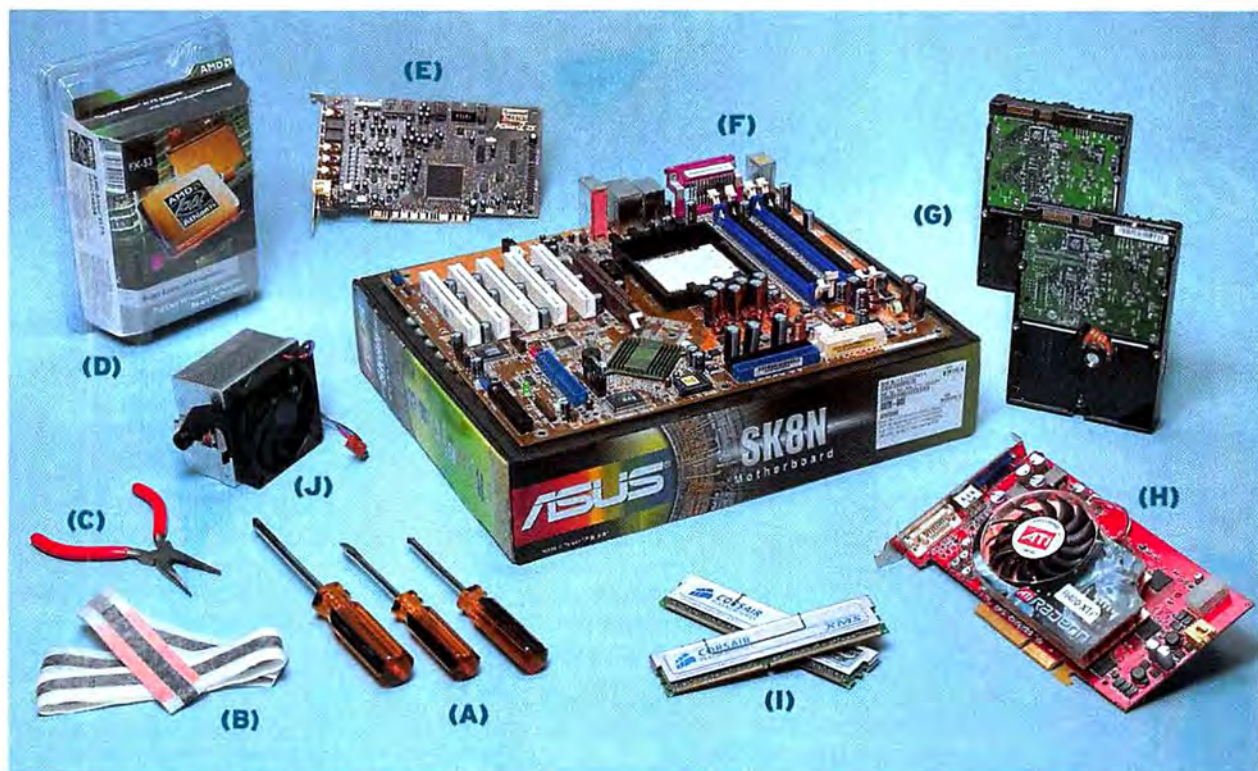
BUILDING YOUR OWN PC isn't as difficult as you might think, but it does require patience and planning. When you're ready to buy everything, you can save money on shipping by purchasing a good-size chunk of the components from one place. We did this but we also relied on specialist dealers for some parts. In particular, we bought many parts for our

quiet PC from Compuquiet.com (a subsidiary of the component seller Directron), which specializes in components for noiseless PCs. It's definitely worth spending some time shopping around; the prices of many components (particularly memory and processors) change daily, so watch for deals. See find.pcworld.com/43512 for an expanded version of this step-by-step guide.

Prepare

1 BEFORE YOU BEGIN building, check one last time to ensure that you have all the parts you need. It's no fun to get halfway through assembling your PC only to realize that you forgot to buy a vital part. Clear some work space and set aside a few hours of your day. Carpeting can create static electricity that's harmful to PC components, so work on a bare floor if you can.

Grab a set of screwdrivers, a pair of needle-nose pliers, and an antistatic wrist strap. We've rarely seen components succumb to static electricity; but it's a wise precaution, and a wrist strap costs less than \$5. Finally, download the latest drivers from the vendors' Web sites for each component you'll be installing, and copy them to a CD to avoid headaches later on; the drivers that come in product boxes are often several versions out of date. ▶



THE TOOLS THAT YOU'LL NEED for building your own PC include screwdrivers (A), an antistatic wrist strap (B), and needle-nose pliers (C). The components you'll build the PC from include a processor (D), sound card (E), motherboard (F), one or more hard drives (G), a graphics card (H), one or more RAM DIMMs (I), and a cooling fan and heat sink for the processor (J). The cooling fan and heat sink in this illustration are the ones that came with the processor; other choices are available.

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Populate the Motherboard

2 REMOVE THE MOTHERBOARD from its packaging and place it on top of the antistatic bag it came in. You'll want to install the processor, the heat sink, and the memory modules on the motherboard before you secure it in the PC case. If you aren't sure which socket is which, the motherboard manual will identify them.



THE CPU will fit correctly into the socket in only one way.

First, lift the lever on the processor socket so you can install the CPU. Carefully line up the pins and place the chip in its socket; it will fit only when oriented the proper way. An arrow or a missing pin on one corner of the chip will show you how to line things up. Lower the lever to lock the CPU into place.

Next, follow the manufacturer's directions to install the heat sink and the fan that will cool the processor. If you bought an OEM CPU and a separate heat sink, you may need to spread a thin layer of the thermal grease that came with the heat sink over the chip to ensure proper transfer of heat (some heat sinks come with this grease already applied). Attaching the clip that holds the heat sink in place may require a fair amount of force. Again, the instructions that came with the heat sink will show you how to know whether you've fitted it correctly. Plug the fan's power connector into the proper connector on the motherboard.

To install the memory modules, insert them into the proper sockets and push down firmly but evenly until the clips on both sides of the socket pop into place. If your motherboard supports dual-channel memory, consult the manual accompanying it to determine which pairs of RAM sockets you should use.

Put the Motherboard in the Case

3 SOME PC CASES, such as the Antec P160 that we chose for our quiet PC, have a removable motherboard tray. If yours does, remove the screws holding it in place and pull it out of the case. Note the pattern of the holes in your motherboard, and screw brass standoffs into the motherboard tray or into the PC case in the correct locations.



SCREWS FASTEN the motherboard onto the system case.

Check the layout of the sockets on the motherboard, and confirm that the ports on your motherboard's back panel match the holes on the I/O shield that is installed in your case. If necessary, remove the old I/O shield by tapping it firmly a few times with the butt-end of a screwdriver, and then replace it with the shield that came with the new motherboard.

Carefully position the motherboard on top of the brass stand-

offs, line up all the holes, and use the screws that accompanied the case to fasten down the motherboard. If you are using a removable tray in your system, slide the tray and motherboard back into the case and then secure the tray.

Connect Power Cables and Front-Panel Controls

4 PLUG THE LARGE ATX POWER connector for your power supply into the corresponding port on your motherboard. Find the smaller, square processor power connector (the one with the yellow and black wires) and attach it to the motherboard; the connector is usually near the processor.



THE ATX POWER connector attaches to the motherboard.

Next, open your motherboard manual to the page on front-panel connectors, and prepare for some frustrating detail work. Attach each of the tiny leads from the power and reset switches, the hard-disk activity lights, the PC speaker, and any front-panel USB and FireWire ports to the corresponding pin on your motherboard, using the needle-nose pliers if necessary.

Install the Video Card and Test

5 REMOVE THE BACKPLANE cover for your AGP or PCI Express X16 slot, install the graphics board in that slot, and then secure the card with a screw. Some graphics boards require a dedicated connection to your PC's power supply. If yours does, you should plug in the correct power connector now.



SOME graphics cards need their own power connection.

Connect a keyboard, mouse, monitor, and power cable to your computer and turn it on. If the internal fans begin to whir, the system beeps, and you see the machine starting to boot, power down (by holding the power button for 5 seconds) and continue building. If nothing happens, back up a step and recheck all of your connections.

Make sure that both the processor and the memory are properly seated, and recheck those minuscule leads connecting the motherboard to the power and reset switches.

Install the Drives

6 COLLECT THE HARD DISK, the optical drives, and the floppy drives and make any necessary changes to jumpers on the drives before mounting them in the case.

The configuration we used for the systems we built (one or two SATA hard drives, plus one parallel ATA optical drive) is easy to set up; the SATA drives are jumperless, and the optical drive can be set as master on its own parallel ATA channel. For other



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PARALLEL ATA cable (left) and Serial ATA cable.

drive setup options, see "One Cable, Two Drives," page 86.

Many cases use removable drive rails or cages to house drives. Use the included screws to attach your drives to the rails or cage, and slide them into the case. For externally accessible drives such as a DVD recorder, you can save time by installing one drive rail and sliding the drive in for a test fitting to make sure that its front is flush with the case.

When the drives are installed, connect power and data cables to each one. Parallel ATA drives use wide, flat data cables that can be installed only in the correct way. Floppy drives use a similar but smaller cable; SATA drives use a thin, 1cm-wide data cable.

SATA drives use a new type of power connector that many power supplies don't come with. Fortunately, many motherboards ship with adapters for converting a standard four-pin power connector to a SATA power connector. Some drives ship with both the older connector and the SATA power connector. In that case, use one power connector or the other, *but not both*.

SATA drives use a new type of power connector that many power supplies don't come with. Fortunately, many motherboards ship with adapters for converting a standard four-pin power connector to a SATA power connector. Some drives ship with both the older connector and the SATA power connector. In that case, use one power connector or the other, *but not both*.

Install the Add-In Cards

7 FOR EACH ADD-IN CARD, choose a free PCI slot and remove its backplane cover to allow access from the rear of the case. Position the card above the slot, and press down firmly to seat the card. Secure the card with a screw.

Many motherboards have additional sound connectors or ports housed on small add-in boards. Some of these plug into slots on the motherboard; others screw into the back of the case in place of slot covers.



SOME PCI cards may require a bit of force to seat correctly.

Usually the additional ports aren't critical to the operation of your PC—if you're installing a sound card, for example, you don't need connectors to the motherboard's built-in sound chip. Check your motherboard manual to determine what each of these boards does.

Power On and Check PC Setup

8 PLUG THE KEYBOARD, mouse, and monitor into the appropriate ports on the back of the PC. Plug the power cord back in, and turn the machine on.

Enter your PC's BIOS setup screen by pressing the indicated key (often <Delete>) as the machine boots. Menu options vary from board to board, but they have the same general categories. Set the date and time, and then look for a setting that deals with PC health status and monitoring. That choice should bring up a screen showing processor and case temperature.

Watch the processor temperature for a few minutes. It should

stabilize at a level between 30°C and 50°C. If it keeps increasing, your heat sink probably isn't installed properly. Power down and check to see whether the heat sink is securely attached and making good contact with the processor.

Next, find the section of the BIOS setup that determines the order in which your machine checks drives and devices for one it can boot from. Set CD-ROM to the highest priority so that your machine will boot from the Windows installation CD.

Set Up RAID (optional)

9 IF YOU PLAN TO USE multiple hard drives in a RAID arrangement, you'll want to configure it (using the motherboard RAID controller) before you install an operating system. As your machine boots, you should see a message from the RAID controller indicating a key sequence that will activate a configuration utility. Enter the utility and follow the directions to create the type of array you want. Warning: Once you've created the array, you can't change it without deleting all of your data, so make sure that you set up the right type.

Install the OS

10 PLACE THE WINDOWS installation CD in your optical drive, reboot the PC, and allow the system to boot off the disc. Windows setup should begin.

Early in the process, Windows will ask you whether you need to install a third-party SCSI or RAID driver. If you're using a RAID setup, press <F6> when this message appears; then insert the floppy containing the appropriate driver when it is requested.

If your machine hangs while installing Windows, there may be a problem with one of the components. Try removing everything except the core components (motherboard, processor, one memory module, and hard drives); then, once you've successfully installed Windows, begin reinstalling each component one by one to isolate the source of the problem.

Update Drivers and Install Programs

11 ONCE WINDOWS IS UP and running, you need to update your hardware drivers. Insert the CD with the latest drivers (from step 1) and install them, starting with those for the motherboard and graphics card and then moving on to less critical ones like mouse and sound card drivers. (Windows comes with basic drivers to get you up and running.) Several reboots later, you should have a shiny new PC!

Next, get your network connection up and running, install a firewall, and point your browser to windowsupdate.microsoft.com to download the latest Windows patches.

Finally, make sure that everything runs okay, and then back up your system. That way you'll have a clean, current image of Windows to go back to if serious trouble arises in the future. ■

Eric Dahl and Richard Baguley are senior associate editors for PC World.



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Time for a new cell phone, service plan...or both? Use this guide to pick the perfect ones for your needs and budget.

BY LAURIANNE McLAUGHLIN

When Marsha Berger prepared to move cross-country, she tried to make a smart choice for a new cell phone. She signed up for a two-week trial with T-Mobile and took a phone on a trip to Palo Alto, California. The phone worked fine in downtown Palo Alto, so she kept it and signed up for a family plan. But after moving, she found that she could not place calls from her house (she has to go outside) or from her office.

Berger, a New York University mathematics professor working at NASA's Ames Research Center in Mountain View, California, says that the worst part was the company's lack of concern. "I called [T-Mobile] repeatedly," she says. On the first call, a representative promised to put in a request to look into the coverage issue. When she called back, a rep couldn't confirm whether anything had been done. She called customer service twice more and asked for some accommodation. "T-Mobile's response?" she reports: "Well, our [voice coverage] map says it does work [in your area]."

T-Mobile spokesperson Richard Brudvik-Lindner confirmed that Berger lives in "a pocket with substandard coverage." After we contacted T-Mobile, the company offered a refund on the phones and waived the penalty for canceling her contract. But T-Mobile says that to test her phone adequately, Berger should have tried it out in her new house during the trial period.

Berger's experience illustrates two of the biggest frustrations of owning a cell phone: spotty coverage and mediocre customer service. To help you shop wisely, save money, and avoid getting burned, we researched voice and data plans from six nationwide wireless service providers: AT&T Wireless, Cingular Wireless, Nextel, Sprint PCS, T-Mobile, and Verizon Wireless. (AT&T and Cingular will soon merge, but their representatives asked us to consider them separately for purposes of this story.)





The good news: You'll find deals on many national plans, and with some care, you can avoid surprises on your bill. The bad news: Once you're locked in to a contract, don't expect tender loving care from the customer service department of any carrier. As for choosing among hardware options, we examined three categories of cell phones—basic, camera-enabled, and PDA hybrid—to help you find one that suits your budget and needs. Armed with our tips, you'll be able to dodge some of the most common cell phone frustrations.

Plans

Calling RESEARCHING CELL PHONE plans is about as much fun as pouring through income tax filings. For starters, it's not easy to figure out which company provides the best or worst service. Scouring the Web, we came across a report the Consumers Union group Escape Cell Hell (www.escapecellhell.org) had posted. It said that out of a total of more than 20,000 consumer complaints filed with the Federal Communications Commission against the six nationwide carriers in 2003, AT&T Wireless drew the highest percentage of complaints; Verizon drew the fewest, followed by Nextel, Cingular, T-Mobile, and Sprint. The lead-

ing gripes for all carriers related to billing, number portability, and service quality. (For more details on the report, go to find.pcworld.com/43100.) In response, AT&T says that it has since expanded its network. "This filled most of the coverage holes that customers may have been experiencing," says spokesperson Ritch Blasi.

TIP To find out about dead spots, ask friends and neighbors, and read the reports posted by cell phone users at DeadCellZones.com (www.cellphone.homestead.com); the site logs users' complaints about areas that have poor or no coverage. Don't rely on the carrier's coverage map. Just because your area is shaded doesn't mean you'll get good coverage.

TIP Take advantage of the vendor's trial period to test both its service and its phones. The six major carriers offer 14- to 30-day trials, during which you can cancel the service if you're dissatisfied. **TIP** Test the phone in the places where you spend most of your time—for example, in your office, on your commute route, and in all the rooms of your house. During your trial period, you'll pay for only the voice minutes and data transmission amounts you use; in some instances you'll also pay an activation fee, usually \$35 to \$50. If you don't cancel within the trial period, you'll be committed to a one- or two-year contract, whichever you select.



TIP What if you like the coverage but not the phone? Immediately go back to the store and request a new phone. **TIP** Set a reminder on your calendar to cancel the service two days before the trial ends.

A caveat: Most trials don't last long enough for people to receive a monthly bill—a sore spot for consumers. According to a recent Better Business

Bureau study, "the major area of consumer complaints involved either various forms of billing problems or communications problems that didn't surface until consumers received their first bill," says Charles Underhill, senior vice president for the Council of BBBs. This situation led California's Public Utilities Commission to adopt new regulations for wireless carriers. One notable provision allows consumers to back out of contracts after 30 days of use without incurring any penalty—in effect, extending a two-week trial period. Barring further changes, the state rule takes effect in late November.

CELLULAR NETWORKS

YOUR NETWORK CHOICE can shape your hardware choice, so understanding the different network standards will help. You get an alphabet soup of options: CDMA, GSM, iDEN, and TDMA. Sprint and Verizon use CDMA (Code-Division Multiple Access). AT&T, Cingular, and T-Mobile

COST COMPARISON

THE PRICE YOU'LL PAY FOR A NATIONWIDE CALLING PLAN

THE AVERAGE U.S. CELL PHONE USER consumes 615 minutes a month overall, according to research firm Yankee Group. So we compared the 600-minute (or the next closest) plans of six nationwide carriers. Overall monthly fees differ by only \$20 top to bottom.

WIRELESS SERVICE	AT&T Wireless GSM America National	Cingular Nation 600 With Rollover	Nextel National Value	Sprint PCS Free and Clear Nationwide	T-Mobile Get More	Verizon Wireless America's Choice
Monthly fee	\$50	\$50	\$60	\$50	\$40	\$60
Anytime minutes	600	600	1000	700	600	800
Cost per extra minute	45 cents	40 cents	40 cents	40 cents	40 cents	40 cents
Extras	Unlimited night, weekend, and in-network mobile-to-mobile calls	Unlimited night, weekend, and in-network mobile-to-mobile calls	Unlimited night and weekend calls; 100 push-to-talk minutes	Unlimited night and weekend calls	Unlimited night and weekend calls	Unlimited night, weekend, and in-network mobile-to-mobile calls

Prices and features as of June 2004.

The worst part about my cell phone service is the company's lack of concern to help me get better coverage.

-Marsha Berger, T-Mobile user

support GSM (Global System for Mobile Communication). Nextel is the only carrier on iDEN (integrated Digital Enhanced Network). AT&T continues to use TDMA (Time-Division Multiple Access), a now-aging technology, in some areas. You'll save a few bucks on a TDMA phone, but your choices will be limited.

To get the most innovative phones, choose either CDMA or GSM. Some GSM phones allow you to roam in other countries. Ask the carrier about countries you expect to visit, because network standards vary. Newer GSM phones feature an additional layer—GPRS (General Packet Radio Service) or EDGE (Enhanced Data for Global Evolution)—for faster data transmission on tasks such as text messaging. However, GSM phones don't support analog signals. **TIP** If you travel to rural areas, you will need a CDMA- or TDMA-based phone because it can transmit analog signals. Check the handset specs for analog. **TIP** If you'd like to get details on cellular standards and to learn about other wireless lingo, consult the glossary that's maintained at www.phonescoop.com.

DECIPHERING PLANS

NOW YOU'RE READY to tackle the heart of the buying decision: estimating your cell phone budget and making sense of the plans. Your options include national, regional, family, and prepaid plans. With a regional plan, you'll get more monthly minutes than you will with a similarly



priced national plan. For example, the same \$50 buys you 600 "anytime" minutes per month with AT&T's GSM America National plan, or 800 monthly minutes with its GSM America Local plan.

TIP If you seldom leave your area, pick a regional plan; it offers more minutes for the money. If you travel even a few times a year, go with a national plan because roaming charges with local plans add up quickly at 49 to 79 cents a minute, depending on the carrier and the plan.

As for the monthly minutes, how big a bucket do you need? Start scanning the plans, and you'll see skimpy offers starting at 45 minutes and huge plans that offer thousands of minutes. U.S. cell phone users now average 615 minutes a month, says Roger Entner, director of wireless at research firm Yankee Group. Many users will stay under the 600-minute limit, but "signing up for a 600-minute plan is the safe play," Entner says. The cost of a 600-minute plan from one of the major carriers ranges between \$40 and \$60 monthly (see the chart on the opposite page).

TIP After you sign up for the plan and

have used it for a couple of weeks, check the number of minutes you've actually used and adjust your monthly allotment as necessary. Most carriers let you change this part of the plan during the first few weeks without extending your contract. If you go beyond the allotted minutes, each extra minute typically costs 40 to 45 cents.

Most companies do not allow you to roll over your unused minutes to the next month. But Cingular is an exception: The company transfers any unused minutes to the following cycle. The minutes expire after 12 months, however; and night, weekend, and in-network, mobile-to-mobile minutes don't roll over.

If your minutes vary from month to month, consider Sprint's Fair and Flexible plan. The amount you pay for this plan reflects the actual number of minutes you used that month, and the plan adjusts without penalties. For example, use between 0 and 300 minutes and pay \$35; use between 301 and 325 minutes, and pay \$38, and so forth. Sprint's Web site makes it easy to see what you'll have to pay for each increment of minutes. ►

TIP If you call the same person or a group of people on the same network, save money by getting a plan with unlimited in-network calling and/or a family plan. For example, Verizon's America's Choice Family Share plan lets you call anyone on Verizon Wireless's network without limit for \$40 or more a month (depending on your area) for the first

phone and \$20 for the second handset; you also get 500 extra minutes to call any number. Such deals are so cost-effective that you may stop using your landline to call friends and relatives. In fact, according to a Yankee Group report, cell phone users on average place 43 percent of their long-distance calls on a mobile phone.

If you prefer to be contract-free, or if

you're a parent and want to keep your kids' cell phone usage in check, choose a prepaid service. Prepaid phones work like gift cards, providing a certain allotment of minutes. For example, T-Mobile's Easy-Speak starter kit comes with a basic cell phone, a charger, and 60 voice minutes for \$50. Minute refills come in \$10 to \$100 increments: \$10 for 30 minutes; \$25 for 100 minutes, and so on. You buy refills via the phone or at T-Mobile stores and chains such as 7-Eleven and Target. One catch with prepaid services: The minutes expire after 90 days (or after 30 days for the \$10 or cheaper refills) unless you refill before expiration, in which case the minutes roll over. (Go to find.pcworld.com/43108 for more on prepaid plans.)

TIP In addition to browsing the carriers' sites, compare rates and phones at TeleBright (www.telebright.com) or at MyRatePlan.com (www.myrateplan.com). At each site, you simply enter your location and choose the plan or phone features that you desire. The site returns a list of the options that are available in your area.

CUSTOMER SERVICE

CAN I GET SOME SERVICE, PLEASE?

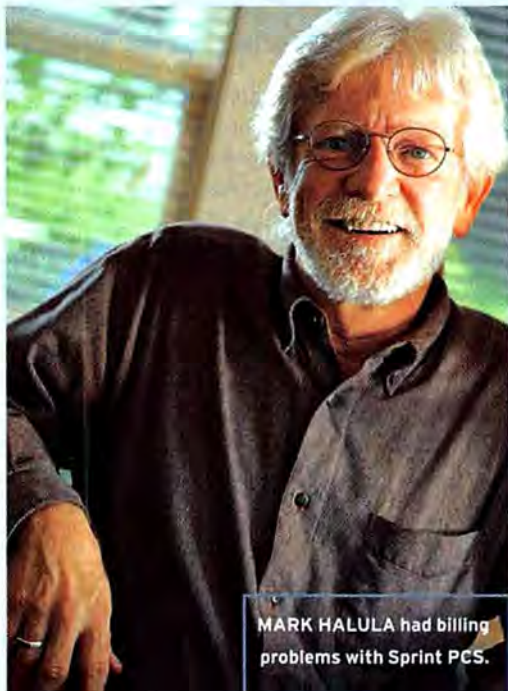
MARK HALULA, who runs a flower shop in Omaha, understands customer service. For him, Sprint PCS gets a failing grade. When he exceeded his credit limit by \$11, Sprint left him a phone message notifying him that his service was being cut off. He talked to a Sprint rep who said he'd have to pay \$15 to reactivate. He did. Still no service.

He called Sprint again and learned that it charges a \$5 transaction fee, leaving him \$1 over his credit limit again. When he asked to speak to a supervisor, the rep said she needed "a valid reason" to transfer him, and hung up. "I called back and talked to a different rep, who was embarrassed and said, 'I can't believe this,'" says Halula. "He credited my

account and [my phone was soon reactivated]."

Of all complaints filed with the U.S. Better Business Bureaus in 2003, cell phone companies accounted for 18,323 (an improvement over 2002's total of 21,534), in a group of more than a thousand industries. Only car dealers attracted more complaints. According to the BBB, consumers frequently cited difficulties with customer service or confusion over billing or plan details.

Will switching carriers improve the situation? Not likely, says Lewis Ward, IDC senior wireless analyst. He adds that creating "bigger and better call centers is



MARK HALULA had billing problems with Sprint PCS.

the [right] move"—but don't hold your breath. Carriers probably won't spend money on call centers because research shows that service alone isn't enough to make people switch carriers. The BBB's Charles Underhill disagrees: "With number portability, consumers are less tied to one carrier, and the companies can no longer count on an exponential increase in the number of new customers," since so many people already own cell phones. Ultimately, being persistent will likely yield the best results.

NUMBER PORTABILITY

NUMBER PORTABILITY allows you to transfer your existing cell phone number to a new carrier. You need to keep your old service active until your new carrier transfers the number. These days, the switch should take a day to complete.

TIP Providers don't prorate bills, so cancel your service at the end of your billing cycle. If you make the switch at the carrier's store, bring your old cell phone bill. Be aware that some small, regional carriers don't offer number portability.

Warning: Though you'll probably be able to keep your old number, you may not be able to keep your old phone. Some cell phones have software locks, which prevent their being used with another carrier. The providers justify this practice by pointing out that they are subsidizing the cost of your cell phone. To find out whether your handset is locked, simply ask your carrier. Another caveat: If you move to a different city or state, you may not be able to keep the same cell phone number.

CONTRACTS AND PITFALLS

DECIDING BETWEEN one- and two-year contracts is a straightforward choice. The benefits of a two-year contract often include the waiving of the activation fee (\$35 or more) and a reduction in the cost of the phone. If you prematurely end a contract, cancellation fees can cost you hundreds of dollars—for example, \$175 with Verizon and \$200 with T-Mobile.

Comprehending the details of a contract is a trickier task. **TIP** To avoid surprises, read all the paperwork. If you don't understand the details of the plan, or if you get conflicting information from the carrier's site and the in-store sales reps, talk to a supervisor and get that person's name. Having a record of your conversations with customer service reps may help you in the long run—especially when a company doesn't deliver on its promises. Just ask Brian Gaudreault, a network security engineer for a data-reporting company in Milford, Connecticut.

When he switched to Cingular, the company promoted the benefit of a combined bill for his cell phone and his landline, which is serviced by SBC. But when his first Cingular bill showed up, he discovered that he had to specifically request a combined bill (which he eventually did). "This must have been an asterisk in fine print somewhere," he says. In Gaudreault's opinion, Cingular should have been vocal about the requirements. On top of that, the company failed to deliver a FastForwarding cradle (which holds the cell phone and forwards cell calls to the home line) that it had promised him when he signed up.

Cingular spokesperson Ross Jacobs says "there was a miscommunication, or [Gaudreault] was given incorrect information. Unfortunately, his phone is incompatible with the cradle." To compensate him, Cingular offered to replace his current Nokia 3600 with a model that works with the FastForwarding cradle.

Another sore point for cell phone users: fees for directory assistance. For example, on Verizon's site, the America's Choice plan lists 411 Connect as an "included



The company failed to deliver an accessory that was promised when I signed up.

—Brian Gaudreault, Cingular customer

feature"—but that doesn't mean that the calls are free. Click the description, and you'll discover that Verizon charges \$1.25 per call, plus airtime, for such assistance.

Taxes can be tricky, too. They vary depending on where you live, and the carri-

ers don't break out these costs. Fortunately, the nominal fees (amounting to a few dollars) are standard among carriers.

