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"This new OS has accomplished in a short period of time what others have struggled to do for years: bring a compelling, widely accepted GUI (called Aqua) to UNIX."

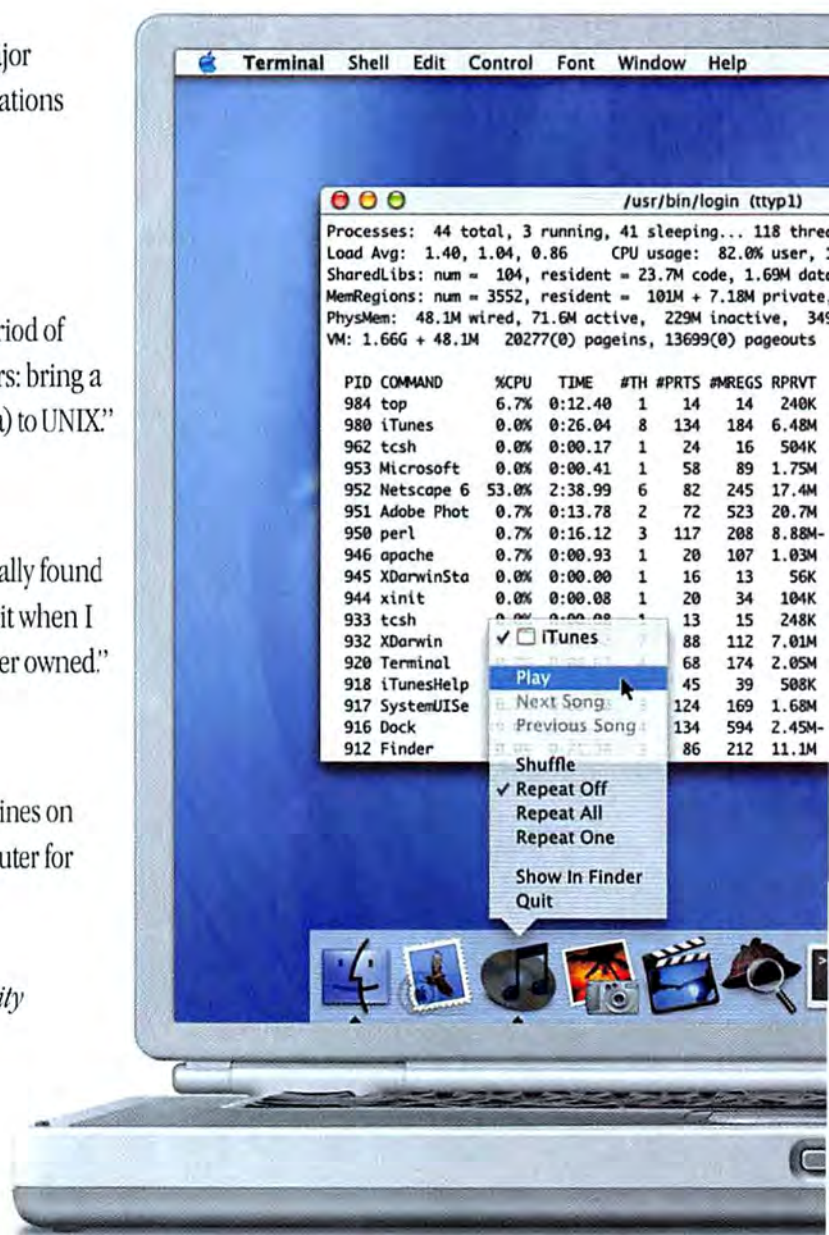
—Tim O'Reilly, O'Reilly Network

"After two-and-a-half years of Linux, I've finally found joy in a UNIX operating system. And I found it when I purchased a Macintosh — the first one I've ever owned."