THE DISH ON DATA PLANS

DATA SERVICES in one regard are simpler than voice plans to shop for. In many areas, one carrier has better voice coverage than others, so most people will pick that service, no matter what. If you have two good options, you can comparison-shop for data plans. Either way, understand the costs before you start text-messaging and picture-sending your way into debt.

Current data services are handy for sending text messages, e-mail messages, and quick snapshots for business or pleasure. Downloaded applications such as games and ring tones are popular, too. But data services aren't cheap, and carriers package and price them differently.

With messaging, you'll get another ►



little taste of alphabet soup: SMS (Short Messaging System), for text messaging; and MMS (Multimedia Messaging System), for transmitting photos and video and audio clips. **TIP** If you expect to send or receive lots of instant messages, pick a plan with unlimited IM. You don't want to pay 10 cents each time you transmit an emoticon. You can send and receive SMS messages between different networks. With MMS, you can transmit messages only to someone using the same carrier as you. By year's end, you should be able to transmit MMS messages between different networks, according to AT&T's Blasi.

Among the big carriers, Sprint's data plans provide good value for moderate and heavy users. The \$15-a-month PCS Vision Pictures pack lets you send an unlimited number of pictures, and send or receive 100 text messages. You can exchange unlimited AOL and Yahoo instant messages and e-mail messages, and browse the Web without limit. Sprint throws in a monthly credit of up to \$5 for use toward downloadable games, ringtones, and screen savers. Sprint is the only major carrier with a broadcast TV service, too. For \$10 a month, PCS Vision subscribers have unlimited access to MobiTV, a service that streams video of sports, entertainment, and news channels (such as MSNBC) to cell phones.

AT&T Wireless's data plan is one of the hardest to understand, making you slog through options that charge different

rates for different types of data. Fees for data services are based on kilobytes—a confusing pricing structure that assumes you know that an e-mail message typically uses 5KB. AT&T's MMode plans cost \$3 to \$20 monthly. Outgoing text messages and IMs aren't included in MMode base rates, and they cost \$5 for 100 messages; incoming messages are free.

Having free incoming text messages isn't always a good thing: Some carriers (including AT&T and Sprint) send

text messages advertising other services.

TIP Look for opt-out instructions at the bottom of such messages if you don't want to receive them. AT&T also lets you opt out through its site, on the privacy policy page. (Go to find.pcworld.com/43430 for more information on data services.)

UP NEXT: FASTER NETWORKS

FASTER NETWORKS PROMISE to make Web browsing and e-mailing by phone more practical, at prices similar to today's. But not yet. Currently, AT&T's and Cin-

gular's EDGE networks offer speeds of 80 to 130 kbps. By 2006, Cingular may use an even faster network called UMTS (Universal Mobile Telecommunications System) with data rates up to 384 kbps.

Verizon's current Broadband Access service, based on the EvDO (Evolution Data Only) network, can transfer data at 300 to 500 kbps. EvDO phones are expected later this year, says Verizon's Brenda Raney. Today, only customers with wireless cards—primarily in laptops—can use Broadband Access, and only in Washington, D.C., and San Diego. Expansion is expected starting this fall and into 2005.

Phones

ONCE YOU'RE ARMED with information on cell phone plans, your other major decision is the phone itself. Today's models range from plain vanilla to ones that have everything but hot fudge on top. Decide on the category of phone that suits you—basic, camera, or PDA—and then cruise the wireless provider's Web site or local store. ▶

FEATURES COMPARISON

CELL PHONES: BASIC TO BRAUNY

YOU WANT A PHONE THAT HAS ENOUGH FEATURES and functionality to keep you happy throughout the life of a two-year contract, but you don't want to spend a fortune for it. This sampling shows you what some current phones in different price ranges deliver.

CELL PHONE	Basic cell phone	Camera phone	PDA phone
Price range	Free to \$150	\$100 to \$250	\$250 to \$600
Notable features	<ul style="list-style-type: none"> • Small color or gray-scale screen • A few handsets have push-to-talk capability • Some models include a speaker-phone • Phones from Nextel feature GPS 	<ul style="list-style-type: none"> • Built-in VGA or 1-megapixel digital camera • Color screen • Many clamshell models feature a small, second screen on the case's exterior • A couple of Nokia models have a flip-out keyboard 	<ul style="list-style-type: none"> • Full-featured OS such as Palm or Windows Mobile • Large color screen • A few have a built-in keyboard and/or media-card slot • Some come with a camera
Examples	<ul style="list-style-type: none"> • Kyocera SE47 (Verizon) • LG VX3200 (Verizon) • Motorola V60 (AT&T, Sprint, Verizon) • Motorola i830 (Nextel) • Nokia 3595 (AT&T, Cingular, T-Mobile) 	<ul style="list-style-type: none"> • Audiovox 8920 (Sprint) • Motorola V600 (AT&T, Cingular) • Nokia 6820 (AT&T) • Samsung SCH-a610 (Verizon) • Sony Ericsson T637 (Cingular) 	<ul style="list-style-type: none"> • BlackBerry (AT&T, Cingular, Nextel, T-Mobile, Verizon) • Hitachi G1000 (Sprint) • PalmOne Treo 600 (AT&T, Cingular, Sprint, T-Mobile) • Samsung SCH-i600 (Verizon) • Sidekick (T-Mobile)

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Available online or at leading retailers

Your cheapest option—a bare-bones handset such as Nokia's 3595 or Samsung's X105—is often free or very affordable at \$150 or less with a two-year contract. But what features will you miss out on with a basic phone? For starters, some models have a gray-scale rather than color screen. And some of the most basic GSM phones lack GPRS, so you won't be able to browse Web pages, though you may be able to access text-only pages.

If you step up a level, you'll get a phone with a miniature operating system, such as JAVA or BREW, that allows you to download apps, games, and fancy ring tones. Middle- and top-tier models (for example, AT&T's Nokia 3100 and Nextel's Motorola i830) typically offer higher-resolution color screens, support newer standards (such as Bluetooth, GPRS, or EDGE), and have more storage for running business apps, travel aids (such as GPS), and personal information-management utilities.

COOL CAMERA PHONES

CAMERA PHONES SPORT some of the most innovative designs among handsets, but you can expect to pay a premium for one. For example, Nokia's 6820 (offered by AT&T for \$200 with a two-year contract) comes with a VGA camera and a flip-out keyboard that's useful for text-messaging junkies. Samsung's clamshell-style SCH-a610 (at press time, \$70 with a two-year contract with Verizon) features a rotating camera lens and a swiveling LCD so you can view the screen with the cover either open or closed.

Other camera-enabled handsets, among them the clamshell-design Samsung A680 available from Sprint (\$150 with a two-year contract), can capture still images and short video clips.

TIP For more picture-taking control, look for a model that has a tiny built-in flash, digital zoom (optical zoom isn't available yet), resolution adjustment, and a night mode. Because the user interface and menus vary from one



CAMERA PHONES:

Samsung SCH-a610 (left), Sony Ericsson T637 (center), and Nokia 6820.

phone to the next, test-drive the phone at a store or sign up for a trial period.

Sure, camera phones can be fun to use, but mediocre image quality is the norm for now. Most models come with a VGA (640-by-480-pixel) camera chip that typically yields grainy 3-by-5-inch or smaller prints. Camera phone technology is improving, however. As we went to press, Sprint launched the PM-8920 from Audiovox with a 1.3-megapixel camera and a small flash. Upcoming 1-megapixel and higher camera phones include the Nokia 7610 and the Kyocera Koi; these and other models should be out by year's end.

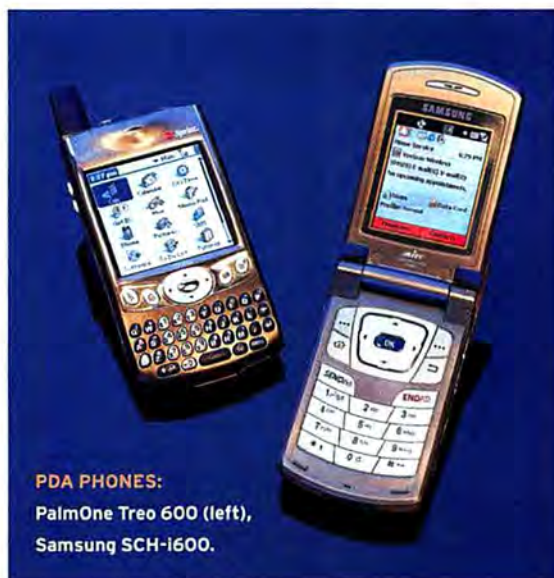
PDA PHONES

PDA/PHONE HYBRIDS, the priciest category of handsets, give you a full-featured phone with the best screens for Web browsing and messaging. PalmOne's Treo 600 (with a two-year contract, \$500 from Cingular and \$550 from AT&T or Sprint) lets you sync its phone book and calendar with those on your PC. And because PDA phones run on a powerful OS such as Palm or Microsoft's Windows Mobile, you have access to many office apps. Some PDA handsets, including the Sidekick from T-Mobile and the Treo, come with a small yet handy keyboard.

No matter which phone you buy, make sure it supports the bands (network frequency) you'll need: Some models are digital-only, for example. You'll need analog if you roam to rural areas.

Our final advice? We said it before, and we'll say it again: Test-drive phones and services before committing to a contract. Even if that means trying out several options and paying a little extra, it's the only way you'll know which mobile phone and wireless plan work best for you. ■

Freelance writer Laurianne McLaughlin uses 599 voice minutes a month.



PDA PHONES:

PalmOne Treo 600 (left), Samsung SCH-i600.

Acer recommends Microsoft® Windows® XP Professional.

August 2004



Acer® Aspire™ 1660

*Optimal Balance of
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- 802.11b/g WLAN, 10/100 LAN, V.92 modem

Acer Aspire 1662WLMi

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ALL FEATURES LISTED.
(LXA3006.002)

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(LX.T280E.122)

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Acer recommends Microsoft® Windows® XP Professional.

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- 3-in-1 card reader
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INTEL® PENTIUM® M PROCESSOR 715
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(LX.A1506.003)

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- 802.11b/g WLAN, 10/100 LAN, V.92 modem



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- Intel® 852GM chipset with integrated DVMT
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- Gigabit LAN

Acer Veriton 7600GT-U-P3201

\$923

INTEL® PENTIUM® 4 PROCESSOR 540 WITH HT TECHNOLOGY
(3.20GHz, 1MB L2 CACHE, 800MHz FSB),
MICROSOFT® WINDOWS® XP PROFESSIONAL,
80GB* HARD DRIVE AND CD-RW DRIVE.

Acer Veriton 7600GT-U-N2800

\$745

INTEL® PENTIUM® 4 PROCESSOR 2.80GHz,
MICROSOFT® WINDOWS® XP PROFESSIONAL,
40GB* HARD DRIVE AND CD-ROM DRIVE.

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 or Intel® Pentium® 4 Processor
- Microsoft® Windows® XP Professional
- 512MB DDR400 SDRAM
- 1.44MB floppy drive
- Intel® Extreme Graphics 2
- Gigabit LAN

Acer Veriton 5600GT-U-P3201

\$923

INTEL® PENTIUM® 4 PROCESSOR 540 WITH HT TECHNOLOGY
(3.20GHz, 1MB L2 CACHE, 800MHz FSB),
MICROSOFT® WINDOWS® XP PROFESSIONAL,
80GB* HARD DRIVE AND CD-RW DRIVE.

Acer Veriton 5600GT-U-N2800

\$745

INTEL® PENTIUM® 4 PROCESSOR 2.80GHz,
MICROSOFT® WINDOWS® XP PROFESSIONAL,
40GB* HARD DRIVE AND CD-ROM DRIVE.

Acer 15.0" Flat Panel Displays

A 15.0" LCD is appropriate when both space and budget are limited. It's suitable for most business applications as well as home activities, such as Web surfing and e-mail.



Acer AL1512

- 15.0" TFT LCD
- 1024 x 768 native resolution
- 450:1 contrast ratio
- 120° horizontal viewing angle
- 110° vertical viewing angle
- 2 x 1.5W integrated speakers
- Beige color

Acer AL1512

\$319



Acer AL1511

- 15.0" TFT LCD
- 1024 x 768 native resolution
- 350:1 contrast ratio
- 140° horizontal viewing angle

Acer recommends Microsoft® Windows® XP Professional.

Acer® Veriton® 3600GT

Business Productivity Tool - Compact Desktop

The compact form factor of the deep-charcoal Acer Veriton 3600GT makes it the perfect desktop solution when space is at a premium.



- Intel® Pentium® 4 Processor with HT Technology or Intel® Pentium® 4 Processor
- Microsoft® Windows® XP Professional
- 512MB DDR400 SDRAM
- 1.44MB floppy drive
- Intel® Extreme Graphics 2
- Gigabit LAN

Acer Veriton 3600GT-U-P3201

\$923

INTEL® PENTIUM® 4 PROCESSOR 540 WITH HT TECHNOLOGY
(3.20GHz, 1MB L2 CACHE, 800MHz FSB),
MICROSOFT® WINDOWS® XP PROFESSIONAL,
80GB* HARD DRIVE AND CD-RW DRIVE.

Acer Veriton 3600GT-U-N2800

\$745

INTEL® PENTIUM® 4 PROCESSOR 2.80GHz,
MICROSOFT® WINDOWS® XP PROFESSIONAL,
40GB* HARD DRIVE AND CD-ROM DRIVE.

Acer® AcerPower™ F2

All-Around Budget Performer

Proven technology, high-level reliability and expansion options help to make the AcerPower F2 minitower a sound investment for home, school or office.

- Intel® Pentium® 4 Processor or Intel® Celeron® D Processor
- Microsoft® Windows® XP Professional
- 256MB DDR SDRAM
- 40GB* hard drive
- CD-ROM drive
- 1.44MB floppy drive
- Intel® Extreme Graphics 2
- 10/100 LAN

AcerPower F2-U-C3000

\$448

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

AcerPower F2-U-N2800

\$590

INTEL® PENTIUM® 4 PROCESSOR 2.80GHz,
MICROSOFT® WINDOWS® XP PROFESSIONAL.



Acer 17.0" CRT Monitor

A dependable CRT monitor is a great value for education, small business and home use, providing crisp text and graphics.

- 125° vertical viewing angle
- 2 x 1.5W integrated speakers
- Black or beige color

Acer AL1511b
\$315

Acer AC713

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



Acer AC713
\$109

acer
Empowering People

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

acer

Acer® TravelMate® 8000 Cutting-Edge Performance



The Acer TravelMate 8000 incorporates the high-end features today's business pros demand, including Intel® Centrino™ Mobile Technology and the latest wireless technology. See stunning graphics with 128MB on-chip memory on the 15.0" SXGA+ display. Use the integrated 4-in-1 card reader for your pick of optional storage solutions. All this in a notebook that weights in at under 6.5 pounds.

Acer recommends Microsoft® Windows® XP Professional.

- Intel® Centrino™ Mobile Technology
- Microsoft® Windows® XP Professional
- 512MB DDR333 SDRAM
- Super Multi Write Plus (DVD-RW, +RW, -RAM) drive
- 4-in-1 card reader
- 15.0" SXGA+ (1400 x 1050) TFT display
- ATI® Mobility™ Radeon™ 9700 graphics, 128MB DDR
- 802.11b/g WLAN, Bluetooth™, Gigabit LAN, V.92 modem

Acer TravelMate 8006LMi

\$2,699

INTEL® PENTIUM® M PROCESSOR 755
(2.00GHz, 2MB L2 cache, 400MHz FSB),
MICROSOFT® WINDOWS® XP PROFESSIONAL
AND 80GB¹ HARD DRIVE.
(LX.T4206.092)

Acer TravelMate 8003LMi

\$1,999

INTEL® PENTIUM® M PROCESSOR 1.60GHz
(1MB L2 cache, 400MHz FSB),
MICROSOFT® WINDOWS® XP PROFESSIONAL
AND 60GB¹ HARD DRIVE.
(LX.T4206.028)

Acer Notebook/Tablet Service Upgrades Protect Your Valuable Investment

Quality is built into every notebook and Tablet PC Acer makes, and each comes with a one-year standard limited warranty.² It includes 24/7 (excluding some holidays) hardware technical support via toll-free phone plus a concurrent International Traveler's Warranty for travel outside the U.S. and Canada. Extra protection is available with one of these upgrades:

2-Year Extension of Limited Warranty (146.AB820.EX2)

\$99

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

It's a tough world out there, and accidents do happen—sticky spills, dangerous drops, nasty knocks—which is why you should consider the Total Protection Upgrade. It runs concurrently with the limited warranty and limited warranty extension and covers the cost of a replacement unit if your covered notebook cannot be repaired.

2-Year Extension of Limited Warranty + 3-Year Total Protection Upgrade (146.AD077.002)

\$199

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

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

² For a free copy of the standard limited warranty end-users should see a reseller where Acer products are sold or write to Acer America Corporation, Warranty Department, P.O. Box 6137, Temple, TX 76703.

For the name of a reseller near you or further information, please call Acer or visit our Web site:

800-571-2237

www.acer.com/us

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Better Backups



We test fast, vast, and cheap new storage options that take the pain out of keeping your vital data safe.

BY JON L. JACOBI

TEST Center

WHEN YOU HAVE PROBLEMS WITH YOUR SYSTEM, do you find yourself wishing you had done a better job of backing up? Honing your backup strategy can save you a lot of time and trouble—especially when you have to restore your system.

To help you choose your backup hardware and software wisely, we analyzed five of the most common backup scenarios, and evaluated eight all-in-one backup products in the PC World Test Center to identify the ones best suited for each task.

Whether you have a gargantuan hard drive, a laptop that needs backing up on the road, photos you want to preserve, multiple PCs to be backed up over a network, or just protection against a system catastrophe, these products and strategies can get you on the path to regular backups. We also examined ten backup applications you can use with that storage device on your desk, and found that some are better suited to certain tasks than others. ►

My PC has a huge hard drive. How do I protect all that data?

WITH DESKTOP HARD DRIVES now reaching 400GB, backing one up might seem like a herculean labor. But your most crucial data probably doesn't fill the entire drive—and even if it does, there are still ways to back it up.

Use an external hard drive: If you want to back up your entire system in one fell swoop, the easiest and cheapest-per-gigabyte approach is a capacious external USB 2.0 or FireWire hard drive. Such drives cost about \$1 per gigabyte, depending on the interface (dual-interface drives tend to cost a bit more than USB 2.0-only drives).

At the time we did our tests, Maxtor offered the largest-capacity external hard drive, the 300GB, \$300 Maxtor OneTouch. Pressing a button on the front of the drive launches Dantz's Retrospect Express 6.0 backup software on your PC. Once you've run the OneTouch setup wizard, the drive will back up anything you want at the touch of that button.

The default Retrospect script uses native file copying (without compression), which is convenient because you can browse and restore them using nothing more than Windows' Explorer. However, they require up to twice as much space as methods that employ compression.

To conserve space, you can set Retrospect to do a full traditional backup, compressing your data into a single proprietary file that you can restore only via Retrospect. The amount of space such compression saves depends on the type of files involved (for example, JPEG and MP3 files are already compressed, so they can't compress much further). Expect anywhere from 1.2:1 to 1.4:1 compression in most typical desktop file mixes.

With either native file copying or traditional backing up, you can arrange for a full backup of all your data; or, if the soft-

ware supports it, an incremental backup of only the files that have changed between backups (full or previous incremental backups), or a differential backup of all changed files since your last full backup. The difference between the last two: To restore from incremental backups, you must first copy back the initial full backup, and then restore each subsequent incremental backup. With the differential approach you restore just the full backup and the latest differential backup.

Most backup software—including the Retrospect software that came with our Maxtor drive—supports data verification. Verifying takes time, but it's essential: This is your confirmation that a backup contains an accurate copy of your data. During verification, the software typically reads the original and the copy, and compares the two. If they don't match, you'll have to redo your backup.

Using the traditional backup method, the OneTouch drive copied and verified 44.3GB of data in 2 hours, 18 minutes (for all tests, we used the default software settings). If you start your backup at the end of the day, you can even set Retrospect to shut down your PC automatically when the process is complete.

External hard drives have other conveniences, as well. For example, you can easily detach an external model from your system and store it separately, safe from power surges and viruses.

Use a removable-cartridge hard drive: Iomega's \$400 Rev 35GB/90GB Removable Hard Disk Drive uses removable hard-drive cartridges that are easier to store off-site than an external hard drive. But even though the software's compression can pack up to 90GB on a disk, be prepared to buy multiple disks if you're backing up a huge, full hard drive. Although well-funded businesses might

tip:

Rotate your backups between two drives. This way you have different restore points, so you can retrieve a file after an accidental deletion.



Maxtor OneTouch

★★★★☆ \$300

- 300GB, 7200-rpm hard drive
- USB 2.0 and FireWire interfaces
- Dantz Retrospect Express 6.0
- Required 2 hours, 18 minutes to back up 44.3GB of data using software default settings of data compression and verification.

find.pcworld.com/43244



Iomega Rev 35GB/90GB Removable Hard Disk Drive

★★★★☆ \$400

- 35GB cartridges (one in box; \$60 each)
- USB 2.0 interface
- Iomega Automatic Backup Pro and Symantec Norton Ghost 2003 for Rev
- Required 1 hour, 49 minutes to back up 44.3GB of data to two discs, using defaults of light data compression and no verification.

find.pcworld.com/43246



Sony Professional Disc for Data BW-RU101

★★★☆☆ \$3295

- 23GB rewritable and write-once cartridges (one rewritable disc in box; \$45 apiece)
- USB 2.0 interface
- NovaStor NovaBackup 7.1 and Software Architects Disc Drive TuneUp 3.1
- Required 4 hours, 10 minutes to back up 44.3GB of data to two discs, using defaults of data compression and verification.

find.pcworld.com/43248

not mind spending \$400 on the first drive and cartridge, and \$60 on each additional cartridge, those costs could be a deal-killer for a self-employed worker.

Rather than buying a stack of Rev disks, you could use a single Rev disk exclusively for backing up critical files—such as your data, e-mail, and bookmarks—thereby minimizing how many discs you need.

Our backup of 44.3GB of data using Iomega's Automatic Backup Pro software required two discs. Using light compression (the software lacks data verification), the Rev backed up our data set in 1 hour, 49 minutes—29 minutes faster than the Maxtor drive (which did have verification enabled). The Automatic Backup Pro sits in the background and updates your back-

up as changes occur or at scheduled intervals. Another perk: You can make a Rev disc bootable, which is handy for recovering from a system disaster.

Use a blue-laser optical drive: High-capacity blue-laser-based optical drives for use with PCs are just now becoming available. As such, the drives are expensive, but we tested Sony's Professional Disc for Data BW-RU101 drive to get a glimpse of the future of optical recording—and backup. Sony's ProData has several advantages: Its sturdy discs come in nearly air-tight cartridges that protect them from wear and from harmful elements like dust and fingerprints; and the slim, removable cartridges are far easier to transport than a high-capacity hard drive.

Blue-laser formats haven't been ironed out yet. Even if the standards were solidified, the \$3295 ProData drive and its 23GB recordable and rewritable disc cartridges (\$45 each) are pricey for the average user. Its main aim is to replace the magneto-optical (MO) storage still used for business backup and archiving.

Using the bundled NovaStor NovaBackup 7.1 software, the Sony ProData compressed, wrote, and verified our 44.3GB data set in 4 hours, 10 minutes—including one disc swap. That's slower than the Iomega and Maxtor hard drives, and worse than we were hoping for in view of the drive's 9-megabytes-per-second write rating, but still on a par with 4X DVD±RW, with far fewer disc swaps.

How do I protect the data on my laptop while I'm traveling?

BEFORE STARTING ON A JOURNEY, back up your laptop with one of the options discussed above. Once you're on the road, choose a weight-conscious backup option to keep your evolving data safe.

Back up online: If you expect reliable broadband access while traveling, or if you have relatively little data to back up, you can handle the task online. ISP mailboxes generally top out at 25MB or less; but MSN's Hotmail will soon offer 250MB of storage with its free service, and Google's free Gmail gives you 1GB—plenty of room for you to e-mail a copy of a multimedia-laden PowerPoint file to yourself. Online backup services provide utilities for uploading data from your system to their servers, and charge based on capacity. IBackup (www.ibackup.com), for example, charges \$15 per month for 4GB.

Back up to a USB flash memory drive: A USB flash memory drive is a handy, extremely robust means of backing up

1GB or less of data. These tiny wonders are becoming increasingly capacious and affordable: The M-Systems DiskOnKey Classic 512MB costs about \$100, half what it cost a year ago; and Memorex's 1GB TravelDrive sells for \$250.

Use a travel-size hard drive: As with desktop PCs, the quickest way to back up everything on your laptop is to use an external hard drive—albeit a small, bus-powered drive (no AC adapter required), such as CMS Products' pocket-size ABSplus Portable USB 2.0 drive. Alas, less weight means more cash: The 80GB version of the drive costs a whopping \$350 (\$4.37 per GB), versus just \$300 for the 300GB Maxtor OneTouch desktop drive.

The ABSplus has some added perks. Its bundled BounceBack Professional software lets you transform the unit into a bootable duplicate of your notebook's hard drive; if your notebook's main drive dies, you can boot from the ABSplus and

tip:

Organizing and storing your data in one location—for example, My Documents—makes it easier to manage and back up, especially when you're traveling.



CMS Products ABSplus Portable

★★★★☆ \$350

- 80GB, 4200-rpm hard drive
- USB 2.0 interface
- CMS BounceBack Professional 5.5
- Required 37 minutes to back up 15.9GB of data, with the software's default settings of data verification and no compression.

find.pcworld.com/43250

get back to work (your system BIOS needs to support booting from USB 2.0). Alternatively, if your laptop doesn't support booting from an external drive—and you have a screwdriver handy—you can remove the drive from the ABSplus enclosure and install it in your notebook.

The 4200-rpm ABSplus drive backed up and verified our 15.9GB notebook data set in a little over 37 minutes, without compressing data. By comparison, Maxtor's 7200-rpm OneTouch backed up the same data, but with both data verification ►

and performance-sapping compression, in 43 minutes—just 6 minutes more time.

Keep your data in sync: Synchronizing data between your laptop and your desktop PC or a network server ensures you'll always be working on the most recent version of a file, and it provides a quick means of creating a second, off-site copy of those files. Plus, when the desktop or server gets its regularly scheduled backup, so will your notebook data.

Windows' own built-in Briefcase syncing software is useful, but limited. It only recognizes the files that have changed

between syncs; it doesn't track file additions or deletions. By contrast, dedicated syncing software monitors additions and deletions as well as updated files. SimpleTech's \$19 StorageSync Professional 1.4 lets you control only whether or not to overwrite files. VCom's Folder Synchronizer, part of the company's \$40 PowerDesk Pro 5 file management software, lets you specify that you want to copy only the newest files between folders. The most impressive features of Michael Thummerer's \$25 AllSync Home Edition are its preview function (which lets you

see what files are being copied and deleted during a sync) and its preset tasks such as mirroring and copying new files.

Synchronization utilities alert you to conflicts and give you ways to resolve them, but you have to be careful not to delete data accidentally. Before syncing, confirm that each system's date and time are set identically, so you don't accidentally overwrite the wrong file. Also, choose files for syncing carefully: With some application files, such as a Microsoft Outlook .pst mail database, you could end up overwriting your most current data file.

SOFTWARE

CHOOSE THE RIGHT SOFTWARE FOR YOUR

WE RECOMMEND a two-part approach to system backup. In the first phase, create an image file of your boot drive so you can recover from catastrophe (see page 121 for more). In the second phase, protect your data regularly using traditional backups or native file copying.



TRUE IMAGE 7 puts a colorful face on the process of creating image backups.

For imaging software, two worthy choices are Acronis's \$50 True Image 7 and Symantec's upcoming \$70 Norton Ghost 9 (we looked at a beta of this program, and found it borrows heavily from Drive Image 7, which Symantec gained during its recent acquisition of PowerQuest). Both programs offer intuitive Windows interfaces, excellent graphical user interfaces for use during recovery when your system won't boot, plus full and incremental images.

The software you use during the second phase of your backup strategy depends entirely on what you're backing up to and what features you need (see table for more). Despite its high \$129 price, Dantz's Retrospect Professional 6.5 garnered a

slick-looking app that simplifies selecting, backing up, restoring, and syncing files (graduate to the \$19 Pro 1.4 version to get compression and password protection). But Argentum Backup 2.1 impressed us more, thanks to its clean design, use of standard .zip compression, and ability to keep multiple versions of each backup. Both programs work only with hard drives (Argentum works with optical drives as long as third-party packet-writing software is installed).