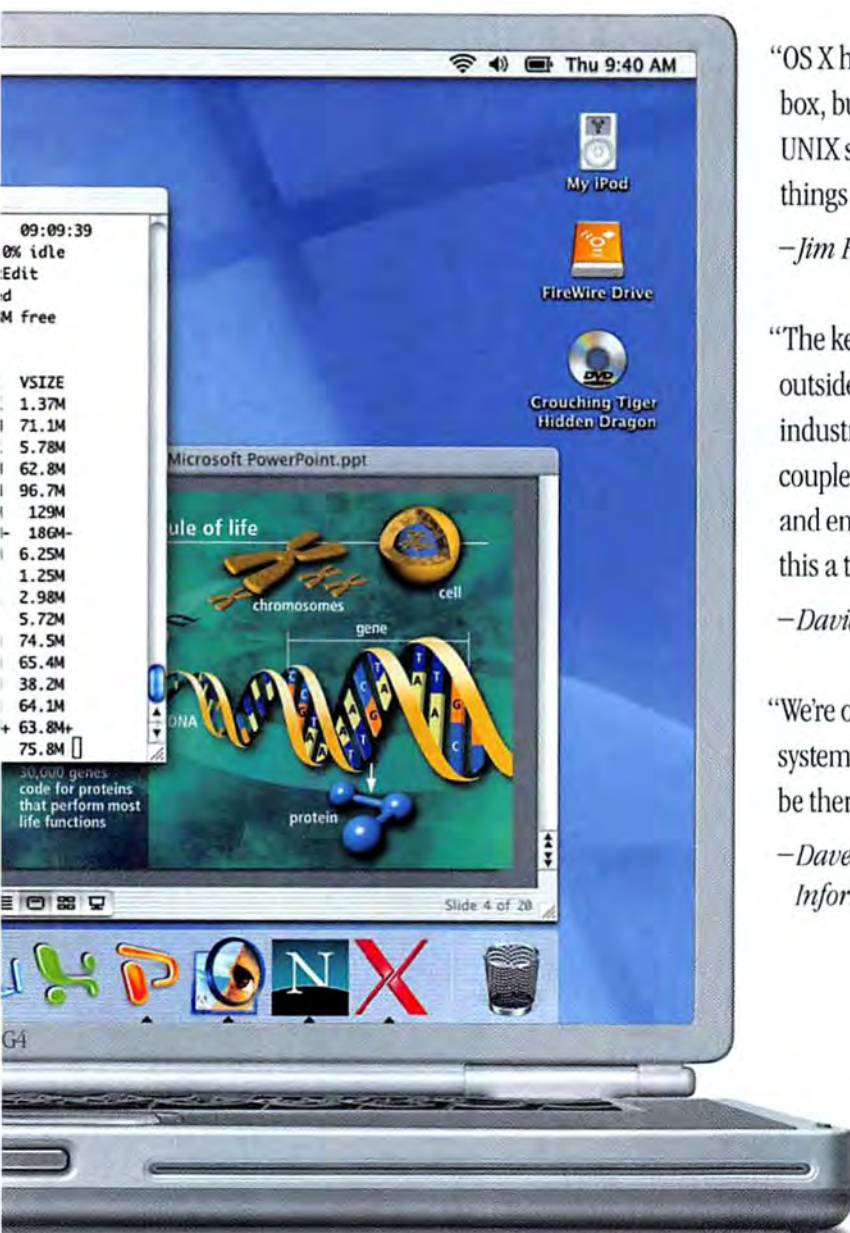
—John Hummel, Jr., *The Gamers' Press*

"Until Mac OS X came along, I had three machines on my desk. Now with Mac OS X, I use one computer for writing, coding, research, everything."

—Dr. Michael Cherry, Associate Professor,
Department of Genetics, Stanford University



boxes to /dev/null.



“OS X has all the power you expect from a UNIX box, but none of the hassle associated with basic UNIX system administration. You can expect things to work and they do.”

—Jim Hourihan, *Tweak Films*

“The keys to OS X are that it’s UNIX inside and Mac outside. This combination of stability, support for industry standards, and wide developer support coupled with Apple’s Aqua graphical user interface and emphasis on graphic performance makes this a truly great operating system.”

—David Coursey, *ZDNet AnchorDesk*

“We’re old hardcore UNIX hackers, so a BSD-based system is mother’s milk. Everything you expect to be there is there, and it works right.”

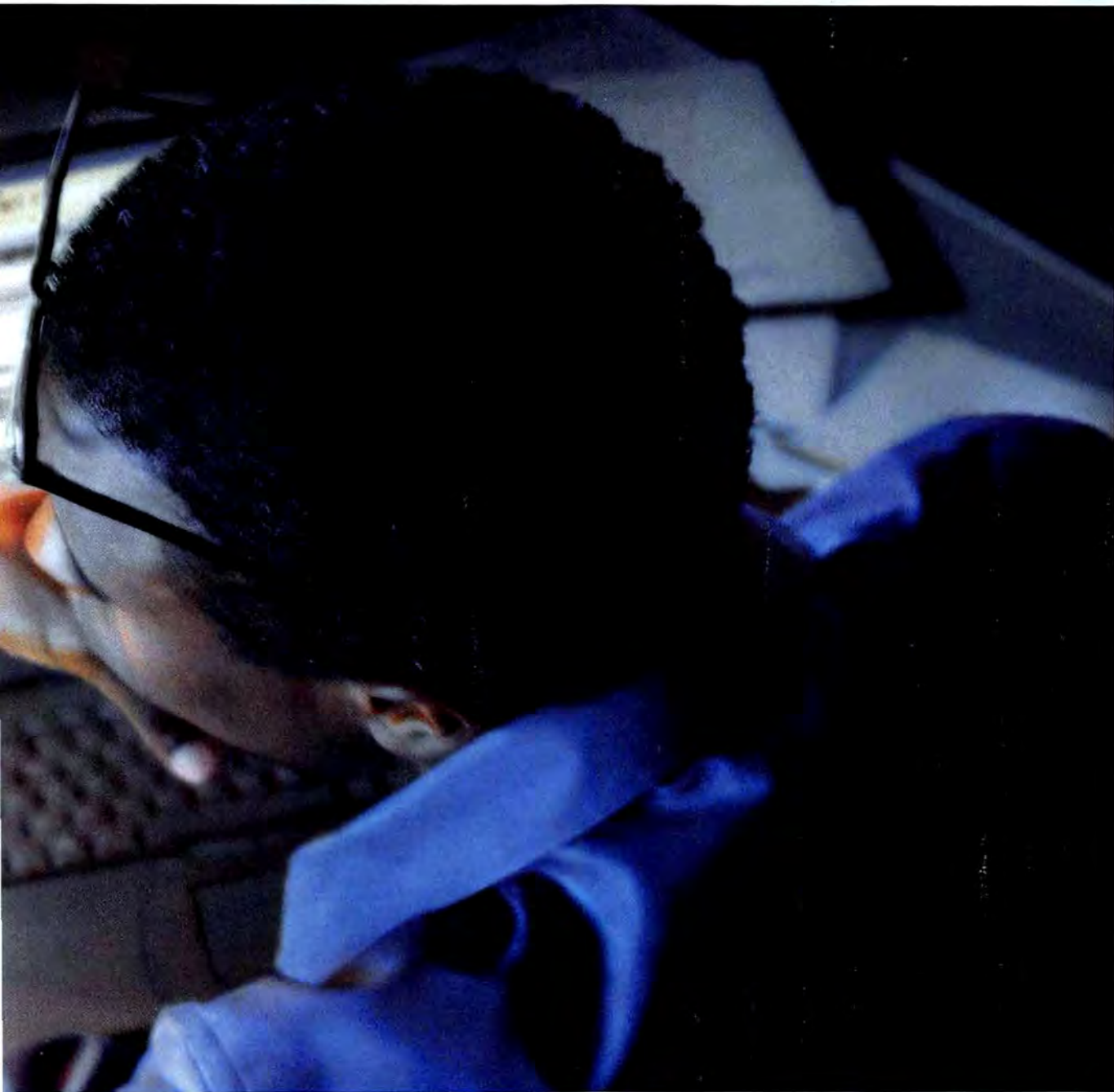
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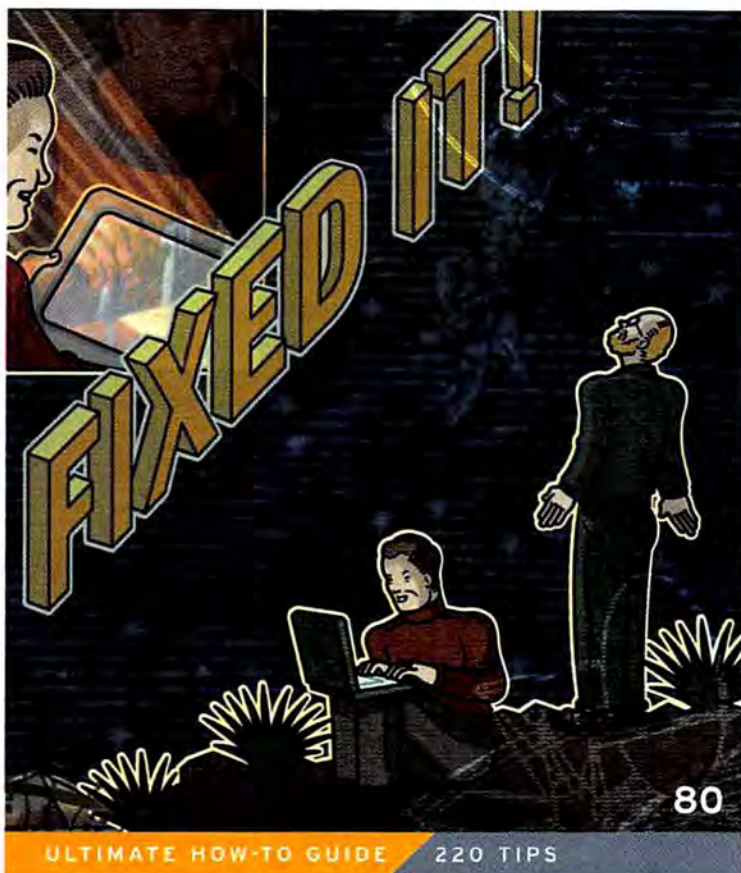
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HOW TO USE THIS SPECIAL ISSUE



MONTH AFTER MONTH, many of *PC World*'s most popular features have one thing in common: They're *how-to* articles full of tips for making the most of technology at work and at home. So we've packed our first-ever how-to issue with tips, tips, and more tips. Starting right now:

>>TIP Throughout the issue, **>>TIP** flags point to the good stuff. Flip to page 10 for a detailed index of this month's tips, and visit find.pcworld.com/26763 for an expanded Web version of this issue.