If you want features like encryption and the ability to back up to optical media, you'll have to spend a few more bucks. LI Utilities' \$50 Win-

Best Buy because it does virtually everything you'd expect from a backup program. Our pick for the budget Best Buy is Argentum's \$25 Backup 2.1, due to its ease of use.

The steal of the review, though, is the free standard edition of SimpleTech's StorageSync,

Backup 1.85 supports optical drives, and it offers superstrong 256-bit AES encryption, too. Ahead's Nero BackItUp 1.2 (part of the \$100 Nero 6 Ultra Edition CD/DVD suite) and NTI's \$80 BackupNow 3 each offer encryption and frequent driver updates to support new optical drives. BackItUp is powerful, but sometimes counterintuitive to use; NTI's easygoing step-by-step wizard is more straightforward, but it lacks native file copying.

Uniquely, CMS Products' \$79 BounceBack Professional 5.5 software can create a bootable copy of your hard drive without imaging. Regrettably, however, the program needs an interface overhaul—separate modules handle the backup and



CMS'S BOUNCEBACK Professional has a handy pop-up box to walk you through your backups.

I'm a packrat with tons of photos and documents. What's best for long-term storage?

TO PRESERVE YOUR FILES for posterity, archive them on removable media that you can store off site, away from your home or office. DVD media is perfect for this job: It's cheap enough to permit you to make multiple copies of your backups, and both the write-once and rewritable flavors of DVD media retain their integrity better than magnetic media, such as

tape and hard-drive platters that are constantly accessed.

Archive to write-once DVD:

Inexpensive, easy-to-store recordable DVD-R or DVD+R is your best bet for archiving. Disc manufacturers claim that write-once media has a shelf life of about 60 years, based on simulated, accelerated-life tests; that's far longer than

tip:

Some backup programs, including those from Stomp and Dantz, maintain catalogs to help you organize multidisc backups. This makes it easier to find and restore data.

magnetic media. Nonetheless, if you're archiving irreplaceable data, we recommend backing up your data to two discs, keeping the copies in different locations, and checking them periodically to confirm that the content is intact.

If your data fits on a single DVD, using standard DVD mastering software to back up is fine. Otherwise, use backup software, which can span discs and perform incremental or differential backups. ►

BACKUP STRATEGY

restore chores. Also, with no compression, encryption, or support for tape, its price tag is too steep.

NovaStor's \$80 NovaBackup 7.1 has a friendly, wizard-driven interface and wide device support (including the Sony Professional Disc for Data drive), but it's pricey considering it can't create disaster recovery boot discs.

A much better value is Stomp's \$60 BackUp MyPC 5 Deluxe—which handles tape drives as well as optical and hard drives. With its disaster recovery features and superclean, intuitive interface, BackUp MyPC is a great program, but it has a few limitations. It lacks native file copying, and it can't shut down your PC after an end-of-day or overnight backup, a few of the features offered by our second Best Buy, Dantz's Retrospect Professional 6.5.

Retrospect's interface is inelegant yet functional. We liked how it automates restoring an incremental backup (unlike other programs, which might require you to restore several incremental backups before you revert to the date you want). It's also the only program to include two clients, for backing up two other computers that reside on the same network.

PREMIER BACKUP PACKAGES

BACKUP SOFTWARE	Price ¹	Supported media	Comments
Acronis True Image 7 find.pcworld.com/43138	\$50	• Optical discs, hard drive	Well designed, easy to use—one of the best disk-imaging programs we've seen. Also works from within Windows. Not for general backups. (★★★★☆)
Ahead Nero BackitUp 1.2 (part of Nero 6 Ultra Edition suite) find.pcworld.com/40733	\$100	• Optical discs, hard drive	The backup component of Nero 6 Ultra Edition practically guarantees compatibility with optical drives. Doesn't support tape. (★★★★☆)
Best Buy Argentum Backup 2.1 find.pcworld.com/43124	\$25	• Optical discs, ² hard drive	Attractive program makes it easy to back up computer settings, files, and user data like Favorites and Outlook e-mail. It uses .zip file compression. (★★★★☆)
CMS Products BounceBack Professional 5.5 find.pcworld.com/43126	\$79	• Hard drive	Can create a bootable copy of your hard drive without imaging. It's fast, but its design—with a multitude of single-function modules—is confusing. (★★★★☆)
Best Buy Dantz Retrospect Professional 6.5 find.pcworld.com/39344	\$129	• Optical discs, hard drive, tape	The most expensive program here has advanced features, like scripted backups and automatic system shut-down, but a rough-edged interface. (★★★★☆)
LI Utilities WinBackup 1.85 find.pcworld.com/43136	\$50	• Optical discs, hard drive	Exceptionally simple to use, with a pop-up wizard, and an interface that describes the software's functions in plain English. (★★★★☆)
NovaStor NovaBackup 7.1 find.pcworld.com/43134	\$80	• Optical discs, ³ hard drive, tape	Full-featured program, but it lacks disaster recovery. The company says that this feature will be in version 7.2, due this fall. (★★★★☆)
NTI BackupNow 3 find.pcworld.com/43132	\$80	• Optical discs, hard drive	Constant CD/DVD driver updates make it a strong choice for optical users. But for \$20 more, you can buy Ahead Nero 6 Ultra Edition with Nero BackitUp. (★★★★☆)
SimpleTech StorageSync Pro 1.4 find.pcworld.com/43130	\$19	• Hard drive	Nicely designed, easy-to-use program for backing up to, or syncing between, hard drives. Won't recognize network locations or mapped network drives. (★★★★☆)
Stomp BackUp MyPC 5 Deluxe find.pcworld.com/43128	\$60	• Optical discs, hard drive, tape	The interface is easy to navigate, and the program is packed with features. Still, we wish it could perform native file copying. (★★★★☆)

See find.pcworld.com/43508 for more details. FOOTNOTES: ¹ As of 6/29/04. ² Software doesn't natively support optical media; needs packet-writing software installed from a third party, such as Roxio or Ahead. ³ Supports Sony Professional Disc for Data.

In our tests, the \$180 Sony DRU-700A took 1 hour, 34 minutes to write and verify 8GB of data to two 8X DVD+R discs, and 2 hours, 9 minutes to back the data up to one 2.4X DVD+R Double Layer disc. Ahead's Nero BackItUp spent 22 minutes compressing the data before mastering it (other packages, such as Retrospect, use packet writing), and it spent about an hour on verification. Actual write times were about 15 minutes and 45 minutes, respectively.

We recommend that you skip compression when using backup software with optical media. Native file copying is faster, and it ensures that any application in the future, including Windows' Explorer, can read your archive discs—an important consideration if you're putting the discs into deep storage. We also suggest enabling data verification to confirm that the data transferred to the disc safely, with no errors caused during the burn process.

Use rewritable DVD: If you constantly update your data—for example, by frequently adding new scans to a family photo album—rewritable DVD is among the safer ways to store it. Surprisingly, the most suitable media for this task is DVD-




LG Electronics Super-Multi GSA-4120B
★★★★☆ \$200

- 12 DVD+R, 4X DVD+RW, 2.4X DVD+R Double Layer; 8X DVD-R, 4X DVD-RW; 5X DVD-RAM
- Internal IDE drive
- Ahead Nero Express 6.3
- Required 2 hours, 25 minutes to back up 8GB of data to two 5X DVD-RAM discs, using defaults of compression and verification.

find.pcworld.com/43252

RAM, which has a higher reliability specification (up to 100,000 rewrites) than DVD±RW (rated for up to 1000 rewrites); all three rewritable formats have a lower longevity rating (about 30 years) than write-once DVD. DVD-RAM has superior defect management, too, so the media can better compensate for errors or scratches on the disc. Also, DVD-RAM discs have a scratch-resistant coating that you rarely find in other DVD formats.

Our tests show LG Electronics' \$200, 5X-rated Super-Multi GSA-4120B is the



Sony DRU-700A
★★★★☆ \$180

- 12X DVD+R, 4X DVD+RW, 2.4X DVD+R Double Layer; 8X DVD-R, 4X DVD-RW
- Internal IDE drive
- Ahead Nero Express 6.3 (version includes Nero BackItUp)
- Required 1 hour, 34 minutes to back up 8GB of data to two 8X DVD+R discs; 2 hours, 9 minutes to back up to one 2.4X DVD+R DL disc; and 1 hour, 42 minutes to back up to two 4X DVD+RW discs; all tests used the default settings of data compression and verification.

find.pcworld.com/43262

fastest DVD-RAM drive yet, but with compression and verification enabled on Nero BackItUp (a \$50 upgrade to the bundled version of Nero), it took 2 hours, 25 minutes to back up 8GB of data. That's 43 minutes slower than the time we recorded for 4X DVD+RW—a difference caused in part by DVD-RAM's hardware read-after-write verification to ensure that the data wrote to the disc correctly. ▶

OPTICAL DISCS

RECOVER UNREADABLE CDs AND DVDs

YOU POP A backup CD or DVD into your drive, looking for two-year-old tax data, but Windows stalls before finally replying that it can't read the disc. Don't

panic: You may still be able to rescue the data on it. The trouble might be due to an incompatibility between the drive and the disc. Try upgrading your drive's firmware, or read-



DISC BUFFERS from Digital Innovations (top) and Memorex.

ing the disc in another drive. Older, slower drives can sometimes read damaged discs that newer models can't, so if you have one lying around, cherish it, don't toss it.

If your disc is scratched or has suffered other minor damage, you can try using a recovery application such as InfinaDyne's \$50 CD/DVD Diagnostic, or a physical repair product such as Memorex's \$30 OptiFix Pro or

Digital Innovations' \$50 Skip Dr. But InfinaDyne's software won't help if the disc's multiple tables of contents in the inner portion of the disc are too damaged, and OptiFix Pro and Skip Dr. can correct only minor scuffs (and clean discs). Another option: Use TDK's specially coated Armor Plated DVD-Rs, which can withstand light scratches and abrasions, but cost three times as much as regular discs.

The last-ditch solution is a data recovery service such as CBL Data Recovery Technologies (www.cbltech.com) or On-Track Data Recovery (www.ontrack.com). Both will recover data from optical discs, but prices start at \$500 per disc.



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SRV PG 9304



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SRV PG 9/04



Snap Appliance Snap Server 2200

★★★★☆ \$1750

- 500GB total storage (two 250GB, 7200-rpm hard drives)
- Gigabit ethernet interface
- Symantec PowerQuest DataKeeper
- Required 58 minutes to back up 8GB of data, with the software's default of data compression enabled (no verification).

find.pcworld.com/43268



Ximeta NetDisk

★★★★☆ \$230

- 160GB, 7200-rpm hard drive
- USB 2.0 and ethernet interfaces
- NetDisk SureSaver 1.21
- Required 15 minutes to back up 8GB of data (without data compression and verification).

find.pcworld.com/41231

I have several computers on my small network. How can I back them up?

ETHERNET-CONNECTED STORAGE is a great way to protect against drive failure or accidental file erasure. We suggest that you supplement it with off-site backups, since any always-connected drive is necessarily vulnerable to power surges and security attacks.

Back up to an ethernet hard

drive: A new breed of external drives has an RJ-45 connector, so you can attach the drive directly to your router and share it via the network. Ximeta's \$230 NetDisk provides 160GB of network storage, at just a small premium (\$30) over an ordinary USB 2.0 drive. The NetDisk's included client driver registers the device as a local drive instead of as a network drive, which makes it visible even to backup programs that don't see your network. The drive sped through our tests, backing up 8GB in 15 minutes (using the bundled SureSaver 1.21 full-backup utility).

And if you already own an external USB 2.0 hard drive, Linksys's \$99 Network Storage Link lets you attach up to two drives to your router. You configure the

NSL via a Web browser, and the drives will show up as network locations.

Use network-attached storage: Conventional network-attached storage, such as Snap Appliance's \$1750 Snap Server

2200, appears as a network drive and can be administered via a Web browser.

The full-featured 2200 has dual 250GB hard drives that you may configure with RAID 1 for 250GB of mirrored storage or stripe with RAID 0 for 500GB of storage. Plus, the 2200 supports various operating systems and network protocols, so

you can back up data from Mac, Linux, and even ancient Windows systems. The unit ships with Symantec's PowerQuest DataKeeper, which performs a full backup (sans system files and settings) of each system, and then back up changes to your hard drive as they occur.

In our tests, the Snap Server 2200 installed easily and took 58 minutes to do an initial full backup of 8GB of data over a 10/100-megabit-per-second ethernet network, using compression and verification.

tip:

If your backup software can't see a network drive, map the desired network location to a drive letter by right-clicking XP's *My Computer* icon and selecting *Map Network Drive*.

tip:

Create an image file after you've installed Windows and your core applications; this makes recovery a snap.

What's the quickest way to get up and running following a catastrophe?

RETURNING YOUR COMPUTER to a pre-catastrophe state involves replacing the machine's operating system and boot information as well as its other data. Some backup programs, such as those from Dantz and Stomp, create boot discs so that you can then restore your most recent backup. But we found two options that were less tedious.

Make an image of your drive: The easiest and speediest way to recover from a data disaster is to restore your system with a

drive image created by a program such as Acronis's \$50 True Image 7, or Symantec's \$70 Norton Ghost 9, due out soon. Image files contain everything in a single convenient package: boot information, the operating system, and all of your programs, settings, and data. The catch: You must image an entire drive.

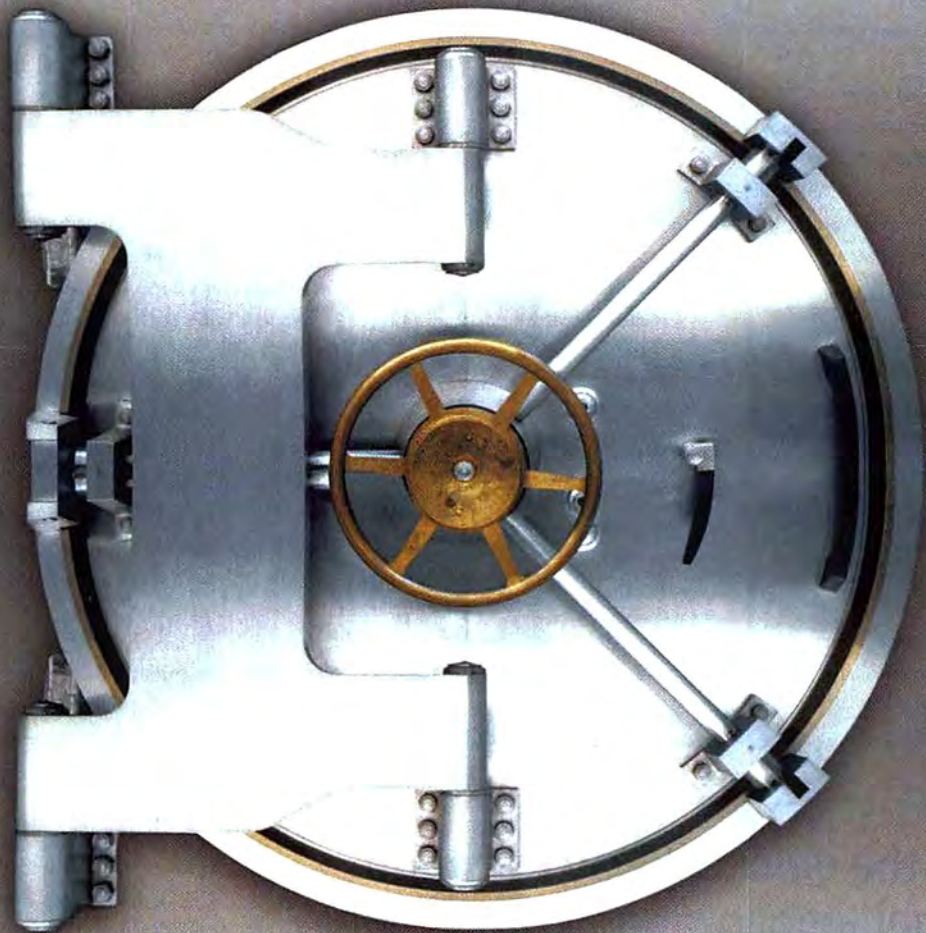
Once you have a disc image, the recovery process

is simple: Boot with the rescue floppy, CD, or DVD created by the imaging program; restore the image; and reboot.

Create a bootable drive. CMS Product's \$79 BounceBack Professional 5.5 software can create a bootable backup on a hard drive, so you can skip over restoring a backup. In the event of a meltdown, you just plug the drive in and start your PC—but only if your system's BIOS supports booting from USB or FireWire devices. ■

Jon L. Jacobi is a frequent contributor to PC World.

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Windows XP's Big



BY PAUL THURROTT



With **Service Pack 2**, Windows gets an array of much-needed **patches, tweaks,** and **tools**, all rolled into one free download. Here's what's in it for you. ►

IT'S AN UNSAFE WORLD OUT THERE FOR Windows-based computers. Microsoft wants to address the problem with its new megapatch, Service Pack 2 for Windows XP. Does it succeed? Not entirely. But the big fix does so much to close security holes and to make protecting your PC simpler that it's still an essential upgrade.

AS WE WENT TO PRESS, Microsoft was predicting that SP2 would get to consumers in August. This giant patch—the biggest single update since Windows XP itself was released—promises to cure many of the known security ills that have befallen XP since it debuted in late 2001, and to preemptively put a stop to a still-unknown number of others.

But it's not just a big security fix; SP2 makes Wi-Fi and Bluetooth networks easier to navigate, adds new features to Tablet and Media Center PCs, and updates XP's multimedia components. It all comes in a 220MB package that (at press time, when we saw only the Release Candidate 2 beta version) installs in under an hour over broadband.

We tested a beta version of SP2 on a handful of systems and encountered no major problems. However, it's impossible to know how the finished product will do when people load it on millions of different computers built in millions of different configurations. You should be sure to take the usual precautions whenever making a major update: Back up crucial files, create a System Restore point before you start—and don't begin the installation if you have a pressing deadline looming. Microsoft will provide free phone support for SP2 (see find.pcworld.com/43222 for details).

The new Security Center Control Panel puts all XP security tools, even third-party antivirus products, within reach.



Security Improvements

AMONG THE MOST important security upgrades in SP2 are a major overhaul to Windows' built-in firewall and the addition of a Security Center Control Panel, a single starting point offering convenient links to several security features. The new tools will help safeguard even the least-protected systems against the most common kinds of Internet attacks, and will also provide a baseline of fundamental security technologies that will (in theory) shield PCs from future attacks.

Built-In Firewall Gets Refreshed

THE WINDOWS FIREWALL in SP2 replaces the lackluster (and well-hidden) Internet Connection Firewall—a part of the operating system since Windows 2000. The utility can block probes and attacks coming in from hackers or worms over the Internet, but it can't inhibit the ability of programs already residing on your hard drive to send data out to the Internet as the free ZoneAlarm firewall can.

Outbound protection can help staunch the spread of spyware and worms from an infected machine to others.

With inbound protection alone, the Windows Firewall is significantly less useful than one with both inbound and outbound controls. Lacking outbound controls, you'll likely still need to use a separate free or commercial software firewall for a while longer; there's no good reason to use the Windows Firewall as your sole protection.

That said, SP2's Windows Firewall is still a valuable contribution to PC safe-

Windows Road Map

WITH A RANGE OF SPECIALTY Windows operating systems (and of products tied in to them), it can be hard to keep track of planned future releases of Microsoft software. Here, then, is the road map for Windows, circa summer 2004. Most of the dates are estimates from analysts and Microsoft observers; the company is reluctant to officially say when an update will arrive. Also, as with any Microsoft project, there's a good chance that delays will occur.

2004

Windows Media Player 10

Expected late summer 2004:

WMP 10 will have a simpler interface plus support for Microsoft's digital rights management, which will enable music services to offer downloadable tunes.

Windows XP Media Center Edition

Expected late 2004: This

update to Media Center Edition 2004 (code-named "Symphony") promises some pretty cool new video and audio features.

ty. Enabled by default, the Windows Firewall will protect those computers whose users fail to get a full-featured software firewall of their own.

The new Windows Firewall is also more configurable than its predecessor, with options that can block some applications from receiving data over networks where you can't be assured of the security, such as wireless hotspots in cafés or airports.

Security Center Ties It Together

THE MOST OBVIOUS user interface change in SP2 is the Windows Security Center, a Web page-like dashboard for configuring various settings and



launching security applications, such as the Windows Firewall. It's a good start at developing a one-stop place to manage security on your PC, but (at least in the beta version of SP2 that we looked at) it still isn't comprehensive enough.

The Security Center links you to the Windows Firewall, puts settings within easy reach, and can tie in with third-party antivirus software to alert you when your definitions are too old—a nice touch. However, you still have to launch the individual applets (or the components that control those features) individually if you want to change the settings that determine how they behave.

In SP2's Security Center Control Panel, Microsoft places emphasis on the Automatic Updates feature, which can be set up to download (and install) a wide range of patches to your PC whenever they become available. In the final release of SP2, the panel interface will look slightly different from what is shown here.

SP2 Urges Automatic Updates

THE FIRST TIME you boot your PC after you install SP2, but before Windows loads the desktop, SP2 makes a full-screen plea for you to enable Automatic Updates. Our advice: Enable Automatic Updates when Windows requests that you do so. Right now, the security risk of not completely patching your system outweighs the risk of encountering problems caused by a patch that may contain new bugs. The only exception may be for people at large companies who run one or more custom-made applications on their PCs. IT managers will have to do some testing before rolling out a patch on employees' computers.

IE (Finally) Gets Several Big Fixes

ONE OF SP2's most useful features is the pop-up (and pop-under) ad blocking it adds to Internet Explorer, letting you stop any unwanted browser windows from spawning. IE will permit pop-ups you initiate purposefully, such as when you click a link that triggers a new window, and it will allow you to view blocked pop-ups via a handy (and surprisingly unobtrusive) Information Bar.

Less successful is IE's new Manage Add-ons feature, which permits you to disable unwanted browser plug-ins.

Some plug-ins, such as adware programs, can be quite malicious. While the ability to disable undesirable plug-ins is laudable, Manage Add-ons is unable to delete them completely—a silly limitation when many PCs already have useless (and potentially dangerous) spyware or adware plug-ins installed, and the process to remove plug-ins is tedious and user-unfriendly (click *Tools*•*Internet Options*, click the *Settings* button, click the *View Objects* button, select the plug-ins that you don't want, and press the <Delete> key).

Windows XP 64-Bit Edition for 64-Bit Extended Systems

Expected late 2004 or early 2005: This mouthful will be optimized to take advantage of AMD and Intel 64-bit processors.

2005 Longhorn Beta 1 and 2

Expected in 2005: The beta version of the next Windows (code-named "Longhorn") will apparently offer Microsoft's futuristic, 3D "Aero" user interface.

2006 Longhorn Release Candidates

Expected early 2006: As the release approaches, Microsoft will lock down the feature set and work on performance and fit-and-finish issues.

Longhorn Ships

Expected mid- to late 2006: The new OS promises security features and hack-proof components that more closely resemble those in Linux and Mac OS X than those in past Windows.

SP2 Blocks Some Executables

THE NEW Safe Attachment Execution Service will prevent you from running potentially dangerous types of files that you either download through a Web browser or receive through e-mail or an instant message. Applications in XP that support downloading attachments—IE, Outlook Express, and Windows Messenger—will be supported immediately, but third-party software companies will need to build support into their applications.

The feature works the same way in all three XP applications: Any file you download that the service deems unsafe (such as a .pif, .scr, or .exe file) will initially be *soft-blocked* (you'll see a pop-up warning message about the dangers of downloading such an attachment). If you downloaded the file through IE, you'll see a second warning message when you try to run or open the download, asking if you're really, truly sure you want to run it. Click the *Run* button, and you're good to go.

But if you're using Outlook Express or Windows Messenger, and you override the first warning message, the file will appear on your hard drive in a *hard-blocked* state—it won't run unless you deliberately go into that downloaded program's Properties dialog box and manually click a button labeled *Unblock* within its Advanced Properties tab.

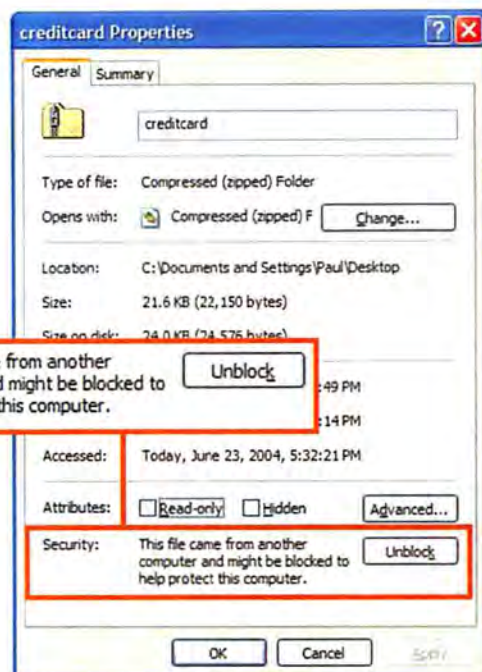
SP2 also introduces fundamental changes (called NX, or *No eXecution*) that will make it more difficult for hackers to exploit certain kinds of common vulnerabilities; the most important of these additions, however, work only on PCs with 64-bit processors, such as AMD Athlon-64-based systems or computers using Intel's upcoming 64-bit Pentium 4 and Xeon CPUs. PCs running on common 32-bit Intel or AMD chips get no benefit.

Though SP2 dramatically raises the bar on security, it provides you no way to clean up after a successful malware incursion; you will still need to run an up-to-date antivirus utility and a spyware removal tool to rid your computer of assorted junk that shouldn't be there in the first place.

Security: This file came from another computer and might be blocked to help protect this computer.

Unblock

If you download executable files, Windows will warn you about the risk. After the warning, you may have to tweak the file's properties before XP will allow it to run.



Functional Improvements

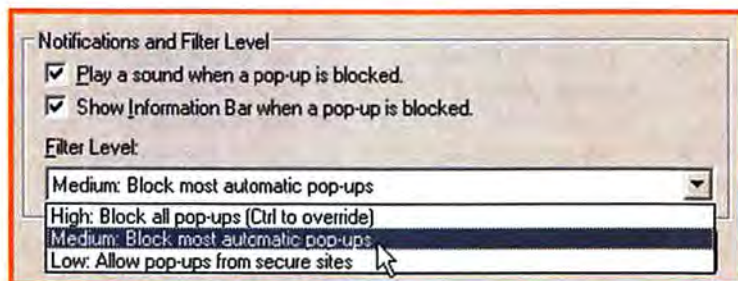
OF COURSE, Windows XP Service Pack 2 isn't solely about security fixes; Microsoft couldn't resist inserting a few other interesting new features into this update.

One is a *mea culpa* of sorts: In the original XP release, Microsoft integrated support for wireless networks, dramatically simplifying the process of configuring and connecting to wireless networks. But XP made it too easy to connect to *insecure* wireless networks, so in XP Service Pack 1 the company added an annoying click-through dialog box. Every single time you tried to connect to a Wi-Fi network without security, you would get a warning. Outraged users found that they couldn't even connect to their own home networks easily anymore because they had no way to turn the alert off.

In SP2, Windows still raises an alarm the first time you connect to a wireless network that has no security turned on, but you get a chance to override its objection permanently. Once you do so, every time you try to connect to the same insecure network thereafter, Windows won't complain.

The new Wireless Network Connection applet (which appears when you right-click the wireless adapter's system tray icon and choose *View available wireless networks*) is a model of clarity compared with the previous version. Now, at a glance, you ▶

With SP2, Internet Explorer finally catches up with the rest of the browser world, adding a pop-up blocker and the ability to turn off any plug-ins you don't want.



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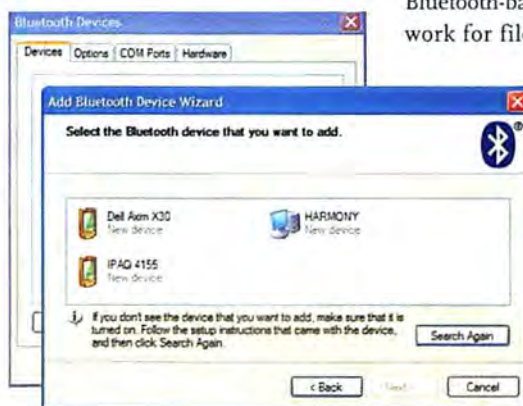
can peruse the available wireless networks, determine their relative signal strengths, see if they're protected, and easily access the settings for the wireless adapter, among other features.

Also, SP2's Wireless Network Setup Wizard dramatically improves the process of initially setting up and connecting to wireless networks. The software even includes a way to move wireless settings from PC to PC using USB flash drives, a surprising but welcome new capability.

XP's wireless network support still lacks some features that are found elsewhere. Mac OS X, for example, makes setting up a peer-to-peer wireless network very easy. This functionality is next to impossible to replicate in XP, and the Wireless Network Setup Wizard does nothing to help.

No More Bluetooth Blues

BLUETOOTH USERS, REJOICE. XP SP2 includes Microsoft's Bluetooth Client 2.0, a dramatic improvement to its Client 1.1, a tool that supported only Microsoft's own Bluetooth keyboards and mice. Version 2.0 introduces a Control Panel applet (which appears only if you have a Bluetooth radio in your PC), a well-designed wizard for discovering and configuring Bluetooth devices, and a tray icon to help you access the Client and monitor connected Bluetooth devices. The wizard also allows you to choose a passkey for any connected Bluetooth device—an important feature that "locks" the device to the PC so that the device can



With SP2's intuitive Bluetooth Device Wizard, Microsoft finally adds standard support for a wide variety of Bluetooth devices. Previously, XP supported only Microsoft's own Bluetooth products.

communicate only with that single computer.

From the Bluetooth tray icon, you can easily launch the Bluetooth Devices Control Panel applet, send or receive files with compatible devices, join a Bluetooth-based Personal Area Network for file sharing, or perform other related tasks.

You can also selectively suspend individual Bluetooth devices, which can conserve a laptop's battery power. It's as straightforward as it should be, and for the first time the Bluetooth support in XP rivals

that of OS X, previously the undisputed Bluetooth champ. Linux, by comparison, offers only rudimentary support for Bluetooth devices.







Tablet PC Edition Gets a Face-Lift

USERS OF WINDOWS XP Tablet PC Edition who install SP2 will find their system updated to Windows XP Tablet PC Edition 2005. Included is a new context-sensitive Tablet Input Panel, which is what Microsoft calls the dialog box that appears whenever you use a stylus to insert text in a document. In earlier versions, the TIP always had a fixed location at the bottom of the screen; now it appears ►

SP2 COMPARISON

SHOOT-OUT AT THE OS CORRAL: XP VS. THE OTHERS

MAC OS X AND LINUX HAVE IMPROVED STEADILY OVER THE YEARS and are superior to Windows in some ways. We looked at the two alternatives and offer our thumbs-up, thumbs-down verdict on how they compare with Windows in significant areas.

OS	Security	Functionality	Media handling
Mac OS X 10.3	 <ul style="list-style-type: none"> Mac OS X is much less likely to be hacked than Windows XP. With tougher security policies, Mac OS X forces users to supply administrator-level passwords when performing certain system tasks, like installing software. 	 <ul style="list-style-type: none"> Though Mac OS X is pretty, it's still not much easier to use than Windows, with few obvious starting points or helpful guides. Like Windows, it remains a standard desktop OS, circa 1984. Despite simpler networking and support for lots of hardware, true software compatibility with Windows remains elusive. 	 <ul style="list-style-type: none"> Mac OS X offers a more complete package of multimedia applications (or you can download them for free), and they play virtually any kind of media file. Apple's bundled iLife suite of sophisticated media authoring tools is unparalleled in the Windows world.
Linux (2.6 kernel)	 <ul style="list-style-type: none"> With Unix-like underpinnings and pervasive security, Linux operating systems generally are much less likely to be hacked than Windows. Linux still lags Windows and the Mac OS in ease of use, making some security features difficult to implement. 	 <ul style="list-style-type: none"> The most recent versions of the GNOME and KDE desktop environments rival the look and feel of Mac OS X. Though Linux's hardware and software compatibility has improved dramatically over the years, it still lacks Windows' universal hardware compatibility. Networking setup isn't always as easy as it could be, but it has gotten a lot better. 	 <ul style="list-style-type: none"> Most Linux distributions include digital media applications (or you can download them for free), and they play virtually any kind of media file. With fewer Linux-compatible hardware media players, Linux doesn't offer the wide range of options that Windows and Mac users enjoy.

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- SSL Secure Server
- Optional Dedicated SSL Certificate
- Hosted on 1&1 Linux platform

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- 1&1 WebStatistics
- In2site Live Dialogue
- 1&1 Newsletter Tool
- 1&1 WebElements

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- Handling of unlimited domain names
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- 50 subdomains

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directly below wherever you want to insert some text. The new TIP also adds real-time handwriting recognition, so you can correct the text before it's transmitted to the underlying application.

Digital Media & Multimedia

THOUGH MICROSOFT will ship its most dramatic digital media components of 2004 (such as Windows Media Player 10) separately, XP Service Pack 2 bundles a number of multimedia upgrades that have already been released individually, including Windows Media Player 9 and Windows XP Media Center Edition 2004.

Media Player Adds Online Links

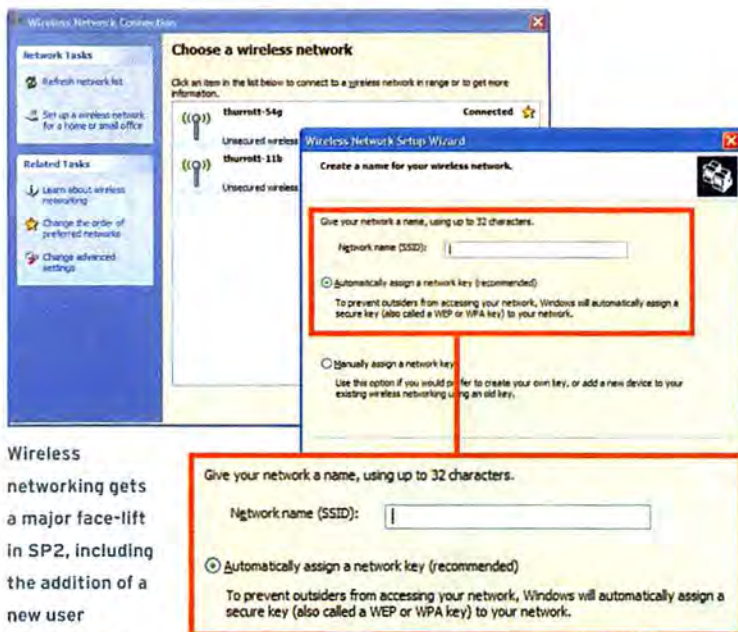
IN LATE 2002 Microsoft shipped a major media player upgrade: Windows Media Player 9 Series. It has been available as an optional download since then, but with SP2 it is now a required, core part of the operating system. This version of Media Player is a decent, if overly complex, all-in-one player that offers pervasive links to online music and video. Compared with Apple's elegant iTunes, which provides much of the same functionality, Windows Media Player 9 suffers from a confusing user interface—for example, a bizarre array of tiny buttons that you must hover over with the mouse pointer just to figure out what they do.

Media Center Edition Evolves

USERS WHO UPGRADE their Media Center PCs will see their OS rebranded as Windows XP Media Center Edition 2004, a major update that refines the user experience, adds support for wide-screen displays and FM radio, improves the program guide and recording features, and integrates online services. Media Center Edition 2004 is a must-

Wireless networking gets a major face-lift in SP2, including the addition of a new user interface and help for those who use Wi-Fi security features.

SP2 moves a Tablet PC's Tablet Input Panel to a location directly below where you want to insert text, rather than at the bottom of the window.



have. And a couple of months after the release of SP2, another significant upgrade to Media Center Edition will add even more nifty features.

Service Pack 2: Patch Imperfect?

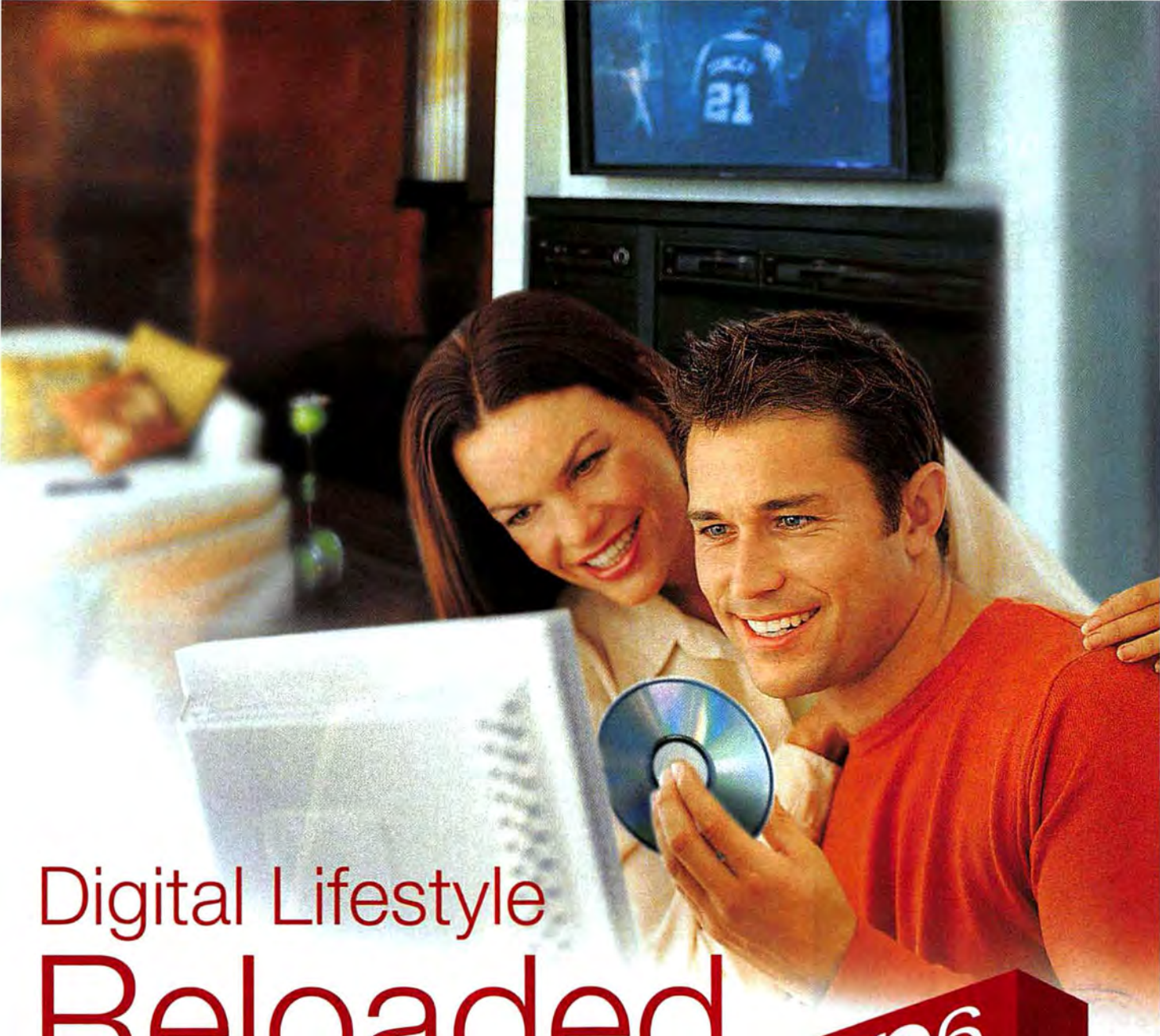
OVERALL, WINDOWS XP Service Pack 2 substantially improves the state of Windows. Microsoft's proactive approach to security in this patch—implementing some precautions at all times, even at the cost of functionality—is a welcome change of priorities. However, even though the Windows Firewall, the Internet Explorer pop-up blocker, and the IE Manage Add-ons feature address many of the security problems of today, SP2 merely scratches the surface of potential future security issues.

Until the Windows Firewall can block outbound connections, for instance, it will never fully replace a third-party application. And compared with competitors such as Linux and Apple's Mac OS X, Windows XP—even with SP2 added to it—still has a long way to go before it can ensure bulletproof security for every PC it is installed on.

Nevertheless, the bigger picture—that the security features in XP SP2 will create a new baseline of security for all Windows users—is inescapable. Even though SP2 can't fix every security problem in Windows now or in the future, the hope is that hackers won't have as easy a time breaking into an SP2-patched Windows XP system. And if every XP computer were patched with SP2, then the Internet as a whole might for a while be safer. ■

Paul Thurrott is the news editor for Windows & .NET Magazine and runs the SuperSite for Windows Web site (www.winsupersite.com).





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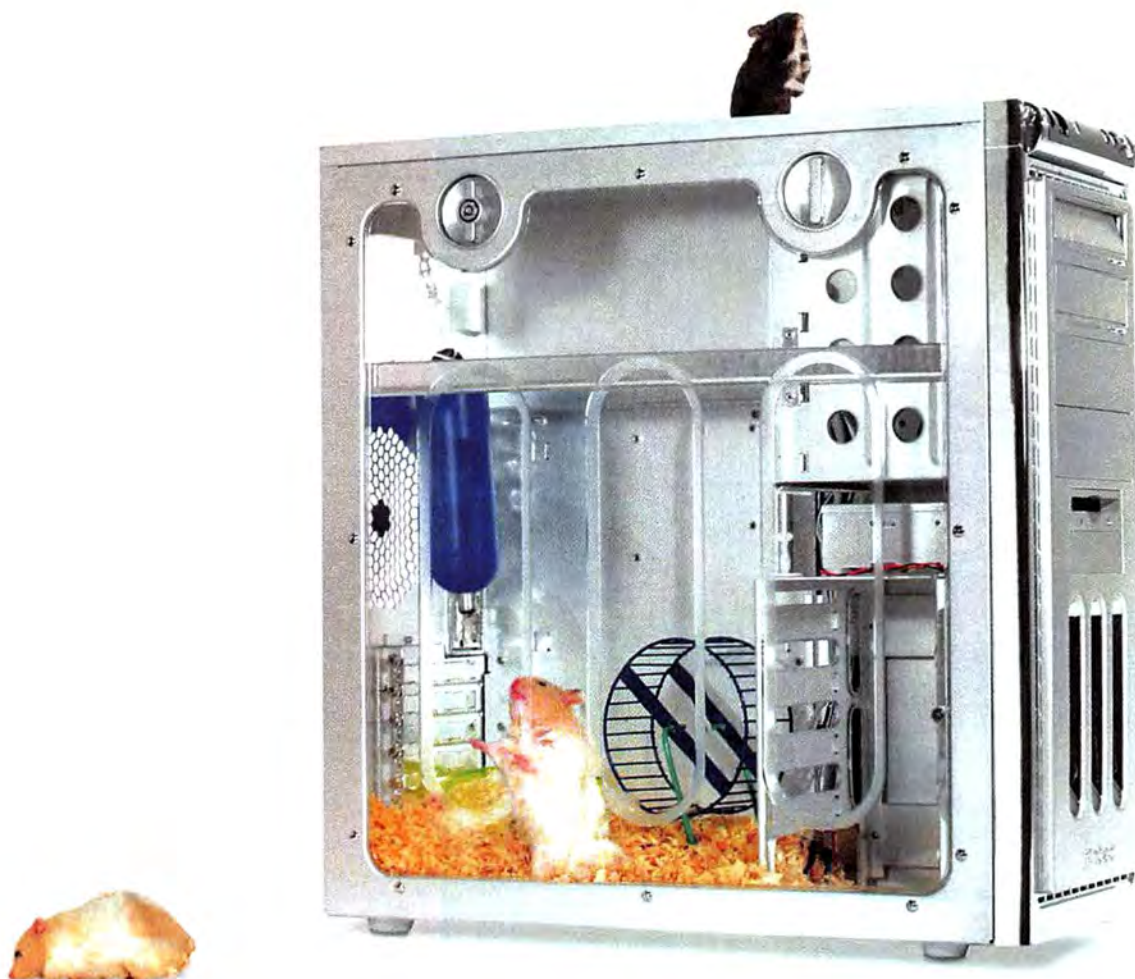
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EDITED BY ALAN STAFFORD

VIDEO WITHOUT WIRES?

GETTING MOVIES OFF THE INTERNET AND ONTO YOUR TV OR HANDHELD DEVICE SOUNDS GREAT. BUT THE IDEA'S NOT READY FOR PRIME TIME—YET. **BY MICHAEL DESMOND**

IT SEEMED LIKE a terrific idea at first: Get some of the latest wireless gear and see what I could do with video streaming through the air. For this story, I attempted three things: Download a movie or two over the Internet, watch the flicks across my wireless home network, and view videos on a handheld device. I

imagined myself watching *South Park* episodes on my Pocket PC, and streaming Hollywood's newest releases over a wireless connection to my TV. It would be so cool.

Instead, it was mostly painful. What started as a romp with high-tech toys morphed into a three-week ordeal. I tackled hardware installation

hiccups and wireless networking failures; and as I expected, I ran headlong into movie copyright protection issues.

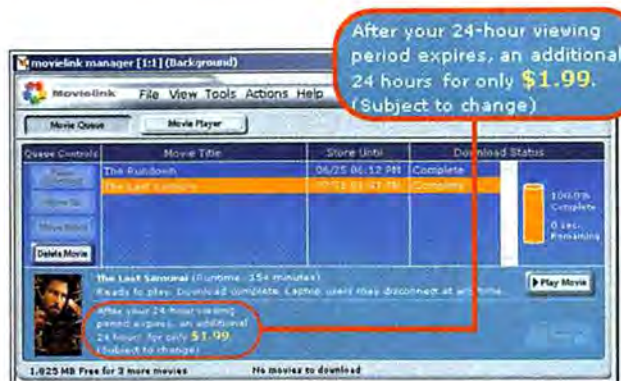
That said, I eventually had a swell time streaming movie trailers and short videos to my wireless-enabled PDA. But in most respects, the hit-or-miss affair that is wireless digital video today remains a miss.

The first step in my movie odyssey was to download video. I registered for free with Movielink (www.movielink.com), one of many great Web-based rental services. Movielink offers over 800 movies in both Real Video and Windows Media Video 9 file formats. I installed the Movielink Manager applet on my PC and ►

then paid \$4 to rent *Lost in Translation* in WMV format.

Unfortunately, I ran into a glitch while downloading the 543MB file: Movielink Manager erroneously reported that I had two instances of the film in my queue. To avoid paying twice, I consulted an online rep, who cleared out the transaction and advised me to repurchase the movie. I did so; and 45 minutes later, I had downloaded the file over my cable connection. I also downloaded two others: *The Run-down* (528MB) and *The Last Samurai* (787MB). The *Run-down* transferred well, but *The Last Samurai* download initially failed because of the pop-up blocker in my Google Toolbar.

As expected, once I got past the download process, I ran into some use restrictions. After you download a movie from Movielink, you have up to 30 days to start watching it. If you fail to play the video within the rental period, the file is deleted. Once you start viewing a video, Movielink gives you 24 hours to view it as often as you like. But at the end of that time, the file be-



VIEW A MOVIELINK flick for a limited time: After you've downloaded the file, the clock starts ticking as soon as you click "Play Movie."

comes inaccessible unless you pony up \$2 (or less) to purchase an additional 24 hours of viewing time. This may sound complicated—and it is. You've entered the madcap world of digital rights management (see "Protected Movies," below).

I downloaded all three movies to my Pentium 4 laptop. I was surprised by how good the movies looked on my laptop's big 16-inch display. Image quality fell somewhere between VHS and DVD.

VIDEO EVERYWHERE?

NEXT I TRIED watching *Lost in Translation* on a second PC over a wireless network, but the Windows Media Player

software flashed an error message and I couldn't play the movie—DRM at work again.

After that, I wanted to try watching *Lost in Translation* on my 36-inch Sony WEGA television. A new class of adapters is supposed to make this possible, using 802.11g signals to stream video, audio, and images wirelessly from PC hard drives for playback on TVs and stereos. Alas, the adapters were not available in time for me to test. However, network equipment makers Netgear and D-Link say that their new adapters should be on sale by the time you read this.

Enter Gateway, with its nifty \$200 Connected DVD ADC-

320 Player. The unit looks and acts a lot like a standard DVD player, but it has exceptional network smarts. A PC Card slot in the back of the chassis accepts an 802.11g network card, enabling the Connected DVD Player to hop onto your wireless network to find and play digital media.

Would it work? I plugged the Gateway-supplied Wi-Fi card into the Connected DVD Player, and the unit failed to see my network. I searched for firmware upgrades on the Web. I turned WEP security off, then on, then off again. I even tried a different PC Card and router. After a couple of hours on the horn with Gateway's techs, I received a second Gateway PC Card (which didn't work) and a Gateway 802.11g router (which did).

Thanks to the new Gateway router, I finally got the player working with my network. Using the player's remote control, I could select video stored on my PC. On my TV the video looked smooth, and its quality matched that produced on the PC's monitor. Note: At press time, Gateway said it was phasing out the Player, with no plans to introduce a replacement model.

Unfortunately, my attempts to play the Movielink movies failed. The Connected DVD Player's media server software supports only MPEG and AVI file formats, not the WMV format from Movielink. And even if the player could have handled WMV files, its lack of DRM support meant that the unit wouldn't have been able to unlock the scrambled content. The only way I could get the movies to play on the TV was to lug my notebook into the den and run S-Video and

COPYRIGHT ISSUES

PROTECTED MOVIES: YOUR OPTIONS

TODAY, DIGITAL RIGHTS management is a monumental pain in the neck for anyone who wants to take downloaded movies with them, even on a 20-foot trip from the office to the den. Legally and technically, here's what you can and can't do with digital movies.

One PC only: Today, rental services like Movielink and CinemaNow (www.cinemanow.com) allow you to play the rented videos only on the machine used to download them. So if you're planning to watch a flick on an airplane, for example, be sure to

download the movie directly onto your laptop.

Limited screening: You can watch the downloaded video on your PC's monitor or use an S-Video cable and an audio RCA or optical cable to connect the PC to your TV or receiver.

Copying restrictions: You can't copy a Movielink video file to another drive (such as a hard drive or an optical drive) and keep it for future use.

The unlicensed file just won't play.

No burning: Forget about any DVD possibilities: You can't burn the movie to DVD.



RCA stereo cables from the notebook to the TV. Picture quality on the TV screen was better than I had expected, though it was worse than that of DVDs, with some blurring.

MOVIES ON THE MOVE

MY ATTEMPTS AT Wi-Fi bliss on the (relatively) big screen had fallen short, but I still had high hopes for using my Wi-Fi network to stream video to a Pocket PC handheld (movie files are generally too big to store on a PDA). Of course, because of copyright protection, I knew I wouldn't be able to play the locked Movielink files on my Pocket PC, so I pursued other options.

I installed SnapStream's \$70 (\$60 as a download) Beyond TV 3 software on my TV tuner-equipped laptop. And things started well. I captured a *South Park* episode and a hockey game to disk using Beyond TV. Then I set the program's ShowSqueeze feature to compress the files overnight to a compact 320-by-240-pixel format, which would suit my Wi-Fi-ready Dell Axim X30 Pocket PC (\$349). (I got the Axim to talk to my PC over my wireless network using a variety of configuration settings.) Next morning, the new files appeared in the Beyond TV interface on my PC and played well in Media Player.

Things got ugly after that. The PDA couldn't find the Beyond TV interface. The program's documentation recommended that I open several ports on my router, but the video wouldn't play reliably. The *South Park* episode always froze after 15 to 20 seconds.

Could it be the router? To test this theory, using Pocket Internet Explorer, I called up

TEST EQUIPMENT included Gateway's Connected DVD ADC-320 Player and Dell's Axim X30. Gateway's Player (soon to be discontinued) offers wireless capabilities, but the unit didn't work properly right off the bat.



PPCvidz (www.ppcvidz.com), a site with streaming videos formatted for the Pocket PC. Within seconds I was streaming a news segment from MSNBC.com. A few more stylish taps, and my PDA was

playing Avril Lavigne's "Sk8r Boi" music video. The video appeared crisp on the small screen at a 100-kbps data rate. Sharper, 300-kbps videos produced long pauses and intermittent lost connections.

ON THE WEB

VIDEO RENTAL SITES

READY TO RENT and download or stream a movie? These sites offer everything from feature films to news feeds to short clips.

CinemaNow (www.cinemanow.com): This outfit offers over 5000 films, ranging from box office hits to forgotten oldies. Movie rentals start at \$3; monthly subscriptions start at \$10.

The FeedRoom (www.feedroom.com): View a constantly updated roster of clips culled from national news outlets, local newscasts, and other sources at this streaming-video site. Free.

MSN Media Guide (windowsmedia.com/MediaGuide/Home): Streaming video includes news from MSNBC, movie trailers, and clips from television shows and short games. Free.

Movielink (www.movielink.com): Download hundreds of films—treasured classics and new releases. The selection ranges from the mainstream to the obscure. Movie rentals start at \$2.

Pocketmovies.net: Download tons of short films in MPEG format for Pocket PC and Palm devices, including ads and trailers. Pocket PC users need a third-party player (like PocketTV), since Media Player can't handle MPEG files. Donations requested.

PocketRocketFX.com: Free membership gives you access to movie trailers, music videos, and more, formatted for handhelds.

PPCvidz.com: A fine site for anyone with a Pocket PC or Palm-based PDA. Streaming-video content includes movie trailers, music videos, news feeds, and short films. Free.

Wiredvideo.com: Stream a selection of silly commercials, funny outtakes, and stupid stunts gone wrong. Free.

Despite this successful test, every effort with Beyond TV failed. I wandered from room to room in my house in vain. But then I placed my notebook near the wireless router and tried to access the video on my PDA in the same room. Suddenly, *South Park* burst forth in all its animated glory. Kenny had never looked so good (even if he was dead).

WIRELESS WORLD

MY THREE-WEEK foray into wireless video convinced me that video over wireless networks is not ready for the spotlight—not by a long shot.

Rob Enderle, a technology analyst for the Enderle Group, wasn't surprised to hear about my wireless video hassles. "It's still in the—if you'll excuse the term—technoweenie phase," Enderle says. "It is probably better to wait."

Enderle expects things to be easier for users in the last quarter of the year. Companies like Apex, D-Link, Igo-Video, and Netgear are at work on next-generation technologies that should get closer to doing video right. Watch for more-flexible DRM, smarter network appliances, and more-reliable network gear.

For the time being, downloading films over the Web is best for notebook owners and über-geeks. A number of the rental sites are excellent, but downloadable movies bring on a host of restrictions regarding where, when, and how you can use the content. And even if you hook up your PC to your TV, the videos you get from the Web can't match the quality of those on DVD.

Michael Desmond is a freelance writer based in Vermont.



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LCD TVs

MINOR-LEAGUE FLAT-SCREEN TVs

MIDSIZE LCD TVs, in the 21- to 23-inch range, might not do for Super Bowl parties, but they're ideal for bedrooms, small dens, and offices.

To gauge image quality, our judges watched three types of content on each of five LCD TVs: standard TV broadcasts, a DVD movie, and scenes from IMAX movies encoded in the Windows Media Video High Definition format.

No model triumphed in all tests; but our top pick, the 21-inch Sony LCD WEGA KLV-21SG2, performed consistently well with all content types. (However, it had to convert high-definition content for its standard-definition screen.)

For standard television, using the units' default settings, the Sony and the Dell W2300



THE SONY LCD WEGA KLV-21SG2 (far right) steals the show. Also pictured (left to right): Dell's W2300 23-inch LCD TV, Gateway's 23-inch HD-Ready LCD TV, LG Electronics' RU-23LZ20, and Mitsubishi's LT-2240.

23-inch LCD TV did the best job of cleaning up video static and extracting realistic colors from a cable signal. By comparison, certain images looked grossly exaggerated on the Gateway 23-inch HD-Ready LCD TV: Faces appeared bright pink, red, or orange; but they looked much better after some adjustments.

Sony's unit did the nicest job of reproducing our DVD

movie, *Pirates of the Caribbean*. Unfortunately, though, when we played a wide-screen movie on this LCD, with its standard 4:3 aspect ratio, lots of empty black space remained above and below the picture. Dell's screen, which has a 16:9 aspect ratio, displayed a much larger image; but colors on it appeared somewhat dull (even after we adjusted them).

In our high-definition video tests, the LG Electronics RU-23LZ20 showed rich images from IMAX movies. But the real jaw-dropper was Mitsubishi's LT-2240, which displayed more-luminescent colors and darker blacks than the other TVs. One drawback: The Mitsubishi's viewing angle is the narrowest of the units here.

—Seán Captain

FEATURES COMPARISON

MIDSIZE LCD TVs FOR YOUR HOME AND OFFICE

NO LCD MODEL SHINES in all tests, but the Sony offers the most consistently strong performance and high quality across the board.

LCD TELEVISION	Price and features	Performance	Comments
Dell W2300 23" LCD TV ★★☆☆☆ find.pcworld.com/43028	• \$1599 • 23-inch, 16:9 screen (1280 by 768 resolution) • High-definition capable • Analog and digital PC inputs	• Standard TV: Very good • DVD: Good • HDTV: Good • Sound: Good	Great for standard television viewing, but its colors for DVD movies and high-definition video looked a bit drab. Swivel, tilt, and height adjustments made the unit easy to position, but the remote control was frustrating to use because of its weak signal. Good sound system.
Gateway 23" HD-Ready LCD TV ★★☆☆☆ find.pcworld.com/43024	• \$1500 • 23-inch, 15:9 screen (1280 by 768 resolution) • High-definition capable • Analog and digital PC inputs	• Standard TV: Good • DVD: Good • HDTV: Poor • Sound: Good	Its low price and large screen are compelling selling points, but this black-and-gray model had terrible default color settings (which required extensive adjustments) and slightly fuzzy standard TV images. The sound system is good, though. Supports 4:3 aspect ratio.
LG Electronics RU-23LZ20 ★★☆☆☆ find.pcworld.com/43022	• \$1900 • 23-inch, 16:9 screen (1280 by 768 resolution) • High-definition capable • Analog PC input	• Standard TV: Good • DVD: Very good • HDTV: Outstanding • Sound: Fair	This swanky, glossy-black television performed beautifully with high-definition content and looked almost as good with DVD movies. Its sound was a little flat, however, and standard TV content appeared slightly fuzzy; the display overemphasized reddish colors.
Mitsubishi LT-2240 ★★☆☆☆ find.pcworld.com/43026	• \$2999 • 22-inch, 16:9 screen (1280 by 768 resolution) • High-definition capable • Analog PC input	• Standard TV: Good • DVD: Good • HDTV: Outstanding • Sound: Outstanding	This model required a lot of tweaking to get the settings right, but it paid off handsomely with stunning high-definition performance. The constrained viewing angle, however, was a big disappointment. Comes with terrific sound and a white bezel.
Sony LCD WEGA KLV-21SG2 ★★★★★ Editor's Pick find.pcworld.com/43030	• \$1700 • 21-inch, 4:3 screen (1024 by 768 resolution) • Enhanced-definition capable • Memory Stick card slot	• Standard TV: Outstanding • DVD: Outstanding • HDTV: Good • Sound: Outstanding	Images on this understated, silvery model looked great with regular TV, DVD movies, and high-definition content converted to a lower resolution. But if your passion is high definition, get a true HD model. The unit's sound system is among the best in the bunch.

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GADGET FREAK

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CENSORS AND SENSIBILITY



THE DAY I HEARD my three-year-old quoting the movie *Bad Boys*, I realized we had to change our family viewing habits. To an unfamiliar ear it probably sounded like he was saying "mother-father," but I knew better. I figured we'd be stuck watching Disney for the next decade—at least until the kids were in bed.

That was five years ago. Today I can watch family-friendly versions of many films, thanks to new technology that filters a movie as it plays, censoring the racy bits. Apex, Mintek, and RCA include this technology from such companies as ClearPlay and TVG Vision in newer players. Filters for new releases cost \$5 to \$7 a month.

I was doubtful. Could this censorware handle a movie loaded with lust, mock violence, and really bad teeth? To find out, I popped *Austin Powers* into an RCA ClearPlay-

equipped player (at press time, RCA said it had stopped making such models).

OH, BEHAVE!

ACTUALLY, I STARTED by inserting a disc that came with the player, which contained sets of filters for some 500 movies (including family fare like *Shrek*), and then picked the ones I wanted to install. As ClearPlay creates filter sets for new movies, you can download them from ClearPlay's site, burn them to a CD-R, and then pop that disc into the player. The list of filters for each film is rich with the naughty bits that ClearPlay claims to block: Among *Austin*'s sins were strong action violence, crude sexual content, and "vain references to deity." All of the filters are turned on by default, but you can disable whichever you wish. The disc also lists themes identified in each film

so parents can choose appropriate viewing material. The themes include smoking, alcohol consumption, implied premarital sex, nude fine art, dysfunctional relationships, and homosexual/lesbian characters, to name but a few.

I quickly discovered that watching *Austin Powers* with filters is like eating a ham sandwich without the ham. Censored words (like *shag*) were blanked out, scenes ended abruptly, and some of the best jokes (the endless urination scene, the Swedish "enlargement" device) were gone. The Fembots—robot vixens with machine-gun breasts—were also missing in action.

Untouched, however, were several gun battles, a nuclear explosion, and various torture scenes, though ClearPlay did truncate one where a character is killed by being dunked in a toilet. Apparently violence is okay unless a potty is involved.

I restored some jokes by clicking through a half dozen text menus, deselecting filters such as "Crude Language and Humor," and restarting the film to see whether the missing scenes reappeared. (Turns out ClearPlay labels the Fembots as "Sensual Content"—go figure.) I spent more time fiddling with filters than I did watching the movie. If I hadn't seen *Austin Powers* before, I'd have known something im-

NEXT UP

Satellite Radio Stays at Home



BIG AND BULKY is back—at least when it comes to satellite radio doodads. The \$300 Model Sirius from Tivoli Audio (www.tivoliaudio.com/sirius) will appeal to satellite radio fiends who are looking for a device that can sit in the den or on the kitchen counter, say, and stay there. Slated to ship this fall, the retro-looking radio sports a 4-by-2-inch digital interface, an AM/FM analog tuner, an alarm clock, and a teeny remote control. Homebodies can subscribe to Sirius's satellite service—monthly fees start at \$10.

portant had been chopped out, but I'd have had no idea what.

ClearPlay provides greater control over content than you would get by renting pre-edited movies from stores like CleanFilms. But the editing is far more amateurish, and you still rely on someone else's idea of what's acceptable. I would prefer a service that let me preview the worst of the dicey bits so I could decide whether my kids could handle seeing the film the way it was intended.

When *Austin* was over, my wife turned to me and said, "ClearPlay: Prude in a Box." Yeah, baby. And definitely not shagadelic. ■

Contributing Editor Dan Tynan is one bad mother-father.

Remove Pests... Not Profits!

Here's the plain truth about anti-virus solutions: They differ—sometimes dramatically—in their ability to catch viruses and in terms of the resources they consume while doing their job. An efficiently written solution that maximizes detection and performs at blazing

speed will keep you safe while boosting productivity and ROI.



With its unique Advanced Heuristics, NOD32 (www.nod32.com) from ESET Software has detected and eliminated more than 85% of all new viruses and worms without requiring a signature database update. This means NOD32 catches the overwhelming majority of all new worms and viruses before most other anti-virus companies are even aware of them.

Knowing Where The Wild Things Are

In fact, for more than six years now NOD32 remains the only anti-virus system in the world that has not missed any "in the wild" viruses in the independent tests performed by the prestigious *Virus Bulletin*. NOD32 has won the *Virus Bulletin's* 100% Award 27 times, more than any other anti-virus solution. Winning the 100% Award means catching all the bugs and doing so with no false alarms.

The relevance of "in the wild" detection tests is that the viruses used in this testing methodology are executable and can cause

"real-world" virus incidents—the ones that can wreak such great havoc to your company when unleashed.

There are a number of reasons why NOD32 stands alone among anti-virus solutions in delivering superior ROI and unmatched detection.

Unparalleled Detection

By using its Advanced Heuristics, NOD32 immediately detects more viruses than any of its competitors, before the bugs can do any damage.

Speed Of Operations

NOD32 is much faster than other systems at scanning for viruses. In recent *Virus Bulletin* tests, NOD32 and only two other solutions received the coveted 100% award. However, NOD32 performed scans nearly four times faster than one of the products and 21 times faster than the other! Computers protected and scanned by NOD32 spend far less time executing anti-virus software. This means knowledge workers no longer have to wait for the anti-virus software to do its work, so they can do theirs!

Automatic Updates

NOD32 features highly flexible updates for those problems for which a signature update is needed. Updates are done "on the fly" and can be transparent to the user. You no longer have to be frustrated while waiting for your system to update.



Your anti-virus solution needs to do more than protect against bugs; it also needs to boost productivity and ROI.

Less Resource Usage

NOD32's code is written far more efficiently than that of other anti-virus solutions. Therefore it consumes far less system resources, which is important when users are trying to extend the useful life of hardware. In particular, businesses with older hardware will realize even greater productivity gains as a result of the small footprint of NOD32.

Reduced Security Risk

The Enterprise Version of NOD32 with Remote Administrator allows the highly efficient management of all the desktops from a single console.

This tool is also designed to help

NOD 32
antivirus system

you enforce your security policy. Individual users cannot change password protection or other settings without the Systems Administrator knowing immediately. NOD32's Remote Administrator gives a clear and on-line picture of the status of the anti-virus protection of every computer in the corporate network.

■ To learn more about the unparalleled virus protection capabilities and tremendous ROI potential of NOD32, point your browser to www.nod32.com.

ROI IN THE SMB

TOP 100

EDITED BY THE REVIEWS STAFF

INSIDE

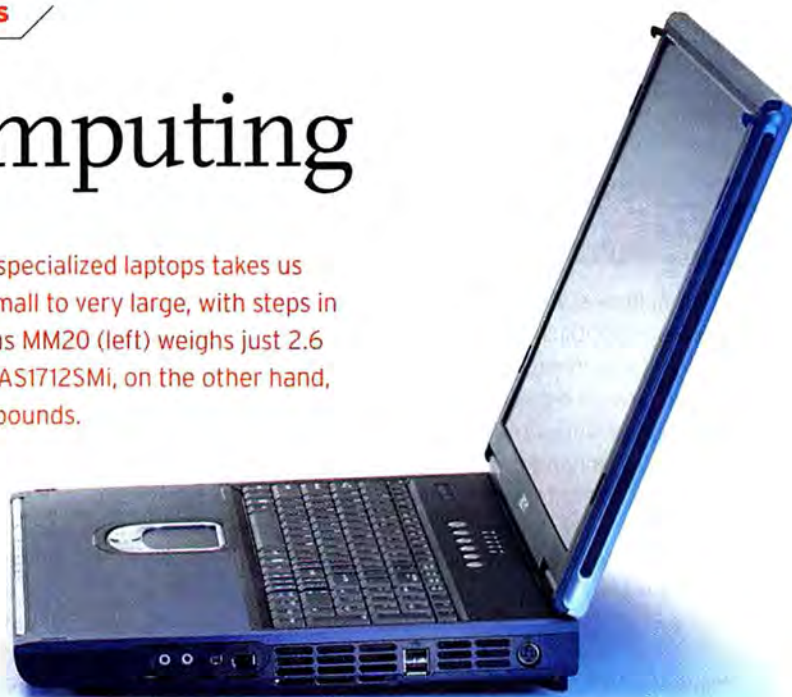
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SPOTLIGHT: SPECIALIZED NOTEBOOKS

Extreme Computing



Our look at specialized laptops takes us from very small to very large, with steps in between. Sharp's Actius MM20 (left) weighs just 2.6 pounds. Acer's Aspire AS1712SMi, on the other hand, tips the scales at 14.6 pounds.



Forget about extreme makeovers and extreme sports: 2004 marks the emergence of extreme notebooks.

The selection of portable computers has expanded from generous in the 1990s to almost ridiculously eclectic today. Now we see truly ultralight notebooks, desktop replacement notebooks equipped with enormous screens, convertible tablet notebooks, rugged notebooks for a range of rigorous conditions, and gaming notebooks fast enough to challenge desktop PCs. Pick a form of extreme computing,

and you can probably find a notebook to fill the bill.

That's where we can help. If you're looking for a notebook that falls into the usual categories, check out our regular *Top 15 Notebook PCs* chart, which this month resides at the end of this article on page 151. On the other hand, if you're looking for something a bit out of the ordinary, consider our sampling of six specialized portables—diverse choices that begin with the same core features and then vary dramatically in shape, size, function, and durability. ►

**PC World
Unveils
WorldBench 5
(see page 146)**



Top 15 Desktop PCs

Top 15 CHART The IBuyPower Gamer Extreme looks as if it were dressed up for Halloween. While its "costume" might not appeal to everyone, it performs well and includes a media card reader.

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Top 10 Digital Cameras

Top 10 CHART Canon's 8-megapixel PowerShot Pro1 has a 7X optical zoom lens and several SLR-like features, including a barrel ring that lets you control the zoom range and manual focus precisely.

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Top 5 Scanners

Top 5 CHART The Epson Perfection 2480 Photo earns a Best Buy this month. The fastest model on the chart at scanning color documents, it also delivers good overall scan quality.



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INSIDE THE TOP 100

See find.pcworld.com/15720 for details on how we compile charts for the Top 100. Freelance writers Richard Jantz and Carla Thornton, and PC World editors Laura Blackwell, Eric Butterfield, Tracey Capen,

Kalpna Ettenson, Rebecca Freed, Dan Sommer, and Alan Stafford contributed to the Top 100 section this month. Ulrike Diehlmann, Julio Giannobile, Elliott Kirschling, Jeff Kuta, Tony K. Leung,

Thomas Luong, Ibrahim Reyhanoglu, and William Wang of the PC World Test Center performed testing on the products that are reviewed in this section, with logistical support provided by Julian Weatherby.

We looked at mobile specialists from Acer, HP, JVC, Sharp, and Toshiba that range in price from \$1598 to more than \$4000. Because our *Top 15 Notebook PCs* chart emphasizes mainstream portables, and because some models in this review are anything but mainstream, we've summarized their features and performance in a separate chart on page 150. We also had games enthusiast Andrew Brandt, one of *PC World's* senior associate editors, play around with a gaming-optimized notebook from VoodooPC. (For his take, see "This Envy Will Turn Your Friends Green," page 148.)

Of course, sometimes a specialist can be too limited.

Whether too big or too small or too expensive, a niche notebook may not always be the superior choice. Should you lay down your money for a specialist? Find out what you'll have to give up—in price, in weight, and in built-in features such as optical drives—when you choose one of these out-of-the-ordinary systems.

TAKE A LOAD OFF

TRYING TO SPRINT with 8 pounds hanging off your shoulder, you nearly miss your flight, and suddenly you feel like shouting, "This thing is heavy as hell—

and I'm not going to take it anymore!"

Times like this call for an ultraportable notebook. Much thinner and lighter than standard notebooks, ultraportables trade full-size screens and keyboards for much less weight. Not too long ago a 3-pound notebook stood as the cutting-edge ultraportable. But now the category includes the Sharp Actius MM20 and the Sony VAIO VGN-X505ZP. Radically thin and light, the Actius is 1 inch tall and weighs

SHOULD YOU LAY DOWN YOUR MONEY FOR A SPECIALIZED NOTEBOOK?

just 2.6 pounds. The VAIO, which we examined but did not test because we could not get a production unit in time for this article, is less than an inch tall and weighs only 1.8 pounds—it looks like it might blow away in a stiff breeze.

These notebooks are not for everyone, but they will suit the traveler who counts ounces like a zealous backpacker. Fairly well equipped, both models have 512MB of RAM, a 20GB hard drive, and a 10.4-inch screen. Neither has an integrated optical drive or modem; but the Actius bundles a PC Card modem, and the

VAIO has FireWire. Incredibly, both also have usable keyboards that are small but well laid-out; we could touch-type at a good clip. The biggest problem you'll have is keeping one of these units sitting flat because they're so small and light.

The Actius MM20 is a much-improved redesign of the Actius MM10 notebook that we saw at about this time last year. We liked the new Sharp model more than the new Sony for a couple of reasons.

Although it adds another half pound, Sharp's long-life battery (\$200) lasted 7.5 hours in our tests. That makes the Actius an all-day mobile companion. And then there's the price: The Actius costs just

\$1598 with an external optical drive, compared with \$2999 for the VAIO.

Finally, these are companion notebooks, not full-fledged portables that can take the place of your desktop PC. Sharp acknowledges this with a USB docking cradle that makes syncing files from the Actius to your desktop a snap; you can also use the Actius as an external hard drive for your desktop.

Subnotebooks are another category of ultraportable. Such systems weigh about 3 pounds, the same as most thin-and-light notebooks, but have smaller footprints

BENCHMARKING

PC World Unveils WorldBench 5

MORE THAN TWO YEARS in the making, WorldBench 5 is the fifth generation of *PC World's* industry-standard benchmarking application. Designed to measure the performance of personal computers, WorldBench 5 debuts with this issue. WorldBench 5 is also the first of our benchmarks to be available for public purchase.

Our evolving benchmark has been in continuous use at *PC World* for nine years and is regarded in the computer industry as one of the leading measures of PC performance. Like its predecessors, WorldBench 5 uses real applications running real-world tasks to assess a computer's overall performance. This latest edition adds much more varied testing, including multitasking and task-switching tests, more-strenuous 3D graphics routines, and audio and video encoding that we designed to stress today's more powerful systems.

We use WorldBench 5 to test desktop, notebook, and tablet PCs, as



well as to support our testing of hard drives, graphics boards, and other products. An important note: Because WorldBench 5 uses a completely new set of applications, and because we have updated our baseline system, the scores in this and future issues cannot be compared in any way with scores from older versions of WorldBench.

AN UP-TO-DATE BENCHMARK

WORLDBENCH 5 RUNS ON computers using the Home, Professional, Media Center, or Tablet PC version of Windows XP. Fifteen applications (counting the components of Office XP) make up the WorldBench 5 suite. We selected this group, listed in the box at right, for their mass-market appeal, stability, market share, and variety.

PC World has always believed that using an application-based benchmark is a better way to quantify computer performance than using esoteric synthetic methods. WorldBench 5 runs—albeit in an

and screens, and slightly thicker cases. As a result these chunky little units have long appealed to folks who don't like to surrender any more space in a carry-on bag than they absolutely must.

Though the latest subnotebook models are speedier and better equipped than ever, with 1-GHz/600-MHz Pentium M SpeedStep processors and 40GB hard drives, some things haven't changed. Typing on one can still be difficult, as we discovered while testing the \$2300 JVC Mobile Mini Note PC MP-XV841US. Its cramped keyboard made touch-typing a chore: We hit the spacebar when we didn't mean to, <Enter> instead of the apostrophe, and <PgUp> instead of the right <Shift>.

That said, we like the Mini Note. It comes with an integrated DVD-RW/-RAM drive and front audio buttons. Movies played fine on the bright 8.9-inch wide-format screen. The Mini Note lasted 4.8 hours on one battery charge in our tests and performed well for a system of its size.

SUPERSIZE ME

AT THE OPPOSITE end of the size spectrum are desktop replacement notebooks. Designed for people who want a portable



THE HP COMPAQ TABLET PC Tc1100 has a small keyboard that detaches from the touch-screen panel.

desktop PC, the largest of these units have 17-inch screens, built-in numeric keyboards, and up to two modular expansion bays. Desktop replacements can weigh 10 pounds or more and can measure as much as 14 inches across. They don't merely refuse to fit on airline tray tables—they demand their own seats.

The \$1999 Acer Aspire AS1712SMi, though, pushes the limits of even the supersize category. This monster machine weighs 17.6 pounds with accessories, has a 17-inch screen, and when closed stands 2.8 inches tall at the hinges. Although it has no modular bays (its DVD±RW drive is fixed), the Aspire offers

three things most other desktop replacements don't: a user-upgradable processor, a 120GB hard drive, and a powered six-pin FireWire port so you don't have to plug your external drive into a wall socket.

Unfortunately, the keyboard just doesn't cut it. We found the Aspire extremely difficult to type on because of the location of several crucial keys repositioned to fit in a separate numeric keypad. You'll find the <Delete> key, for instance, only in that keypad, far from the main keyboard.

If a desktop replacement is in your future and you like gadgets, we suggest the Toshiba Satellite P25-S670 entertainment notebook. At \$2599 it's not cheap, but the handsome, blue-lidded, 10-pound unit is both a good desktop replacement and a portable TV. Take it whenever you need to work and yet keep up with your favorite show, or make it the PC-based hub of your family room's multimedia center. The Satellite comes with the Windows Media Center OS, a TV tuner, and a handheld remote control. You can connect the Satellite directly to cable, or integrate it into an existing VCR-and-cable setup with an extra-cost splitter, and record your shows for later playback. From the Media Center, a dazzling ►

extremely compressed fashion—many of the same tasks that average computer users perform on their systems every day.

THE WORLDBENCH 5 SCORE

WORLDBENCH 5 IS automated and bullet-proof: Once you launch WorldBench 5, it runs on its own from start to finish and reports the results, in text or graphics form, as individual test scores and as the overall WorldBench 5 score. It can recover from and repeat failed tests, and can finish the testing and prepare its report even when individual applications will not run or complete. You can easily remove WorldBench 5 when it is finished; this feature helps ensure that we run

the same software configurations and versions on every computer we test, and that WorldBench 5 will leave your PC unaltered.

Like previous versions, WorldBench 5 combines the results of

WorldBench 5 applications:

ACD Systems ACDSee PowerPack 5
Adobe Photoshop 7.0.1
Adobe Premiere 6.5
Ahead Software Nero Express 6.0.0.3
Discreet 3ds max 5.1 (DirectX)
Discreet 3ds max 5.1 (OpenGL)
Microsoft Office XP with SP-2
Microsoft Windows Media Encoder 9
Mozilla 1.4
Musicmatch Jukebox 7.1
Roxio VideoWave Movie Creator 1.5
WinZip Computing WinZip 8.1

scripted application tests and then compares them with the scores of a reference system—now a high-end PC with a 2.2-GHz Athlon 64 FX-51 CPU and 1GB of RAM, as well as an NVIDIA GeForce FX 5950 Ultra graphics card with 256MB of RAM.

To make the comparisons easy to interpret, we set the baseline system's final score at 100. A system that receives a score of 50 is half as fast as the baseline; a computer that earns a final mark of 200 is twice as fast; and so on.

Over the years, we've used different PC vendors' systems. For WorldBench 5 we selected our baseline because its configuration specifically places it near the upper end of the current performance scale. Visit www.worldbench.com for more information about WorldBench 5 or to order a copy.

—Dan Sommer

multimedia interface offering big, easy-to-navigate menus, you can watch broadcasts live, pause them TiVo-style, or record your favorite programs on the notebook's brilliant, wide-format 17-inch screen. The Satellite also has a fine full-size keyboard.

EXTREMELY FLEXIBLE

TABLET PCS ARE ideal for people who work with pen in hand. But what if you also need to type long documents and don't want to carry two computers?

We looked at two convertibles equipped with the Windows XP Tablet PC Edition operating system and a touch screen. The Toshiba Portégé M205-S810 is a convertible notebook with a 12.1-inch touch screen that can rotate and lock face up (covering the keyboard) for writing and drawing. It's a good lightweight device, except for the fact that it has no integrated optical drive—Toshiba bundles an



THE TOSHIBA SATELLITE P25-S670 has two modular bays, for an 80GB second hard drive and a dual-format DVD burner.

external USB DVD-ROM/CD-RW combination drive with the unit. In spite of a few minor reservations, we named the Portégé the Best Buy in the ultraportables section of our *Top 15 Notebook PCs* chart.

The competing \$2577 HP Compaq Tablet PC Tc1100 is a tablet first and notebook second, but like the Portégé it seems better as a notebook. This model has one

trick you won't find in the Portégé: Its small eraserhead-equipped keyboard detaches from the touch-screen panel. The Tc1100 weighs 4 pounds, like conventional thin-and-light notebooks. We found typing on the hard, shallow keyboard fairly easy even though we had no place to rest our wrists.

Our gripes with the Tc1100 center on its touch screen, which was slow to respond to pen taps. We had to push extra firmly to make selections, which tried our patience. In its favor, the Tc1100 sans keyboard weighs a scant 3 pounds. It's stocked with plenty of connections, nicely designed shortcut buttons, and a spring-loaded stylus. It does not include a built-in optical drive, though.

TOUGH ENOUGH

NO PORTABLE IS more specialized than a ruggedized notebook. Built for working in extreme environments, ruggedized ▶

GAMING NOTEBOOKS

This Envy Will Turn Your Friends Green

THE SPECIALIZED notebooks in this Spotlight review are all well and good if the hardware matches your needs, but let me tell you about the extreme system that really grabs my attention. Not long ago, gamers who wanted to get together in groups and play networked games in the same physical location—at so-called LAN parties—had to schlep their giant desktop PCs, CRT monitors, and the assorted gallimaufry of gear with them. The last LAN event I attended was two years ago, and I was the only person who didn't arrive with armfuls of cables, keyboards, mice, and joysticks, and carts loaded with computers. I brought a laptop.

At the time my choice provoked jibes and derision from some players. No way would I be able to hold my own against their big hulking game machines, which smoked and blinked and glowed with a blue or green or red light from within their interiors. I'll grant that my system was slower and less flashy than the other players', but at least I didn't have to rent a U-Haul to transport it to the event.

Flash forward to today, and the chance for me to spend a week-



VOODOOPC'S ENVY M:860 boasts a spacious 15.4-inch, 1680-by-1050-pixel wide-aspect LCD.

end with VoodooPC's Envy M:860 gaming laptop. It's a full-featured desktop replacement notebook that's tuned for gaming, with an Athlon 64 3400+ CPU, ATI Mobility Radeon 9700 graphics with 128MB of video RAM, and a thumping sound system. The laptop weighed 8 pounds, and—true to its gaming persona—it was packaged in a slick blue case sporting a modern-primitive tattoo design on top. My test system costs \$3368, so this is no casual purchase; to go for it, you have to be as game-crazy as I am.

But the true proof is in the play. I sat down at the dining-room table with the Envy and Ubisoft's *Far Cry*, and was immediately sucked into another world of outwitting the bad guys. I soon lost track

of time, oblivious to the setting sun and my sweaty hands.

For my money, the gaming notebook is a legitimate specialized category, and this machine has earned its place among top-notch gaming hardware. With its easy mobility you can impress your friends; the Envy might well be the envy of any gamer.

—Andrew Brandt



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notebooks can survive heat, cold, and knocks. The HP Rugged Notebook Nr3600 is sealed in thick die-cast magnesium so you can take your spreadsheets along to a steamy jungle, dusty construction site, or below-freezing ice fishing camp. The boxy 8.8-pound unit can withstand 3-foot drops and temperatures from 10 degrees to 140 degrees Fahrenheit, Hewlett-Packard says. The Nr3600 boasts a heated screen for supercold conditions, an illuminated keyboard, and recessed connections protected by heavy rubber plugs and foam-lined covers. Also included are built-in antennas, not only for Bluetooth and 802.11b but for optional cellular air cards offered by AT&T, Sprint, and other communications service providers. The battery lasted for only 3.4 hours in our tests, though—shorter than we'd like for an outdoor notebook.

Equipped with a 1.7-GHz/1.2-GHz



THE HP RUGGED Notebook Nr3600 has a heated screen, an illuminated keyboard, and recessed connections.

Pentium 4 CPU and 512MB of RAM, the Nr3600 earned a WorldBench 5 score of 50, more similar to the mark of a typical thin-and-light notebook than to that of a mainstream business portable.

Nonetheless, the Nr3600 is fast enough to handle most jobs, and an optional six-cell battery in the modular bay extends the

unplugged time to the length of a typical workday, according to HP. Would-be survivalists must pay dearly for their gear, however: Equipped with a CD-ROM drive, the Nr3600 costs a hefty \$4487.

THIS MONTH'S TOP 15

WE REVIEWED seven new systems for this month's *Top 15 Notebook PCs* chart, which also marks the introduction of *PC World's* new benchmark, WorldBench 5 (see page 146 for information on WorldBench 5). Most impressive were the Toshiba Portégé M205-S810 convertible and the IBM ThinkPad R51, which received Best Buy nods among ultraportables and all-purpose notebooks, respectively. IBM's ThinkPads T42 and X40 and Acer's TravelMate 8000 also scored well. You'll find reviews of Fujitsu's LifeBook C2310 and WinBook's W360 online.

—Carla Thornton

TOP 100

TEST Center

SPECIALIZED NOTEBOOKS

YOU CAN FIND YOUR next multimedia center, tablet-notebook, rugged system, or ultralight unit in this group of extreme laptops.

NOTEBOOK	Basics ¹	Extras ²	Performance (battery life in hours:minutes)	Comments
Acer Aspire AS1712SMI find.pcworld.com/43072	<ul style="list-style-type: none"> \$1999 3-GHz desktop Pentium 4 17-inch screen 17.6 pounds 	<ul style="list-style-type: none"> Fixed DVD±RW drive Touchpad pointing device 802.11g wireless, gigabit ethernet port Six-in-one card reader 	<ul style="list-style-type: none"> WorldBench 5 score: 82 Overall design: Fair Tested battery life: 1:23 	Nicely equipped desktop replacement has 1GB of RAM, a 120GB hard drive, and two FireWire ports, but suffers from poor keyboard layout and massive weight. (★★★☆☆)
HP Compaq Tablet PC Tc1100 find.pcworld.com/43076	<ul style="list-style-type: none"> \$2577 1-GHz ULV Pentium M 10.4-inch screen 7.1 pounds 	<ul style="list-style-type: none"> External DVD-ROM and CD-RW combo drive Eraserhead pointing device 802.11g and Bluetooth wireless SD Card slot 	<ul style="list-style-type: none"> WorldBench 5 score: 53 Overall design: Good Tested battery life: 3:15 	Tablet PC converts into a smoothly working notebook with a keyboard addition. Screen taps require a lot of force. (★★★☆☆)
HP Rugged Notebook Nr3600 find.pcworld.com/43078	<ul style="list-style-type: none"> \$4487 1.7-GHz Pentium 4 M 12.1-inch screen 10.1 pounds 	<ul style="list-style-type: none"> CD-ROM drive Touchpad pointing device 802.11b and Bluetooth wireless 	<ul style="list-style-type: none"> WorldBench 5 score: 50 Overall design: Good Tested battery life: 3:23 	Ruggedized notebook stands up to the elements and performs adequately, with good battery life. (★★★★☆)
JVC Mobile Mini Note PC MP-XV84IUS find.pcworld.com/43084	<ul style="list-style-type: none"> \$2300 1-GHz Pentium M 8.9-inch wide-format screen 3.9 pounds 	<ul style="list-style-type: none"> Fixed DVD-RW/-RAM drive Eraserhead pointing device 802.11g wireless SD Card slot 	<ul style="list-style-type: none"> WorldBench 5 score: 52 Overall design: Fair Tested battery life: 4:47 	Well-equipped ultraportable boasts an integrated DVD burner and a wide-format screen for on-the-road movies. (★★★★☆)
Sharp Actius MM20 find.pcworld.com/43082	<ul style="list-style-type: none"> \$1598 1-GHz TM Efficeon TM8600 10.4-inch screen 4.3 pounds 	<ul style="list-style-type: none"> External DVD-ROM and CD-RW combo drive Touchpad pointing device 802.11g wireless 	<ul style="list-style-type: none"> WorldBench 5 score: 35 Overall design: Fair Tested battery life: 2:28 	Only 2.6 pounds without accessories, this day-tripper makes a fine companion notebook for your desktop machine. (★★★★☆)
Toshiba Satellite P25-S670 find.pcworld.com/42552	<ul style="list-style-type: none"> \$2599 3.2-GHz desktop Pentium 4 17-inch wide-format screen 11.3 pounds 	<ul style="list-style-type: none"> DVD±RW/-RAM drive Touchpad pointing device 802.11a/g wireless SD Card slot, TV tuner, remote control 	<ul style="list-style-type: none"> WorldBench 5 score: 78 Overall design: Very good Tested battery life: 1:17 	Big, handsome multimedia notebook has a 17-inch wide-format screen, two modular bays, good sound, and the latest DVD burner capable of writing all DVD formats. (★★★★☆)

FOOTNOTES: ¹Weight includes AC adapter, power cord, and optical drive. ²Optical drives are removable, unless noted. Visit find.pcworld.com/43586 for reviews of all products.

TOP 15 NOTEBOOK PCs

	DESKTOP REPLACEMENT	Basics ¹	Extras ²	Performance (battery life in hours:minutes)	Comments
1	Best BUY HP Compaq Nc6000 find.pcworld.com/41093	• \$2032 • 1.6-GHz Pentium M • 14.1-inch screen • 6.6 pounds	• DVD-ROM and CD-RW combo drive • Touchpad and eraserhead pointing devices • 802.11a/g, gigabit ethernet, SD Card slot, embedded security chip	• WorldBench 5 score: 74 • Overall design: Very good • Tested battery life: 6:23	Lightweight corporate notebook comes with dual wireless capabilities and great battery life. (★★★★☆ May 04)
2	Gateway M405CS find.pcworld.com/42184	• \$1522 • 1.5-GHz Pentium M • 15.0-inch screen • 7.1 pounds	• Fixed DVD-ROM and CD-RW combo drive • Touchpad pointing device • 802.11g wireless • Microsoft Works 7	• WorldBench 5 score: 69 • Overall design: Good • Tested battery life: 5:15	Offers solid performance for a low price. Order it with the lithium ion battery (as we did) to get the battery life we saw in our tests. (★★★☆☆ July 04)
3	Acer Aspire AS2003LMi find.pcworld.com/40448	• \$1599 • 1.6-GHz Pentium M • 15.4-inch wide screen • 8.1 pounds	• Fixed DVD-ROM and CD-RW combo drive • Touchpad pointing device • 802.11g wireless • Four-in-one card reader	• WorldBench 5 score: 75 • Overall design: Good • Tested battery life: 4:33	Very good performer offers an alluring wide-aspect 15.4-inch screen, but only so-so sound. (★★★★☆ Apr 04)
4	Dell Inspiron 5150 find.pcworld.com/41147	• \$1749 • 3.06-GHz Mobile Pentium 4 • 15.0-inch screen • 10.3 pounds	• Fixed DVD+R/RW drive • Touchpad pointing device • 802.11g wireless • WordPerfect Productivity Suite	• WorldBench 5 score: 71 • Overall design: Good • Tested battery life: 4:02	This notebook has a high-resolution screen. It's hefty, however, and you can't remove its optical drive to swap in a second battery. (★★★☆☆ May 04)
5	Toshiba Satellite P15-S420 find.pcworld.com/42286	• \$1799 • 3-GHz Pentium 4 • 15.4-inch wide screen • 9.7 pounds	• Fixed DVD±RW drive • Touchpad pointing device • 802.11g wireless	• WorldBench 5 score: 73 • Overall design: Good • Tested battery life: 1:28	Toshiba's wide-screen notebook is a suitable desktop replacement if you don't need good stereo sound or upgradable storage. (★★★★☆ July 04)
6	EMachines M6810 find.pcworld.com/42554	• \$1399 • 2-GHz Mobile Athlon 64 • 15.4-inch wide screen • 9.0 pounds	• Fixed DVD±RW drive • Touchpad pointing device • 802.11g wireless • Six-in-one card reader	• WorldBench 5 score: 79 • Overall design: Good • Tested battery life: 2:59	Speedy, affordable wide-screen notebook would be ideal for home users. It has loads of features. (★★★★☆ Aug 04)
ALL-PURPOSE NOTEBOOK					
1	Best BUY IBM ThinkPad R51 find.pcworld.com/43118	• \$1694 • 1.5-GHz Pentium M • 15.0-inch screen • 7.4 pounds	• DVD-ROM and CD-RW combo drive • Touchpad and eraserhead pointing devices • 802.11g wireless	• WorldBench 5 score: 67 • Overall design: Outstanding • Tested battery life: 3:54	Slim R51 suits users who care more about mainstream features than bells and whistles. Excellent keyboard. (★★★★☆)
2	IBM ThinkPad T42 find.pcworld.com/43080	• \$2299 • 1.7-GHz Pentium M • 14.1-inch screen • 6.9 pounds	• DVD-ROM and CD-RW combo drive • Touchpad and eraserhead pointing devices • 802.11g wireless, gigabit ethernet	• WorldBench 5 score: 83 • Overall design: Very good • Tested battery life: 4:09	IBM pays terrific attention to detail in this impressive business notebook. The keyboard is outstanding, and the unit has speed to match. (★★★★☆)
3	Acer TravelMate 8000 find.pcworld.com/43074	• \$2299 • 2-GHz Pentium M • 15.0-inch screen • 7.6 pounds	• DVD±RW/RAM drive • Touchpad pointing device • 802.11g and Bluetooth wireless, gigabit ethernet	• WorldBench 5 score: 89 • Overall design: Very good • Tested battery life: 4:38	This business laptop boasts elegant design, moderate weight, and very strong performance. (★★★★☆)
4	Toshiba Tecra M2V-S310 find.pcworld.com/42558	• \$1499 • 1.5-GHz Pentium M • 14.1-inch screen • 5.7 pounds	• DVD-ROM and CD-RW combo drive • Touchpad pointing device • 802.11g wireless	• WorldBench 5 score: 61 • Overall design: Good • Tested battery life: 4:02	Lightweight business notebook offers good battery life and generous storage expansion. Model includes just 256MB of RAM at this price. (★★★☆☆ Aug 04)
5	Chem USA ChemBook 2056 find.pcworld.com/42910	• \$1999 • 1.7-GHz Pentium M • 15.0-inch screen • 7.3 pounds	• DVD±RW drive • Touchpad pointing device • 802.11g wireless • SD Card slot	• WorldBench 5 score: 83 • Overall design: Good • Tested battery life: 4:07	Strong performance and long battery life distinguish this portable. The system's optical drive is mounted on the front for easy access. (★★★★☆)
6	Micro Express NP1620A find.pcworld.com/42186	• \$1399 • 1.6-GHz Pentium M • 14.1-inch screen • 6.4 pounds	• Fixed DVD-ROM and CD-RW combo drive • Touchpad pointing device • 802.11g wireless • Three-in-one media card reader	• WorldBench 5 score: 77 • Overall design: Good • Tested battery life: 2:50	Has a whopping 1GB of RAM—our unit's maximum and twice that of most notebooks. (★★★★☆ July 04)
ULTRAPORTABLE					
1	Best BUY Toshiba Portégé M205-S810 find.pcworld.com/43120	• \$2399 • 1.5-GHz Pentium M • 12.1-inch screen • 7.1 pounds	• External DVD-ROM and CD-RW combo drive • Touchpad pointing device • 802.11g and Bluetooth wireless • SD Card slot	• WorldBench 5 score: 64 • Overall design: Fair • Tested battery life: 3:20	This stylish convertible tablet/notebook handles both functions adequately, but excels at neither. Good battery life and very responsive to screen taps. (★★★☆☆)
2	IBM ThinkPad X40 find.pcworld.com/43066	• \$2299 • 1.2-GHz Pentium M • 12.1-inch screen • 5.6 pounds	• External DVD-ROM and CD-RW combo drive • Eraserhead pointing device • 802.11g wireless, gigabit ethernet • SD Card slot	• 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. (★★★★☆)
3	Sony VAIO PCG-TR3AP3 find.pcworld.com/42188	• \$2200 • 1-GHz Pentium M • 10.6-inch screen • 4.0 pounds	• Fixed DVD-ROM and CD-RW combo drive • Touchpad pointing device • 802.11g wireless • Memory Stick slot, integrated VGA camera	• WorldBench 5 score: 52 • Overall design: Good • Battery life: 3:20	The VGA camera mounted on this unit's small, easy-to-read screen supports video and stills. The tiny speakers and shallow keystroke are drawbacks. (★★★☆☆ July 04)

FOOTNOTES: ¹ Weight includes AC adapter, power cord, and optical drive. ² Optical drives are removable, unless noted. Visit find.pcworld.com/43584 for reviews of all products tested this month.

TOP 15 DESKTOP PCs

POWER SYSTEM		Overall rating	Street price (6/25/04)	WorldBench 5 performance score ¹	Faster	Comments
1	Best Buy ABS Ultimate M6 find.pcworld.com/42214	89	Very expensive \$4799	Windows XP Professional Outstanding 115		Built for speed (and priced accordingly), it's the fastest PC on the chart. The jet-black case is good looking and roomy. (★★★★★ July 04)
2	Gateway 710X Performance find.pcworld.com/41736	83	Inexpensive \$2600	Windows XP Home Fair 88		The matching LCD on this silver-and-black midsize tower produced sharp text at all font sizes. (★★★★ June 04)
3	Alienware Aurora Extreme find.pcworld.com/42162	83	Very expensive \$4616	Windows XP Professional Very good 109		Quick, gaming-centric, and very pricey; this Aurora's sci-fi-themed case is exotic without being horrendously gaudy. (★★★★★ July 04)
4	Compaq Presario 8000Z find.pcworld.com/41740	83	Inexpensive \$2502	Windows XP Professional Good 98		The 8000Z sped through our tests, but the model we reviewed lacked open drive bays to boost storage. (★★★★ June 04)
5	Micro Express MicroFlex 34A find.pcworld.com/42574	82	Average \$2799	Windows XP Home Very good 104		A generally well-equipped system, with USB ports on the top of its chassis. It earned low scores for sound quality. (★★★★ Aug 04)
6	Amax Max64 3400+ find.pcworld.com/43224	NEW	Average \$2839	Windows XP Professional Good 93		Moderately priced, silver-gray power system includes a Wi-Fi USB device with 128MB of flash memory. (★★★★)
7	IBuyPower Gamer Extreme find.pcworld.com/43226	NEW	Average \$2895	Windows XP Home Very good 102		A flamboyant design and a 19-inch CRT monitor limit the appeal of this otherwise well-equipped system. (★★★★)
VALUE SYSTEM		Overall rating	Street price (6/25/04)	WorldBench 5 performance score ¹	Faster	Comments
1	Best Buy Gateway 510XL find.pcworld.com/41738	88	Average \$1400	Windows XP Home Very good 85		Mediocre graphics performance and a smallish LCD make this unit best suited for business and home-productivity use. (★★★★ June 04)
2	Sony VAIO PCV-RS520 find.pcworld.com/42158	84	Expensive \$1600	Windows XP Home Very good 84		Stylish design and competitive performance are undermined by an inferior keyboard and tinny-sounding speakers. (★★★★ July 04)
3	Dell Dimension 2400 find.pcworld.com/41174	84	Very inexpensive \$699 ²	Windows XP Home Fair 66		A large CRT monitor and a generous, home-oriented software bundle highlight this bargain system. (★★★ May 04)
4	IBuyPower Back To School find.pcworld.com/42576	83	Expensive \$1694	Windows XP Home Outstanding 98		Though this machine performed well in our tests, its outlandish front panel might give even gamers pause. (★★★★★ Aug 04)
5	ABS Harmony 1000 find.pcworld.com/42578	82	Average \$1499	Windows XP Home Good 79		Minutower sports a sleek look and front-mounted CD audio controls, but it lacks open drive bays and memory slots. (★★★ Aug 04)
6	Sys Technology Sys Performance 3200+/64 find.pcworld.com/42672	81	Expensive \$1795	Windows XP Home Very good 86		Nondescript black tower has a terrific software bundle and an attractive balance of features, speed, and price. (★★★★★ Aug 04)
7	HP Compaq Business Desktop Dx2000 Microtower find.pcworld.com/42150	80	Inexpensive \$1138	Windows XP Professional Good 75		No-frills, attractively priced business system performs sufficiently well for light to moderate duties. (★★★ July 04)
8	Amax Max 3000+ find.pcworld.com/43228	NEW	Average \$1399	Windows XP Home Very good 81		Model works as a low-profile desktop or thin tower; silver-gray design fits nicely in most business or home settings. (★★★★)

Go to find.pcworld.com/10860 for details on PC World's Star Ratings.

Go to find.pcworld.com/39209 for a breakdown of the weightings we give to the various factors that contribute to a desktop PC's overall rating in each of the two categories.

¹ Performance word scores reflect comparisons of PCs in the same category (power or value) running the same operating system. See find.pcworld.com/15720 for more details.

² Total capacity in gigabytes (may represent multiple drives).

LONGTIME PC WORLD READERS will note that system performance scores this month are significantly lower for all PCs on the chart. We've begun testing all systems with our reengineered and more demanding performance benchmark suite, WorldBench 5. Like its predecessor, PC WorldBench 4, WorldBench 5 runs the same applications you're likely to find on any well-equipped PC, including Microsoft Office and Adobe Photoshop. (See "PC World Unveils WorldBench 5" on page 146.)

Switching to the new version of WorldBench yielded some interesting results. Most notably, two similarly configured power systems traded the top performance spot. Under PC WorldBench 4, the ABS Ultimate M6 earned a score of 147 and Alienware's Aurora Extreme earned 150. Their WorldBench 5 scores are 115 and 109, respectively. What accounts for the difference? The ABS has twice the

Visit find.pcworld.com/42675 for reviews of all products tested this month and ranked in this chart.

CPU	RAM (MB/type)	Hard drive ²	Monitor	Graphics	Case type ³	Optical drives	Other features ⁴	Graphics quality	Setup and ease of use	Vendor's reliability/service
2.4-GHz Athlon 64 FX-53	2048/DDR400 SDRAM	398 (RAID)	19-inch LCD	256MB ATI Radeon 9800 XT	Midsized tower	8X DVD±RW and 16X DVD-ROM drives	Media-card reader, ⁵ Microsoft Wireless Optical keyboard and mouse, Klipsch Promedia Ultra 5.1 speakers, no modem, Microsoft Office 2003 SBE	Outstanding	Outstanding	Good/*
3.2-GHz Pentium 4	1024/DDR400 SDRAM	250	17-inch LCD	256MB NVIDIA GeForce FX 5950 Ultra	Midsized tower	8X DVD±RW and 16X DVD-ROM drives	Media-card reader, ⁵ gigabit network adapter, GMAX 2100 2.1 speakers, Microsoft Works Suite 2004, Pinnacle Expressions 2	Very good	Good	Good/Fair
2.4-GHz Athlon 64 FX-53	1024/DDR400 SDRAM	398 (RAID)	22-inch CRT	256MB ATI Radeon 9800 XT	Tower	8X DVD±RW and 48X CD-RW drives	Media-card reader, ⁵ Logitech Z-680 speakers, Microsoft Works Suite 2004	Very good	Very good	*/*
2.2-GHz Athlon 64 3400+	1024/DDR400 SDRAM	160 (RAID)	17-inch LCD	256MB ATI Radeon 9600 Pro	Midsized tower	8X DVD±RW and 48X CD-RW drives	Altec Lansing 221 speakers, Microsoft Works 7, Money 2004, MSN Encarta Plus	Very good	Good	Fair/Poor
2.2-GHz Athlon 64 3400+	1024/DDR400 SDRAM	250	19-inch LCD	256MB ATI Radeon 9800 XT	Midsized tower	8X DVD±RW drive	Media-card reader, ⁵ gigabit network adapter, Klipsch Promedia Ultra 5.1 speakers, no modem	Outstanding	Good	*/*
2.2-GHz Athlon 64 3400+	1024/DDR400 SDRAM	160	19-inch LCD	256MB ATI Radeon 9800 XT	Midsized tower	8X DVD±RW and 52X CD-RW drives	Media-card reader, ⁵ gigabit network adapter, Creative Inspire SBS 5.1 560 speakers, 802.11b wireless adapter	Very good	Good	*/*
2.4-GHz Athlon 64 3800+	1024/DDR400 SDRAM	160 (RAID)	19-inch CRT	256MB ATI Radeon 9800 Pro	Midsized tower	8X DVD±RW and 16X DVD-ROM drives	Media-card reader, ⁵ gigabit network adapter, Creative T-7700 7.1 speakers, no modem	Very good	Good	*/*
CPU	RAM (MB/type)	Hard drive ²	Monitor	Graphics	Case type ³	Optical drives	Other features ⁴	Graphics quality	Setup and ease of use	Vendor's reliability/service
3-GHz Pentium 4	512/DDR400 SDRAM	160	15-inch LCD	128MB NVIDIA GeForce FX 5200G	Minitower	8X DVD±RW and 16X DVD-ROM drives	Media-card reader, ⁵ GMAX 2100 2.1 speakers, Microsoft Works Suite 2004, Pinnacle Expressions 2	Fair	Good	Good/Fair
3-GHz Pentium 4	512/DDR333 SDRAM	160	17-inch LCD	128MB ATI Radeon 9200	Midsized tower	8X DVD±RW and 16X DVD-ROM drives	Media-card reader, ⁵ Microsoft Works 7, Sony PictureGear Studio, Quicken 2004 New User Edition	Good	Fair	Good/Fair
2.67-GHz Pentium 4	256/DDR333 SDRAM	80	19-inch CRT	Integrated Intel 845GL graphics using main memory	Minitower	16X DVD-ROM and 48X CD-RW drives	Dell A425 speakers, Microsoft Works Suite 2003, Sonic MyDVD, Britannica 2003, Quicken 2002, Jasc Paint Shop Pro 8	Poor	Very good	Good/Fair
2.2-GHz Athlon 64 3400+	512/DDR400 SDRAM	80	19-inch CRT	256MB ATI Radeon 9800 XT	Midsized tower	8X DVD±RW drive	Media-card reader, ⁵ Logitech Z-640 speakers, no modem	Very good	Very good	*/*
2.8-GHz Pentium 4	512/DDR400 SDRAM	80	17-inch LCD	128MB ATI Radeon 9600 XT	Minitower	16X DVD-ROM and 52X CD-RW drives	Media-card reader, ⁵ Creative I-Trigue 3300 speakers	Very good	Good	Good/*
2-GHz Athlon 64 3200+	512/DDR400 SDRAM	120	17-inch LCD	128MB PNY FX5900SE	Midsized tower	8X DVD±RW drive	Media-card reader, ⁵ gigabit network adapter, Altec Lansing 251 speakers, Corel WordPerfect Productivity Pack, Ulead PhotoImpact, no modem	Outstanding	Good	*/*
3-GHz Pentium 4	256/DDR400 SDRAM	40	15-inch LCD	Integrated Intel 3D Extreme graphics using main memory	Minitower	16X DVD-ROM/48X CD-RW combo drive	JBL Platinum speakers, no modem, Microsoft Works 7, Dantz Retrospect Express Backup 6.5	Fair	Good	Fair/Fair
2.167-GHz Athlon XP 3000+	512/DDR400 SDRAM	120	17-inch LCD	Integrated NVIDIA GeForce4 MX graphics using main memory	Compact	16X DVD-ROM/52X CD-RW combo drive	Media-card reader, ⁵ Microsoft Works Suite 2004	Fair	Good	*/*

² Vertical cases are towers (over 20 inches), midsized towers (15.5 to 20 inches), or minitowers (under 15.5 inches). Compacts are small-footprint or thin horizontal cases.

³ Unless otherwise stated, systems come with a modem and a 10/100 network adapter.

⁴ Includes support for some combination of CompactFlash I/II, Memory Stick, Memory Stick Pro, MultiMediaCard, Secure Digital, SmartMedia, and X0-Picture Card.

⁵ Insufficient data to give a rating.
⁶ Use Dell E-Value code 6V411-D24REV to get this price.

memory of the Alienware and took half as long to run our new Ahead Software Nero Express test (which creates a data image in preparation for burning a CD).

Two power list newcomers, the Amax Max64 3400+ and the IBuyPower Gamer Extreme, had good speed and offer attractive features. The Amax system carries a Wi-Fi USB adapter that includes 128MB of flash memory. We're not sure how

we'd use this device, but it's an interesting extra. Gamers may gravitate to the IBuyPower PC, but it is most noteworthy for its balance of performance and price.

Our value list hosts one new entrant, the Amax Max 3000+—one of the few compact desktop models we've seen. This system doesn't have a lot of pizzazz, but it does include a media-card reader and a 17-inch LCD for a relatively low price. ■



THE AMAX MAX64 3400+: This unassuming system offers power and expansion room.

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TOP 10 MONITORS

TOP 100

TEST
Center

Visit find.pcworld.com/43140 for reviews of all products tested this month and ranked in this chart.

SHARP'S LL-T15G4 MAKES the highest chart debut this month, thanks to its superb text reproduction. ViewSonic's VG510s performed almost as well as the Sharp on text, and even did a little better on graphics; but the Sharp includes a few more nifty features, like image-adjustment software. One

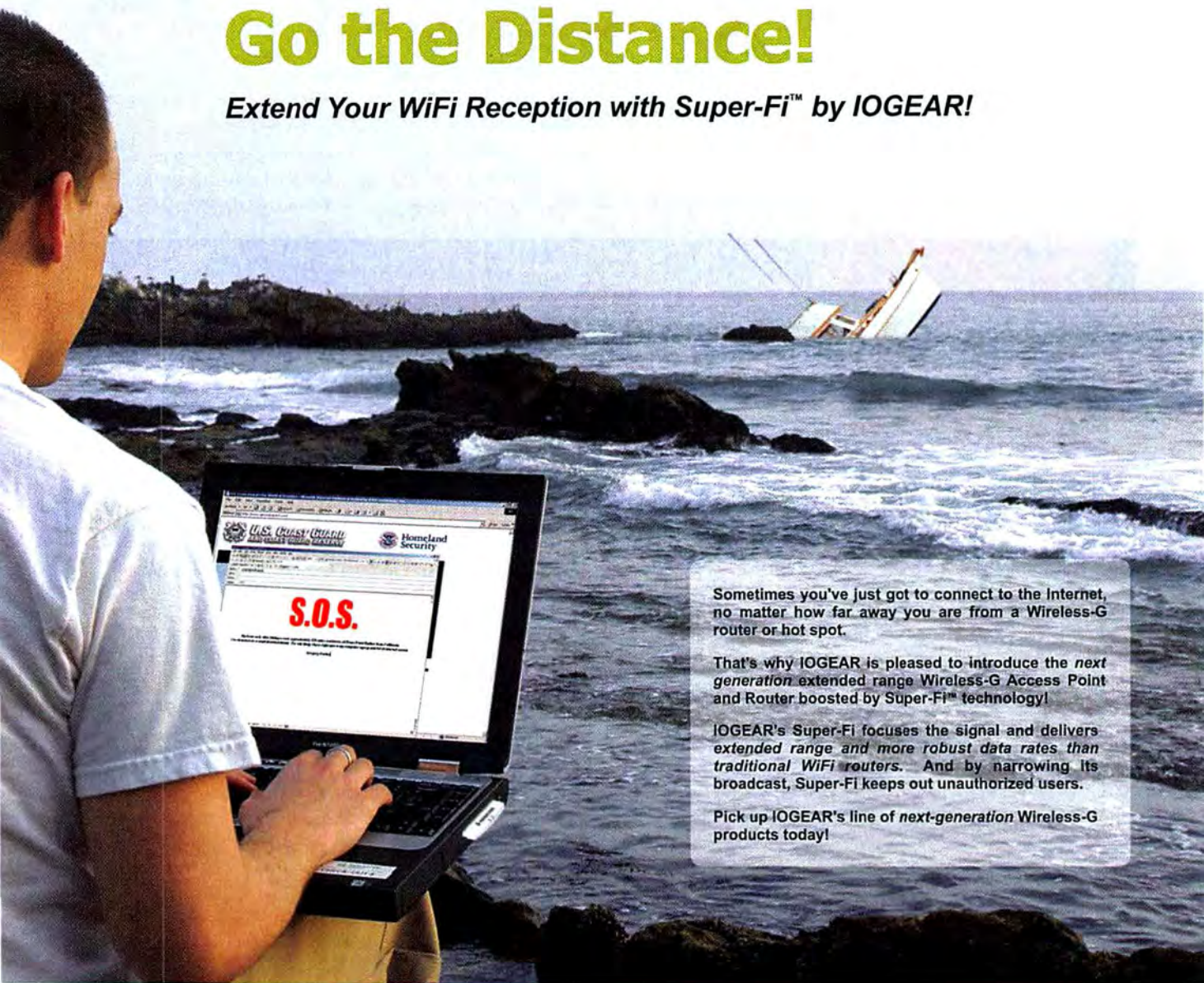
of the better models we've seen from BenQ, the FP557s-v2 showed above-average text quality, but middling graphics held it to the ninth spot. Half the models tested this month—namely the HP F1503, the Princeton Digital SEnergy 561, and the Hyundai ImageQuest L50S—missed the chart.

	15-INCH LCD MONITOR	Street price (5/21/04)	Overall rating	Quality of text/graphics	Comments
1	Best BUY Iiyama ProLite E380S-B find.pcworld.com/41198	\$345	83	Outstanding/ Very good	FEATURES: 5.1 pounds; analog video input; tilt adjustment; built-in speakers; headphone jack; TCO'99 compliant; three-year warranty; 12-hour weekday toll-free tech support. SUMMARY: This moderately priced monitor has very good graphics image quality, and text was sharp and easy to read, even at smaller font sizes. No weekend tech support is offered, however. (★★★★☆ May 04)
2	Best BUY Eizo Nanao FlexScan L367 find.pcworld.com/41246	\$400	83	Outstanding/ Very good	FEATURES: 8.1 pounds; dual video inputs; tilt and height adjustments; built-in speakers; headphone jack; TCO'03 compliant; five-year warranty (three-year backlight warranty); 24-hour daily toll-free tech support. SUMMARY: This slim-bezel monitor comes in black or gray and offers basic speakers. Eizo's bundled Screen Manager Pro software lets you adjust the display from your PC via a USB connection. (★★★★☆ Sept 03)
3	Sharp LL-T15G4 find.pcworld.com/43106 NEW	\$399	82	Outstanding/ Good	FEATURES: 6.4 pounds; dual video inputs; tilt adjustment; built-in speakers; headphone jack; color- and image-adjustment software; TCO'99 compliant; three-year warranty; 24-hour toll-free tech support. SUMMARY: General-use monitor displays remarkably crisp and clear text, even in tiny spreadsheet cells. User-configurable settings and low power consumption make this unit a smart buy. (★★★★☆)
4	LG Electronics Flatron L1515SK find.pcworld.com/41258	\$329	81	Very good/ Very good	FEATURES: 6 pounds; analog video input; tilt adjustment; TCO'99 compliant; three-year warranty; 24-hour toll-free tech support. SUMMARY: This lightweight, small-footprint monitor produced very good-looking text and graphics. As a no-frills unit, it forgoes advanced controls, but the on-screen menu can be locked to prevent users from adjusting the settings. (★★★★☆ May 04)
5	NEC MultiSync 1560NX find.pcworld.com/40808	\$340	81	Very good/ Very good	FEATURES: 9.9 pounds; dual video inputs; tilt and height adjustment; TCO'99 compliant; three-year warranty; 24-hour daily toll-free tech support. SUMMARY: This stately black unit provides dual analog and digital inputs, along with a bright screen and a wide viewing angle. The NaviSet software allows you to adjust settings from the PC as well as from the convenient on-screen menu. (★★★★☆ May 04)
6	HP L1530 find.pcworld.com/41204	\$399	81	Good/ Very good	FEATURES: 12.6 pounds; dual video inputs; tilt, swivel, height, and pivot adjustments; built-in speakers; headphone jack; TCO'03 compliant; three-year warranty; 24-hour daily toll-free tech support. SUMMARY: This business monitor packs in thoughtful extras, including full position adjustability and strong speakers with a volume-control wheel. A double hinge lets it fold flat for easy transportation. (★★★★☆ Jan 04)
7	IBM ThinkVision L150p find.pcworld.com/41201	\$380	80	Good/ Very good	FEATURES: 11 pounds; dual video inputs; tilt, swivel, and height adjustments; TCO'99 compliant; three-year warranty; 24-hour daily toll-free tech support. SUMMARY: This sturdy but slick-looking charcoal-gray unit offers very smooth height and swivel adjustments. The on-screen controls are less versatile; only the brightness level can be changed in digital mode. (★★★★☆ May 04)
8	ViewSonic VG510s find.pcworld.com/43094 NEW	\$389	79	Outstanding/ Good	FEATURES: 8.8 pounds; dual video inputs; tilt adjustment; built-in speakers; TCO'99 compliant; three-year warranty; 24-hour daily toll-free tech support. SUMMARY: Small-footprint monitor shows clean details in both text and graphics. The display's colors could be more realistic, but its black-and-white screens offer excellent shading and contrast. (★★★★☆)
9	BenQ FP557s-v2 find.pcworld.com/43102 NEW	\$379	78	Very good/ Fair	FEATURES: 7.5 pounds; analog video input; tilt adjustment; image-adjustment software; TCO'99 compliant; three-year warranty; 9-hour weekday toll-free tech support. SUMMARY: Like many monitors marketed as video-friendly, this model claims a 16-millisecond response time. Ironically, though, it fares better at business tasks, such as spreadsheet and text display. (★★★★☆)
10	CTX Technology S500B find.pcworld.com/41333	\$360	78	Good/ Very good	FEATURES: 8.2 pounds; analog video input; tilt adjustment; TCO'99 compliant; three-year labor, two-year parts warranty (one-year backlight warranty); 24-hour daily toll-free tech support. SUMMARY: This moderately priced unit produced attractive graphics with strong, bright colors; but the on-screen menu is awkward to use, the bezel is wide, and the black-on-black button labels are difficult to read. (★★★★☆ May 04)

FOOTNOTE: ¹ Includes both digital (DVI) and analog inputs. DVI requires a graphics card with a DVI digital output, which we use to test all monitors that offer DVI. **HOW WE TEST:** Judges rate how well each monitor displays 13 text and graphics images at a native resolution of 1024 by 768. 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:** Overall ratings are based on text and graphics quality (20 percent each), price (15 percent), features (20 percent), ease of use (15 percent), and service and support (10 percent). With LCD monitors, the entire screen area is viewable. See find.pcworld.com/10860 for details on PC World's Star Ratings.

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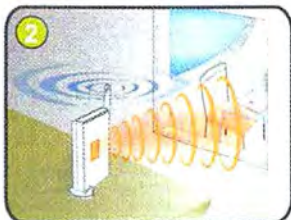
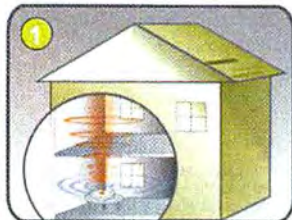


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TOP 5 SCANNERS

TOP 100

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Visit find.pcworld.com/43278 for reviews of all products tested this month and ranked in this chart.

	SMALL-OFFICE SCANNER	Street price (6/30/04)	Overall rating	Scan quality (color/monochrome)	Scan speed (color/monochrome, in seconds per document)	Comments
1	Best Buy Epson Perfection 2480 Photo NEW find.pcworld.com/43114	\$99	84	Good/ Very good	31/23	FEATURES: USB 2.0, ¹ 2400 by 4800 dpi, 16.5-by-10.8-by-3.4-inch case, 6 pounds, 8.5-by-11.7-inch scanning area; includes transparency adapter; optional multiphoto and business card feeder. SUMMARY: This model turns out fast, good-quality scans and includes features for cleaning up defects such as dust or scratches. (★★★★☆)
2	Microtek ScanMaker i320 find.pcworld.com/41543	\$150	79	Good/ Fair	36/29	FEATURES: USB 2.0, ¹ 3200 by 6400 dpi, 11.6-by-19.1-by-3-inch case, 6 pounds, 8.5-by-11.7-inch scanning area; includes transparency adapter; no automatic document feeder. SUMMARY: Produces nice color and has Digital ICE technology for fixing surface defects; but its transparency adapter holds only one 35mm slide. (★★★☆☆ May 04)
3	Visioneer OneTouch 7300 USB find.pcworld.com/41561	\$80	76	Good/ Very good	108/33	FEATURES: USB 2.0, ¹ 1200 by 1200 dpi, 14.8-by-10.1-by-1.4-inch case, 3 pounds, 8.5-by-11.7-inch scanning area; no transparency adapter or ADF. SUMMARY: A lightweight, portable model powered via a USB cable, this unit is sluggish at color scans, but its image quality is worth the wait. (★★★★☆ May 04)
4	Microtek ScanMaker 6800 find.pcworld.com/34400	\$300	76	Very good/ Good	39/42	FEATURES: USB 2.0, ¹ FireWire, ² 2400 by 4800 dpi, 11.4-by-19.7-by-4.5-inch case, 8.1 pounds, 8.5-by-11.7-inch scanning area; includes transparency adapter; optional ADF. SUMMARY: Price drop puts the 6800 within reach of small offices. It includes Digital ICE for repairing surface defects, and a light box for previewing film. (★★★★☆ Apr 03)
5	HP Scanjet 5590 NEW find.pcworld.com/43112	\$399	73	Good/ Very good	35/20	FEATURES: USB 2.0, ¹ 2400 by 2400 dpi, 19.2-by-13.4-by-6.4-inch case, 12.6 pounds, 8.5-by-11-inch scanning area; includes transparency adapter and ADF. SUMMARY: Best suited for heavy office use, the 5590 has a 50-page ADF that enables two-sided scanning. This is the fastest model here at scanning monochrome documents. (★★★★☆)

FOOTNOTES: ¹All USB 2.0 devices are backward-compatible with USB 1.1 ports; however, performance may vary from our results, as we test with USB 2.0 (unless otherwise noted). ²Tested using FireWire 400 interface. **HOW WE TEST:** See find.pcworld.com/43278 for our test methodology. **CHART NOTES:** Scans are of a 2-by-2-inch color photo at 1200 dpi and black-and-white line art at 300 dpi. Case dimensions in order: width, depth, height. See find.pcworld.com/10860 for details on PC World's Star Ratings.

THE TWO NEW MODELS on this month's chart performed similarly in our tests, yet vary widely in price and purpose. The \$99 Epson Perfection 2480 Photo, at number one on the chart, is a good choice for home users. It's quick at scanning color images, and its TWAIN interface has handy features for cleaning up defects like dust and scratches, and for

adjusting grain or restoring color. The Perfection 2480 also comes with a transparency adapter, and four one-touch buttons for easy operation. The business-card and photo feeder that comes with the Perfection 2580 (see *New Products*, page 60) is an option and costs \$149.

The \$399 HP Scanjet 5590 is designed for high-volume office use. Like the Epson Perfection 2480, the Scanjet 5590 has a transparency adapter and one-touch function buttons, but its most impressive feature is a 50-sheet automatic document feeder that enables two-sided scanning—a welcome feature among flatbed scanners in this price range. The Scanjet 5590 scanned monochrome documents more

quickly than any other unit on the chart.

The Microtek ScanMaker i320, at \$150, is the least-expensive flatbed scanner we've tested that employs Digital ICE restoration technology to remove dust and scratches from scans—a technology once available only in dedicated slide scanners for a premium price. Both of the Microtek scanners on the chart have Digital ICE but allow you to use it only with photo prints. By contrast, you can use the image-restoration features of the Epson Perfection 2480 with both prints and transparencies.

The lowest-priced scanner on the chart, the \$80 Visioneer OneTouch 7300 USB,

weighs only 3 pounds and doesn't need a power cord. Though its 1200-dots-per-inch optical resolution is lower than any other model's on the chart, the OneTouch 7300 produced better-quality scans than more-expensive models on some tests, proving that higher resolution doesn't always guarantee a better image. However, it can't scan transparencies and it's slow at scanning color documents. ■



DESIGNED FOR high-volume use, the HP Scanjet 5590 has a 50-page document feeder and performs duplex scanning.

PHOTOGRAPH: RICK RIZNER

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TOP 10 DIGITAL CAMERAS

TEST
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Visit find.pcworld.com/43324 for reviews of all products tested this month and ranked in this chart.

CANON'S POWERSHOT PRO1 is the best of the new cameras we tested this month. One of a small group of 8-megapixel models, the Pro1 earned high marks in all imaging categories, including color accuracy and sharpness. Relatively compact and equipped with a 7X optical zoom, it makes an

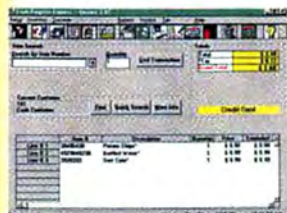
attractive travel camera. Also well suited for travel, the Olympus C-770 Ultra Zoom has a 10X optical zoom and weighs only 12 ounces. We tested Nikon's consumer SLR, the D70, but weren't confident about the image quality scores it received. We'll test a second unit and report the results online.

	ADVANCED CAMERA	Street price (7/2/04)	Overall rating	Image quality	Ease of use	Battery life/shots	Comments ¹
1	 Olympus C-8080 Wide Zoom find.pcworld.com/41860	\$999	84	Outstanding	Very good	Very good/458	FEATURES: 8-megapixel resolution, 32MB XD-Picture Card plus CompactFlash slot, 28mm to 140mm focal range, 640 by 480 video with audio, 25.6 ounces. SUMMARY: A step up from the less-expensive Best Buy C-5060, this model has a faster lens and a slightly longer zoom range, but is also much bulkier. (★★★★☆ June 04)
2	 Olympus C-5060 Wide Zoom find.pcworld.com/3952	\$649	84	Very good	Very good	Outstanding/over 500 ²	FEATURES: 5.1-megapixel resolution, 32MB XD-Picture Card plus CompactFlash slot, 27mm to 110mm focal range, 640 by 480 video with audio, 17.9 ounces. SUMMARY: The C-5060 has extensive and intuitive exposure controls, and it earned high image-quality scores. Its LCD rotates up and swivels for self-portraits. (★★★★☆ Feb 04)
3	Canon PowerShot Pro1  find.pcworld.com/43164	\$1000	81	Outstanding	Good	Good/356	FEATURES: 8-megapixel resolution, 64MB CompactFlash card, 28mm to 200mm focal range, 640 by 480 video with audio, 22.9 ounces. SUMMARY: This model has a near SLR-like feel. A barrel ring controls both zoom and manual focus, and the camera has an extensive selection of controls. (★★★★☆)
4	Olympus C-770 Ultra Zoom  find.pcworld.com/43174	\$600	81	Very good	Good	Fair/200	FEATURES: 4-megapixel resolution, 16MB XD-Picture Card, 38mm to 380mm focal range, 640 by 480 video with audio, 11.9 ounces. SUMMARY: The C-770 is light and fairly compact, and includes a slew of creative controls, though switching among them can take time; has 10X optical zoom. (★★★★☆)
5	Canon EOS Digital Rebel find.pcworld.com/38810	\$1000	81	Good	Very good	Outstanding/over 500 ²	FEATURES: 6.3-megapixel resolution, CompactFlash slot (media not included with camera), 28mm to 90mm focal range, no video or audio recording, 29.5 ounces. SUMMARY: A bargain for a digital SLR camera with interchangeable lenses; though priced here as a kit with a mid-range (3.2X) zoom lens, it is also sold body-only. (★★★★☆ Jan 04)
6	Nikon Coolpix 8700 find.pcworld.com/41862	\$999	81	Very good	Fair	Fair/241	FEATURES: 8-megapixel resolution, CompactFlash slot (media not included), 35mm to 280mm focal range, 640 by 480 video with audio, 18.7 ounces. SUMMARY: This model is compact for a camera with 8X optical zoom, and it creates fine photos, but the extensive menus can make setting controls daunting. (★★★★☆ June 04)
7	Panasonic Lumix DMC-FZ10S find.pcworld.com/42260	\$600	80	Very good	Good	Good/277	FEATURES: 4-megapixel resolution, 16MB SD Card, 35mm to 420mm focal range, 320 by 240 video with audio, 20.8 ounces. SUMMARY: An advanced camera carrying an impressive 12X zoom lens with image stabilization, the Lumix takes impressive photos. Its creative controls are harder to use than competitors'. (★★★★☆ July 04)
8	Olympus C-5000 Zoom find.pcworld.com/39530	\$400	79	Good	Very good	Fair/246	FEATURES: 5-megapixel resolution, 32MB XD-Picture Card, 38mm to 114mm focal range, 320 by 240 video without audio, 9.7 ounces. SUMMARY: Low-priced and small for an advanced, 5-megapixel camera with a hot shoe, the C-5000 produced slightly above-average image quality in our tests. (★★★★☆ Feb 04)
9	Casio Exilim Pro EX-P600  find.pcworld.com/42832	\$599	78	Fair	Very good	Good/352	FEATURES: 6-megapixel resolution, 9MB internal memory plus SD Card slot (media not included), 33mm to 132mm focal range, 320 by 240 video with audio, 9.1 ounces. SUMMARY: A 2-inch LCD with a unique status display, plus 25 scene modes with built-in help, highlight this model. (★★★★☆)
10	Sony Cyber-shot DSC-F828 find.pcworld.com/40802	\$1000	78	Good	Very good	Very good/420	FEATURES: 8-megapixel resolution, Memory Stick and CompactFlash slot (media not included), 28mm to 200mm focal range, 640 by 480 video with audio, 33.9 ounces. SUMMARY: The DSC-F828 uses Sony's new four-color CCD for more-vivid colors; test shots looked fine, but competing models earned higher image scores. (★★★★☆ Apr 04)

FOOTNOTES: ¹Resolutions are expressed in effective pixels, focal range is identified as 35mm equivalent, and camera weights include batteries. ²We cut off testing at 500 shots, or approximately 4.5 hours of testing. **HOW WE TEST:** We take a series of shots, with and without flash, at the camera's highest resolution and at 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:** Each camera's overall rating is based on price (20 percent), picture quality (30 percent), ease of use (10 percent), features (20 percent), battery life (10 percent), and support (10 percent). For all ratings, higher is better.

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MORE REVIEWS

TOP 100

TEST
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MISSED AN ISSUE OF *PC World* or passed your copy along to a friend? Here's a recap of other *Top 100* topics from previous issues. To read reviews of the products ranked on these Top 10 charts, go online and type in the *PC World* Find-It

URL at the top of each chart. Next month in the *Top 100*, our charts will rank point-and-shoot digital cameras, 17-inch LCD monitors, and rewritable DVD drives. In addition, our Spotlight review will take a look at multifunction devices.



THIS COMPACT point-and-shoot, the Sony Cyber-shot DSC-W1, can take optional lenses and includes some advanced controls, such as manual exposure.



THE MEMOREX True 8X External Dual-Format DVD Recorder costs \$205, which is reasonable for an external DVD drive. It also comes packaged in a slick case.

	REWRITABLE DVD DRIVES find.pcworld.com/42934	POINT-AND-SHOOT DIGITAL CAMERAS find.pcworld.com/42866	19-INCH LCD MONITORS find.pcworld.com/42874	PDAs find.pcworld.com/42476
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	From the August 2004 Issue	From the August 2004 Issue	From the August 2004 Issue	From the July 2004 Issue

HERE'S HOW

EDITED BY MICHAEL S. LASKY, DENNIS O'REILLY, AND ERIC DAHL



ANSWER LINE

LINCOLN SPECTOR

PC Safety Toolbox: 5 Steps to Protecting Your System

I ENJOY ANSWERING reader questions (even if I can't respond personally to every one). But often I'm the bearer of bad news. If only readers had backed up, used a firewall, or taken some other preventive step, there would be no problem with their PC.

As preemptive answers to your most frequent questions, here are five ways to avoid PC disasters. If you do only four of them, you're courting danger.

Security step one is a full backup. A reader recently wrote that she had acci-

dentally wiped out a term paper. Unfortunately, she didn't have a copy on a floppy (or other removable storage medium).

CD-RW, DVD±RW, and external hard drives make backing up easier and cheaper than ever. External hard drives in particular are terrific backup tools. For about \$70, you can get a drive large enough to back up your programs as well as your data. However, if you want to keep multiple backup copies (a good idea), external drives can be an expensive option.

By comparison, CD-RW and DVD±RW discs are dirt cheap, and you probably already own one or both types of recordable drives. Backing up to rewritable (CD-RW) discs that you can record over many times rather than to write-once (CD-R) discs will save you money in the long run.

Copy your data files daily. If you use Windows 98 or Me, back up these folders (you may not have all of them): My Documents, Windows\All Users, Windows\Application Data, Windows\Desktop, Windows\Favorites, Windows\Local Settings, Windows\Profiles, Windows\Send-To, and Windows\Start Menu. In Windows 2000 and XP, everything you need to back up is probably in the Documents and Settings folder; but in that folder, don't back up the History, Temp, and Temporary Internet Files subfolders.

Automate full backups (which copy every file in your data folders and run once a week) and incremental backups (which copy only the files created or altered since the last backup and run daily). I start my automated backup routine at the end of every workday. Visit find.pcworld.com/42622 to read Scott Dunn's June *Windows Tips* column on automating tasks (such as backup) when Windows shuts down.

I recommend Datahjaelp's \$27 Zip Backup to CD (see **FIGURE 1**). Go to find.pcworld.com/42628 to download the program. If you own the WinZip compression program, you can use my Spector Backup System; browse to find.pcworld.com/42626 for step-by-step instructions.

BACK UP YOUR SOFTWARE

BACKING UP Windows and your applications isn't as vital as protecting your data (you can always reinstall the programs). In an emergency, however, software back-

162 ANSWER LINE

Stop PC problems in their tracks by following five quick and easy steps for maintaining a trouble-free machine.

166 WINDOWS TIPS

XP Pro's Automated System Recovery; set windows to open big; color-code Explorer files; shortcuts to Outlook.

168 STEP-BY-STEP

Give your browser a tune-up: optimization and security tips for Internet Explorer, Mozilla, and Opera.

170 INTERNET TIPS

How to tell when your PC has caught a virus, and what to do when your antivirus software doesn't catch it.

172 HARDWARE TIPS

Get the best view possible by adjusting your monitor's color temperature, brightness, contrast, and other settings; block your PC's Internet access.



166

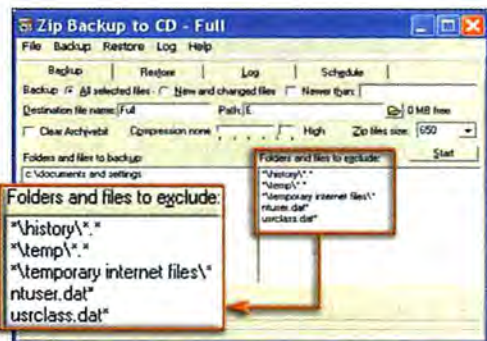


FIGURE 1: BACK UP YOUR data to CD, DVD, or hard drive with the Zip Backup to CD shareware.

ups can save you time and aggravation.

The perfect system backup program would back up the entire Windows folder (except the Temporary and History subfolders), the Master Boot Record, the boot files in your root directory, and optionally your program folders. It would save the information to a bootable CD or DVD for fast restores, with all your data intact.

V Communications' \$40 Recovery Commander comes closest to this ideal. Still, the program backs up to your hard drive rather than to removable media, and it doesn't back up every file you need to protect. Recovery Commander is also part of VCom's \$60 SystemSuite collection of utilities. Visit find.pcworld.com/42630 for more information.

At a minimum, you should regularly back up the Windows Registry—especially if you use Windows 2000. (Windows 98, Me, and XP do automatic Registry backups.) For Windows 2000 backups, I recommend Lars Hederer's free Emergency Recovery Utility NT. Go to find.pcworld.com/42636 to download the program. And visit find.pcworld.com/42638 to read my April 2003 *Answer Line* column on backing up and restoring your Registry.

The safest full system backup is an image—a sector-by-sector copy of an entire hard drive or partition. When you restore an image, your drive returns to the condition it was in when the image was made. Everything that worked then will work now. But you lose every document, e-mail, and other data you received, created, or changed since making the image. That's why you should also back up your data incrementally.

The imaging program I prefer is Acronis True Image, which you can buy at www.acronis.com. It's simple, direct, easy to use, and (at \$50) cheaper than the competition. The program does both full (image) and incremental backups, so it's useful for daily backups as well.

MAKE AN EMERGENCY DISK

ARE YOU PREPARED for the inevitable day when Windows refuses to boot? To be truly ready, you'll need something more versatile than an image backup: an emergency startup floppy. (Of course, you'll still need a restore program to put the image back on the hard drive.) Creating such a drive is easy to do in Windows 98 and Me: Select **Start•Settings•Control Panel•Add/Remove Programs**. Get a blank, formatted floppy disk ready, click the **Startup Disk** tab, and then simply follow the prompts (see **FIGURE 2**).

Windows 2000 and XP lack this capability, and the DOS-based tools you saved on your 98/Me emergency floppy are useless with the NTFS file system used by Windows 2000 and most XP machines. However, if you have a Microsoft Windows CD-ROM, you've got a pretty good tool called the Recovery Con-

sole. To get to it, reboot your system with the Windows CD inserted, and press any key when you're told to 'Press any key to boot from CD.' At the 'Welcome to Setup' screen, press **r** for Repair.

If you don't have a Windows CD, your PC probably came with a restore CD for fixing problems. Boot from this disc as described above and see if it has any programs that fix the boot sector, scan your hard drive, or handle similar functions. If the CD just offers to restore the hard drive to factory condition, pass on this option and use another restore alternative.

Microsoft's free Setup Disks for Floppy Boot Install program has the Recovery Console utility hidden inside. The Setup Disks programs install onto six floppies, the first of which is bootable. You have to swap through all six to get to the Recovery Console. Go to find.pcworld.com/42662 to download the Setup Disks for Floppy Boot Install. Visit find.pcworld.com/42640 to read my November 2003 *Answer Line* column describing emergency boot-up options in Windows 2000 and XP.

DEFRAG YOUR HARD DRIVE

THOUGH MANY readers will surely disagree, I'm convinced that defragging your hard drive doesn't improve performance. Defragging does improve reliability, ►



FIGURE 2: BE READY FOR disaster in Windows 98 and Me by creating an emergency boot floppy disk.



FIGURE 3: AUTOMATE YOUR hard-disk defrags via Windows' Scheduled Task Wizard.

however: A fragmented drive is sure to encounter more problems. You should defrag once or twice a month.

And now to explode another myth: There is no reason to buy a third-party defragger. The one that comes with Windows works just fine. In Windows 98 and Me, select **Start•Programs•Accessories•System Tools•Disk Defragmenter**. In Windows 2000 and XP, open **My Computer**, right-click your C: drive, and select **Properties•Tools•Defragment Now**.

If that's too hard to remember, set up Windows to defrag on a regular, automated schedule. Windows 2000 users must first browse to find.pcworld.com/42642 to download MorphaSys's free AutoDeFrag program and then save the utility to their C:\WINNT folder. In all versions of Windows, select **Start•Programs (All Programs in XP)•Accessories•System Tools•Scheduled Tasks**. Double-click **Add Scheduled Task** to start the Scheduled Task Wizard. When you're asked to select a program, pick any one; you'll change it later. Name the task

Defrag (see FIGURE 3). Make your own decisions through the rest of the wizard, but when you get to the last page, check *Open advanced properties for this task when I click Finish* and then click **Finish**.

In the Defrag dialog box, replace what is in the Run box with the appropriate command for your version of Windows: It's **defrag c: /noprompt /f** in 98 and Me; in Windows 2000, type **autodefrag c:**; and in XP, enter **defrag c:**. (The '/noprompt' and '/f' operators automate the defrag start-up.) Click **OK**, exit Scheduled Tasks, and you're set—unless you use XP, in which case the lack of a password will keep the task from running. See find.pcworld.com/42644 for the fix I described in my January 2003 *Answer Line* column.

BLOCK THE BAD GUYS

YOU MAY FIND this hard to believe, but there are some dishonest people on the Internet. Really. Your first line of defense is a firewall—a program that controls the ports between your computer and the Internet. Whenever something outside tries to access your PC, or a program on your machine tries to access the Internet, the firewall asks whether to allow it.

Windows XP's built-in firewall isn't as protective as a good third-party firewall such as Zone Labs' ZoneAlarm (see FIGURE 4), which is thorough, powerful, easy to use, and best of all, free. Browse to find.pcworld.com/42646 to download ZoneAlarm, and visit find.pcworld.com/42648 to read more about free firewalls in the December 2003 *Internet Tips*.

You also need an antivirus program to check your incoming and outgoing mail, as well as files on your hard drive to catch viruses already on it. Trend Micro's \$50 PC-cillin Internet Security suite—which we recently named our Best Buy security utility—contains excellent virus protection, a very good firewall, a spam filter, and other goodies. Visit find.pcworld.com/42664 to download the trial version, and browse to find.pcworld.com/42650 to read Scott Spanbauer's January *Internet Tips* column on free antivirus software. Note: Af-

WE HEAR YOU

Another Networking Fix

SEVERAL READERS of May's network-troubleshooting column pointed out that software firewalls can block LAN connections, too. If your networked computers don't see each other, check your firewall. If you're using ZoneAlarm, double-click the ZoneAlarm system tray icon and choose the **Zones** tab (if there's no such tab, click the arrow icon in the lower-right corner). To add another computer to your **Trusted** zone, click **Add•Host/Site**. Make sure **Trusted** is selected in the **Zone** field. Enter the computer name in the 'Host name' field, and then click **Lookup**. When the firewall finds the computer, enter a description and click **OK**.

ter we ran June's security tools roundup (find.pcworld.com/42914), PC-cillin was found to be incompatible with ZoneAlarm.

Finally, keep an eye out for spyware—programs that surreptitiously install themselves onto your computer and track your activities for the benefit of advertisers. Some of these programs report your online shopping habits, while others alter how your browser displays Web sites, sometimes adding their own advertisements. Luckily, the two best programs for dealing with spyware are free. Visit find.pcworld.com/42652 to download Lavasoft's Ad-aware, and go to find.pcworld.com/42654 for a copy of Patrick M. Kolla's Spybot Search & Destroy.

Firewalls, antivirus scanners, and spyware detectors require frequent updates. Keep your firewall and antivirus programs running in the background. Scan all the files that you download for viruses and spyware prior to installing them on your system. And don't neglect this old security chestnut: Never open an e-mail attachment unless you know the sender and are expecting the message. ■

Send your questions to answer@pcworld.com. Answer Line pays \$50 for published items. See find.pcworld.com/31577 for more Answer Line columns. You'll find Contributing Editor Lincoln Spector's humorous writing at www.thelinkinspector.com.



FIGURE 4: ZONEALARM KEEPS Internet intruders off your system, without costing you a red cent.



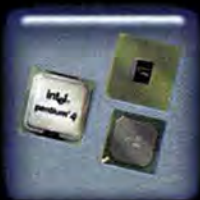
Shuttle XPC P8100 System

The PC of the future

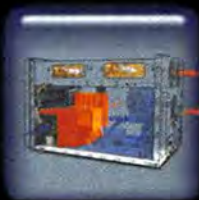
In the future, desktop PC's will be a fraction of the size of archaic tower designs. In the future, desktop PC's will sport the latest processors and video cards, yet run whisper quiet.

The future is here with the Shuttle XPC P 8100. As the world's most advanced desktop PC, the XPC P 8100 crams incredible features and performance into a compact, stylish design. How advanced is it? The Shuttle XPC P 8100 is the world's first compact PC to support processors at 3.6GHz and beyond, the world's first all SerialATA PC, and the world's first compact PC to feature the latest PCI-Express video cards and expansion devices. Yet with all this technology, the XPC P 8100 runs amazingly cool and quietly.

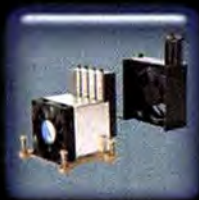
At Shuttle, we create the next generation PC. **xpc**



Intel I915G,
processors
3.6Ghz and beyond



Advanced
Cooling
Zones



Integrated
Cooling
Engine



Up to FOUR
Serial ATA Drives

WINDOWS TIPS

SCOTT DUNN

GET THE FULL VIEW
OF NEW WINDOWSCOLOR-CODE YOUR
FILE NAMESTHE FASTEST WAY
INTO OUTLOOKUse a Super Boot Floppy
After an XP Meltdown

Windows YIKES! YOU FLIPPED ON the power for your computer, but Windows XP Professional won't load. What to do? If you've prepared for this day, you can lessen the pain. XP Pro contains a special tool—called Automated System Recovery—for just such occasions. Regrettably, ASR isn't switched on by default. Follow these steps to activate it today, before the worst happens.

First, open the backup utility that comes with Windows XP: Choose *Start•All Programs•Accessories•System Tools•Backup*. If you see the Backup or Restore Wizard, click *Advanced Mode*. On the Welcome tab, click *Automated System Recovery Wizard* (see **FIGURE 1**). Follow the prompts to make a backup of your system files. Note that this process backs up only the Registry and other files that are critical to starting Windows—not all of your computer's files. When the backup is finished, you'll be prompted to insert a blank floppy disk in the drive. When the wizard is done, eject the disk and put it in a safe place.

In the future, if disaster strikes and you

aren't able to boot your XP Pro machine, you'll be ready to save the day. First, try booting Windows XP using either the Last Known Good Configuration or the Safe Mode option, as described by Lincoln Spector in his *Answer Line* column from last November, "What to Do When XP or 2000 Won't Boot" (find.pcworld.com/42550).

If neither of these two boot-up options does the trick, insert your Windows XP installation CD and reboot your computer. Follow whatever steps are necessary to boot Windows from the CD. When you're prompted in the status line at the bottom of the screen, press **<F2>**, insert your ASR floppy disk, and then follow the on-screen prompts to restore your system.

OPEN WINDOWS SUPERSIZE

Windows WHEN I DOUBLE-CLICK one of my Internet Explorer desktop shortcuts, I want the program to open in a maximized window. Currently it opens small, and as a result I have to click the maximize button every time. But when I close the window and then double-click the shortcut again, it's still not maximized. Please help me make it open big.

Vincent Casolaro

San Jacinto, California

WINDOWS PROVIDES several ways to make windows fill the screen: Single-click the maximize button, double-click the title bar, or right-click a taskbar

button and choose *Maximize*. Unfortunately, very few windows are capable of remembering to open in the state you left them in the next time you access them.

To make an application always open in Jumbotron mode, find the shortcut you want to adjust on the *Start•Programs* or *Start•All Programs* menu. Right-click the shortcut and click *Properties*. On the *Shortcut* tab, choose *Maximized* from the *Run* drop-down list. (The 'Normal' setting is the behavior you usually get; 'Minimized' makes the program start as a taskbar button.) From now on, choosing that shortcut will launch the program in a full-size (maximized) window.

This trick works for your application and document shortcuts, but not for document files or for such special desktop

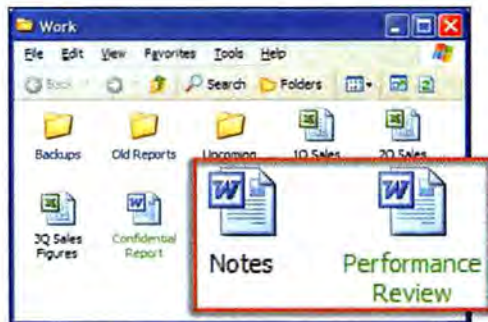


FIGURE 2: ENCRYPTED? COMPRESSED? Use colored file names to get the scoop at a glance.

icons as *My Computer* and *Internet Explorer*. The only workaround for these holdouts is to create shortcuts to the items that you use frequently (by right-dragging an icon, dropping it where you want it, and choosing *Create Shortcut(s) Here*), and then to set the window size in the *Shortcut* tab as explained above.

Unfortunately, shortcuts to Internet Explorer Web pages are an exception to the usual arrangement; their *Properties* dialog boxes have no *Shortcut* tab. For a solution, see this month's "Windows Toolbox."

STANDOUT FILES

Windows IF YOUR PC uses Windows XP Pro and the NTFS file system, you can compress and encrypt your folders and files (visit find.pcworld.com/42556 and read tips 11 and 22 in March's "76 Ways to Get More



FIGURE 1: PREPARE FOR disaster with ease, using XP Professional's Automated System Recovery Wizard.

Out of Windows"). If you would like these files and folders to stand out in Explorer, open any folder window and select **Tools • Folder Options • View**. In Windows XP, scroll down the 'Advanced settings' list and make sure that *Show encrypted or compressed NTFS files in color* is checked. In Windows 2000, check *Display compressed files and folders with al-*

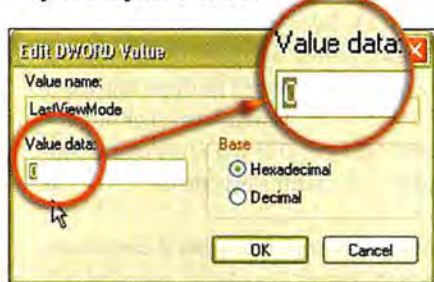


FIGURE 3: BAD SKIN? Turn off Skins mode in the Registry without starting Media Player.

ternate color (or uncheck this option if you don't want to attract attention to your encrypted files). Finish by clicking **OK**. In Explorer, all compressed items will now have blue names, and all encrypted items will have green names (see **FIGURE 2**).

SPEED INTO OUTLOOK AND MORE

Windows 2K XP 98 ME IN LAST NOVEMBER'S column, I described several different things that you can do to get more use out of the Address bar in folder and Internet Explorer windows (find.pcworld.com/42566). Reader Richard Stobart of Putney, London, sent some additional Address bar tips. For example, to get to any Microsoft Outlook folder (including Mail, Calendar, and Contacts,

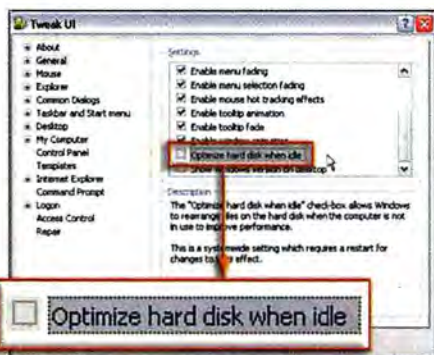


FIGURE 4: USE TWEAK UI to stop Windows from using your hard disk when you're away.

among others), type **outlook:** followed by the folder name (with no space between). For example, type **outlook:tasks** and press **<Enter>** to launch Outlook displaying your task list. If you're typing the address of a Web page that has a .com extension, you can skip both the 'www.' prefix and the '.com' suffix. Simply type the middle of the Web site's domain name and press **<Ctrl>-<Enter>**. Internet Explorer automatically adds the prefix and the suffix before sending you on your merry way.

UNSKIN MEDIA PLAYER 9

Windows 2K XP 98 ME YOU JUST couldn't resist downloading and applying that great-looking "skin" for Windows Media Player 9, could you? Unfortunately, the defective skin crashes Media Player every time you start the program. And what's worse, you can't change skins because Media Player won't run long enough to let you make the switch. What to do? Roll up your sleeves and prepare to edit the Registry: Choose **Start • Run**, type **regedit**, and press **<Enter>**. Scroll in the left pane to **HKEY_CURRENT_USER\Software\Microsoft\MediaPlayer\Player\Skins**. With the key highlighted, click **Registry • Export Registry File**. Browse to the folder that stores your backups and click **Save**.

Now double-click **LastViewMode** on the right. Change the 1 in the 'Value data' box to **0** and click **OK** (see **FIGURE 3**). Close the Registry Editor and restart Windows Media Player. The player should display its normal (skin-free) look. To avoid further problems, delete the problem skin from your Windows Media Player folder altogether. In most cases, you'll find the file in **C:\Program Files\Windows Media Player\Skins**, but your path may vary.

STOP IDLE DISK THRASHING

Windows 2K XP 98 ME HAVE YOU EVER heard your hard disk spinning while you weren't doing anything on your computer? Windows XP might be running its disk defragmenter utility while your system is otherwise idle. At these times, the utility rearranges files on your hard drive to improve performance and shorten boot time. These automatic

WINDOWS TOOLBOX

Broaden Your Web View With IE New Window Maximizer

TIRED OF DOUBLE-CLICKING a Web shortcut or opening a new Internet Explorer window only to have it appear less than maximized? The folks at JIIISoft were, too, so they created IE New Window Maximizer. With this handy program running in your desktop tray, every IE window will open maximized or (if you prefer) in full-screen mode, which hides the title bar and other browser elements. The application also lets you designate a hotkey that hides or closes all open IE windows. It's free! It's easy! What more could you want? Browse to find.pcworld.com/42572 to download your copy.



defrags should happen only when your machine is not being used, and theoretically they should happen only every few days. If you'd rather that your hard drive not work when you aren't around, you can turn the utility off with Tweak UI, which is part of Microsoft's free PowerToys for Windows XP. Visit find.pcworld.com/42570 to download the program.

If you don't want to install any of the other PowerToys included in the set, select only the **TweakUI.exe** option on the Microsoft download page. Once you've installed Tweak UI, select **Start • All Programs • PowerToys for Windows XP • Tweak UI**. In the tree diagram on the left, click **General**. Scroll to the bottom of the Settings list on the right, uncheck **Optimize hard disk when idle** (see **FIGURE 4**), and click **OK**. The setting takes effect for all of the PC's user profiles after your next system reboot. ■

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.

STEP BY STEP

STAN MIASTKOWSKI

Cut the Clutter and Add Power to Your Browser

IF YOU SPEND hours in front a computer—whether at the office or at home—chances are a good chunk of that is Web-surfing time. Web browsers are such ubiquitous tools that people take them for granted. You shouldn't. They can use substantial amounts of computer resources,

and their temporary files can hog huge amounts of disk space. Plus, there are those occasional browser security issues that require patches and updates.

Microsoft Internet Explorer is the most common Web browser for the simple reason that it's included with Windows. But

substitutes for IE are becoming more and more popular because of their advanced features and their relative—albeit not absolute—freedom from security problems. Dozens of different browsers exist, but two—the free, open-source Mozilla (www.mozilla.org) and the \$29 Opera (www.opera.com; free with ad banners)—are probably the most widely used alternatives to Internet Explorer.

Read on to see how to manage temporary files and cookies in these Big Three browsers, and, as well, take a look at some other choices and add-ons that can improve your surfing experience. ■

Stan Miastkowski is a PC World contributing editor. Contact him at stan_miastkowski@pcworld.com. Visit find.pcworld.com/31676 for past Step-By-Step columns.

1 Keep your browser updated. For safe and fast browsing, make sure you have the latest security patches and updates. Because it's the default Windows-based browser, IE is the most targeted, and Microsoft issues security patches regularly. If you use IE on a Windows XP machine but don't have automatic updates enabled, go to *Start*•*Windows Update* and follow the directions. If you're a Mozilla or Opera user, check the maker's home page regularly.



2 Sweep away temporary files. All browsers create temporary files that speed up your Web surfing by caching components (illustrations, banners, and so on) of Web pages you access so they don't have to be downloaded at each visit. Over time, those files can eat up lots of space. In IE, click the *Tools* menu and choose *Internet Options*. In the 'Temporary Internet files' section, click the *Delete Files* button. (The screens below show IE, Mozilla, and Opera, from left to right.)

In Mozilla, select *Edit*•*Preferences*. Click the plus sign next to

Advanced in the left-hand panel, choose *Cache*, and click the *Clear Cache* button. Note the option for setting the cache size.

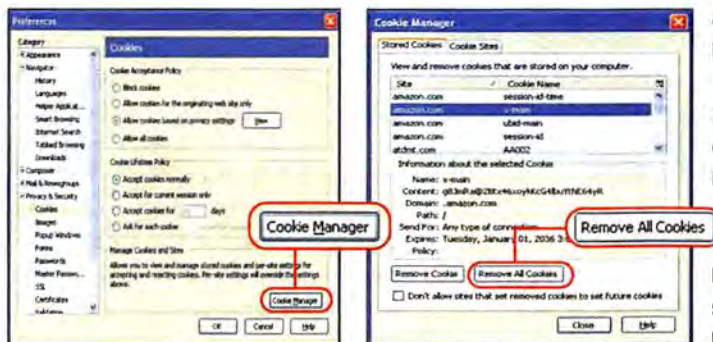
In Opera, choose *Tools*•*Preferences*. In the left-hand panel under the *Network* section, click *History and cache*, and click the *Empty now* button. Opera not only lets you set the maximum size of the cache, it also lets you specify what types of data you want cached. In addition, you can choose to automatically empty the cache every time you exit Opera by checking the *Empty on exit* box.



3 Control cookies. Let's get this straight: Cookies—the small pieces of data left on your PC by many of the Web sites you go to—often serve a positive purpose, identifying you on subsequent visits. If you frequently make purchases from the same site (Amazon.com, for instance), cookies allow content customized to your buying preferences. But cookies can also be used for more nefarious purposes,

such as tracking and reporting your Web surfing habits. Although blocking all cookies sounds like one way to go, some Web sites don't display correctly if cookies are blocked.

So you'll want to selectively keep and delete cookies. Alas, IE's cookie control abilities are rudimentary: It doesn't allow you to selectively block incoming cookies, only to keep or delete all cookies. If



you want to delete them all, select **Tools*Internet Options**. In the 'Temporary Internet files' section, click the **Delete Cookies** button.

If you'd prefer to keep some, click **Settings** instead and note the current location of the 'Temporary Internet files folder' on the following screen. Cancel those dialog boxes and navigate to the temporary files location in Windows Explorer—you may need to be able to view hidden folders and files to find the correct folder. Once there, click the **Internet Address** tab to sort the files. Cookies appear as text documents with names in the format "Cookie:username@sitename". Feel free to delete any from sites you don't recognize.

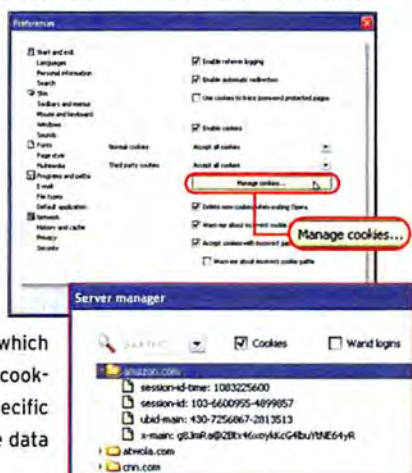
Both Mozilla and Opera offer much more sophisticated cookie control—so sophisticated, in fact, that covering them in detail would take

all the space in this column. Copious assistance is available in both browsers' Help sections. Here's how to get started:

In Mozilla, select **Edit*Preferences**. Click the plus sign next to **Privacy & Security** in the left panel, and choose **Cookies**. By default, the level of privacy you've set controls cookies. Mozilla also has a **Cookie Manager** that lets you analyze cookies and keep or delete them (see screens at left).

In Opera (see screens below), choose **Tools*Preferences**.

In the **Network** section in the left-hand panel, click



Privacy. From there you can set Opera to accept or reject all normal or third-party cookies (ones not served by the site you're visiting). Selecting **Tools*Cookies** launches Opera's cookie manager, which lets you delete individual cookies, block cookies from specific servers, and even edit the data inside a given cookie.

BROWSER ALTERNATIVES AND ADD-ONS

YOU DON'T NEED to stay wedded to the features and abilities of the major browsers. Numerous alternative browsers and add-on utilities are available. Here's a look at some of our favorites.

By the time you read this, Mozilla will have released Firefox (mozilla.org/products/firefox), a small and fast next-generation open-source (meaning free) browser. Firefox is an alternative to Mozilla, but won't replace it. For additional details, see our early look at find.pcworld.com/42824.

Some new browsers essentially sit on top of IE, using its core engine to extend and improve your Web experience. Avant Brows-

a new copy of the browser every time you want to add a new page. Tabbed browsing not only uses computer resources much more efficiently but it also makes keeping track of multiple pages easier. (Both Mozilla and Opera also feature tabbed browsing.)

And now for something completely different. Wymea Bay's IRider (www.irider.com) costs \$29, also sits on top of IE, and also allows you to open multiple Web pages at once. Instead of tabs, though, IRider presents hierarchical thumbnails to give you a visual way of accessing multiple pages. Because IRider takes a different approach from all other browsers, using it effectively entails a



er (www.avantbrowser.com) and MyIE2 (www.myie2.com) are similar packages, but each has its unique flavor and features. And the price is right: Both are freeware, though donations are requested.

Avant Browser and MyIE2 add considerable security, cookie, and ad-blocking controls to Internet Explorer. But the biggest feature in both packages may be tabbed browsing, which lets you open multiple Web pages within a single browser window and quickly move among them by clicking on tabs. In IE, by contrast, you need to open



learning curve. But once you're used to it, it's unmatched for fast Internet browsing. Another unique feature is something called "surf-ahead," which lets you open a link from a Web page in the background by right-clicking the link.

One caveat: IRider, unlike most of its competitors, offers no way to stop banner or pop-up ads (although pop-ups appear under the Web page you're viewing). You can add blocking capabilities by using a utility such as the \$20 PopUp-Stopper (www.popupstopper.com).



INTERNET TIPS

SCOTT SPANBAUER

How Do I Know When a Virus Hits My Computer?

IN MY GARAGE, I have carefully stored not one, but two IBM Selectric II typewriters. While we may conquer viruses, worms, spyware, and other malicious code someday, I'm keeping both of them as backups just in case the situation continues its current downward spiral. Who knows, I may need it to bang out my *Selectric Tips* column someday.

Okay, so maybe I'm overreacting. But even if you follow every online safety measure, there's no guarantee you won't get nailed by the next Internet worm. When that day comes, here's the very first thing you should do: Relax.

Then calmly get to work eradicating the invader. Relatively few viruses start destroying your data right away, and most don't damage anything. In fact, the virus may not do anything at all.

How will you know if you've got a virus

or worm that your antivirus software doesn't detect? Start by looking for unusual activity on your PC, such as unexplained hard-disk activity (listen for disk sounds or watch the PC's disk access LED) or network access. (Note that unexplained hard-disk activity and network communications are usually harmless; see this month's *Windows Tips* column on page 166 for more on this subject.)

To put an icon in your Windows XP system tray that shows when programs are using your network connection, choose *Start•Control Panel•Network Connections*, right-click the network connection you want to monitor, choose *Properties*, check *Show icon in notification area when connected*, and click OK (see **FIGURE 1**).

Be sure to configure your antivirus software to update automatically, and schedule daily virus scans of your PC. Some vendors issue multiple updates in a single day to counter new threats. If you think you may have been hit, don't hesitate to update your software and scan for viruses manually. Remember: If your software is set to perform scans and to download updates, but your computer is generally in standby mode or powered off at that time, you have a problem.

If you suspect that your PC has a virus or worm, but your antivirus software has not detected or stopped it, take these steps to prevent it from spreading.

Pull the plug: Physically disconnect phone lines, network cables, and wireless cards (or turn built-in wireless units off). This will instantly stop viruses and

Trojan horses on your PC from connecting to or infecting other computers, and

will keep your PC safe from some worms. **Now pull the other plug:** Don't open, close, or save *anything* (unless not saving would cause important work to be lost). And don't shut down Windows. Turn the PC off instead. This blocks viruses from creating or modifying any more files on your hard disk as part of Windows' normal shutdown process, which is when many of these modifications occur.

Use a recovery disk: The best antivirus programs let you create a bootable rescue or recovery floppy or CD (see **FIGURE 2**) so you can restart your computer without activating viruses lurking on the PC's hard disk. Check your program's online



FIGURE 2: YOU SHOULD create an antivirus recovery disk before malware strikes.

help or manual for the steps required to create a recovery disk, and then test the disk to make sure your PC is configured to boot from removable media. ■

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.

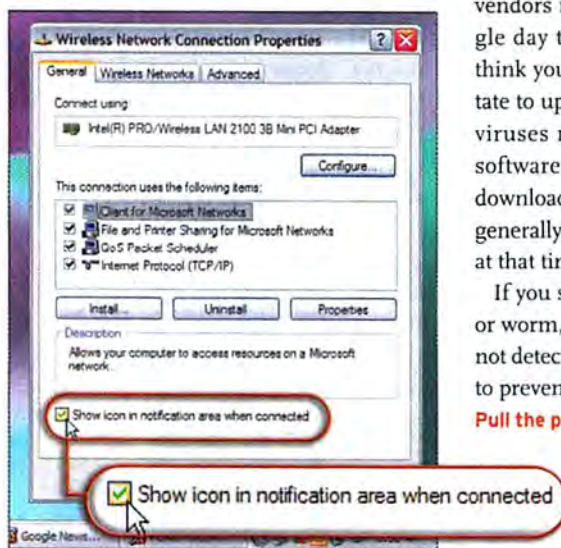


FIGURE 1: MONITOR YOUR network activity by enabling the tray icon for Net connection.

QUICK VIRUS FIXES

IF YOU'RE WORKING on Uncle Joe's computer when the latest worm strikes, and Uncle Joe has never heard of antivirus software, all is not lost. Head to one of these sites for quick, free detection and removal tools and online scans:

Symantec Security Response
www.sarc.com

Trend Micro Housecall
housecall.trendmicro.com

McAfee Virus Removal Tools for
Lovsan, Klez, and Bugbear
find.pcworld.com/42632

Panda ActiveScan
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CISCO SYSTEMS



HARDWARE TIPS

KIRK STEERS

Get the Best View Possible From Your PC's Monitor

YOU SPEND A LARGE part of your workday staring at it, so why not make it look its best? Not only is a properly calibrated display more attractive, but also it reduces eyestrain and can help produce better-looking prints. Unfortunately, most PC users take their monitor out of the box and make little or no effort to give it the best image it's capable of showing.

While a graphics pro may spend thousands of dollars and many hours tuning a PC monitor's images, anyone can tune up the visuals without spending a dime.

PUT A FINE POINT ON IT

DON'T ATTEMPT TO adjust your display until it has been running for at least 30 minutes. Position the screen to avoid reflections and glare, and reduce the quantity of ambient light in the room.

Begin by optimizing your monitor's resolution, color-depth, and refresh-rate settings in Windows. For advice on how to adjust these settings, visit find.pcworld.com/42602 to see my June 2003 *Hardware Tips* column, "Simple Tweaks for Peak PC Graphics Performance."

PADLOCK YOUR MODEM

WANT TO KEEP employees, kids, or unwelcome interlopers from accessing the Internet on your PC? Block all access to your dial-up, cable, or DSL modem with ModemLockDown, a shareware utility that password-protects the device, locking everyone else out of the Internet without requiring you to log off Windows or shut down your PC. Go to find.pcworld.com/42610 to download the 30-day trial version; the program is \$10 to keep.

Get to know the controls on your monitor itself. The settings vary from display to display, but all have options for color temperature, brightness, and contrast.

Color temperature: White light on your monitor isn't pure white; it ranges from bluish white to reddish white. The particular color temperature you choose should be the point on this spectrum that most pleases your eye. Chances are your display came from the factory set at 9300K, which carries a blue bias. But many people prefer the "warmer" tones of 6500K. (The "temperature" number refers to the color of light given off by an ideal object heated to the given temperature in degrees Kelvin—red hot, white hot, blue hot, and so on, similar to the different colors in a gas stove's flame.)

Brightness and contrast: To set or adjust these options, you need calibration test patterns. Many graphics pros rely on Displaymate (www.displaymate.com), which provides excellent diagnostic and calibration patterns and instructions. Displaymate costs \$69 as a download and \$79 on a CD. Browse to find.pcworld.com/42604 to download the free Displaymate demo, which has the patterns you'll need for performing a basic calibration (see **FIGURE 1**).

The brightness setting actually controls the darkness, or black point, of your monitor. Set it too low, and dark shades of gray will appear black; set it too high, and your darkest blacks will look gray. Go to find.pcworld.com/43186 to download a gray-

scale chart. Once you have it, lower the brightness until the last two dark shades on the chart are black, and then increase the setting until the first shade of gray emerges next to the pure black area.

After you've set your black point, adjust the display's contrast, which actually sets the brightness. Pick a setting that's pleasing to your eye. Brighter isn't always better; contrast settings that are too high can cause blurring on some CRT monitors, as well as increase eyestrain.

Gamma: This setting is an electrical correction to the video signal that adjusts the brightness of midtone colors to create more-realistic images. You reset the gamma through your graphics card driver or via a third-party graphics program.



FIGURE 1: FINE-TUNE YOUR MONITOR with test patterns from the Displaymate monitor-calibration program.

Color profiles: The red your printer prints may be very different from the red your graphics card shows or your scanner captures. To coordinate colors across different graphics hardware, Windows uses International Color Consortium (ICC) color profiles, which serve as a sort of lingua franca of color. Each device—printer, monitor, digital camera, whatever—needs its own specific profile. To see whether you already have all the profiles you need on your system, right-click the desktop, choose *Properties*, click *Settings*•*Advanced*, and look under *Color Management*. ■

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.

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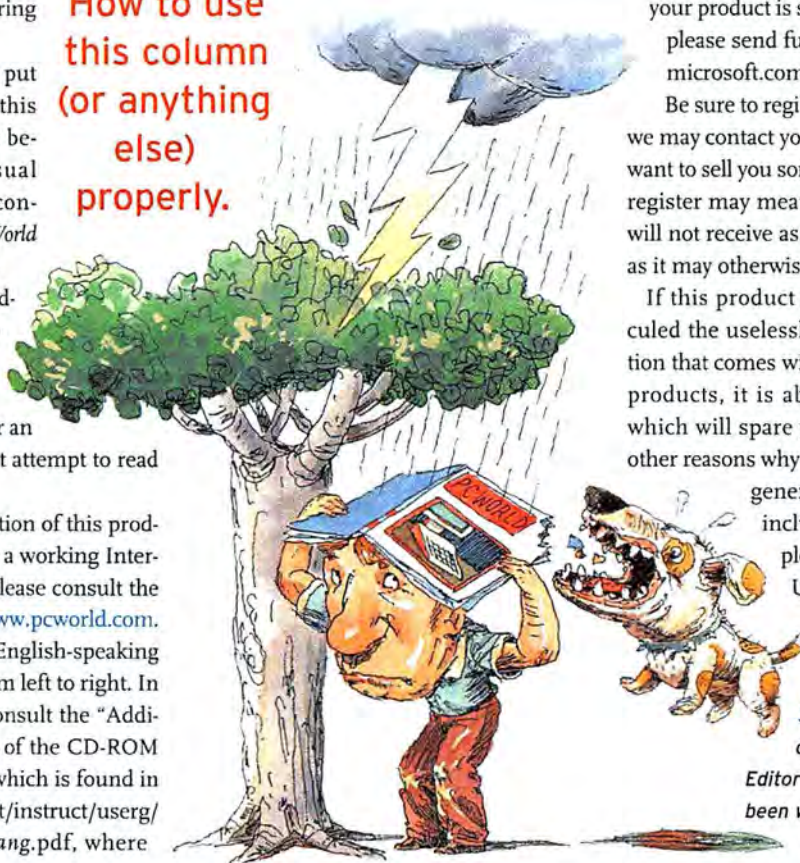
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Visit find.pcworld.com/31595 to see additional columns by Contributing Editor Stephen Manes. He has been writing about technology for two decades.



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