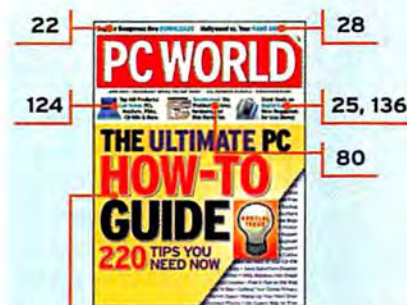
>>TIP You'll find tips in departments from *Up Front* to *Full Disclosure* this month. But we didn't stint on new product reviews—see *News and Trends*, *New Products*, and the *Top 100*.

>>TIP In the "Take My Advice" items included in our feature articles, typical PC users share their favorite pointers.

>>TIP Got a **>>TIP** or two of your own you'd like to share? We're listening. Drop us a line at readertips@pcworld.com.

—Harry McCracken, Editor

ON THE COVER



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PC WORLD

JUNE 2002
VOLUME 20 ♦ NUMBER 6
AOL KEYWORD: PCWORLD
WWW.PCWORLD.COM

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YOUR INDEX TO THE ULTIMATE HOW-TO GUIDE



TABLE OF CONTENTS? Hey, with a magazine as tightly packed with tips, tricks, and tutorials as this special issue,

you need an index. So here's our browsable breakdown of the wealth of useful advice you'll find in this issue. Careful counters will observe only 195 entries below, not the

220 promised on our cover. That's because we sometimes represent multiple tips with one index entry. But fear not: There are many *more* than 220 tips inside—so dig in.

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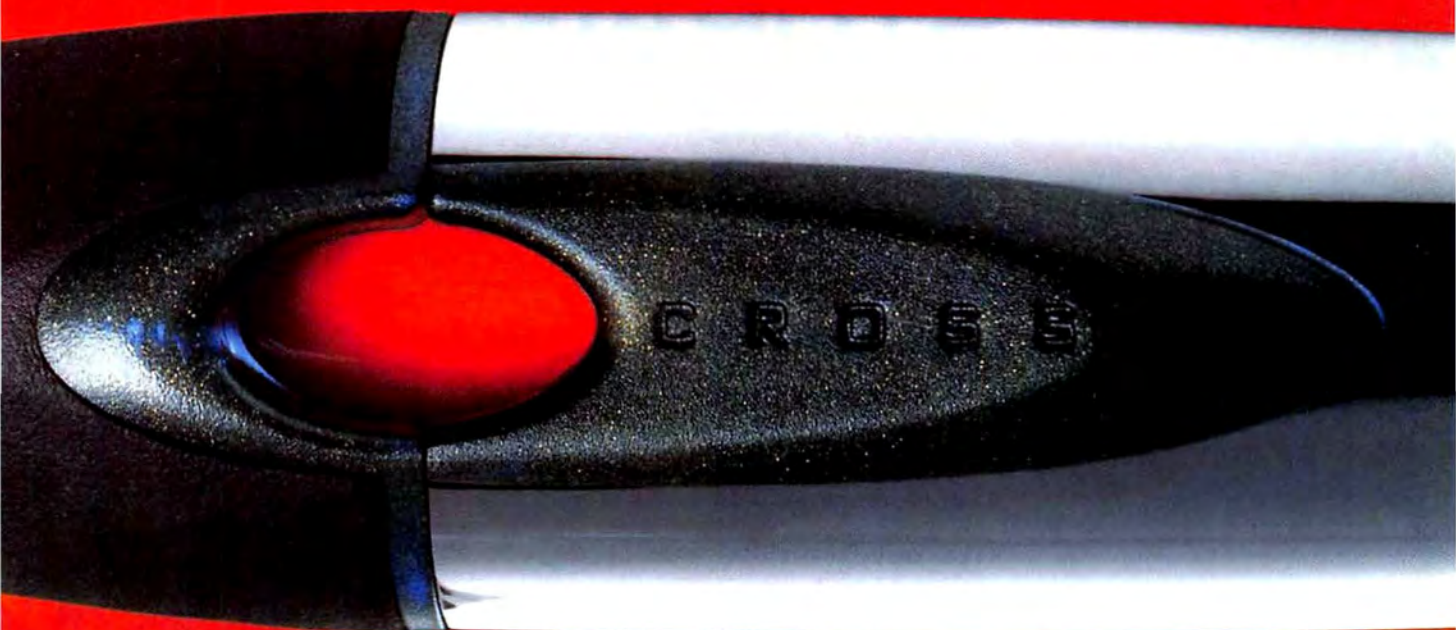
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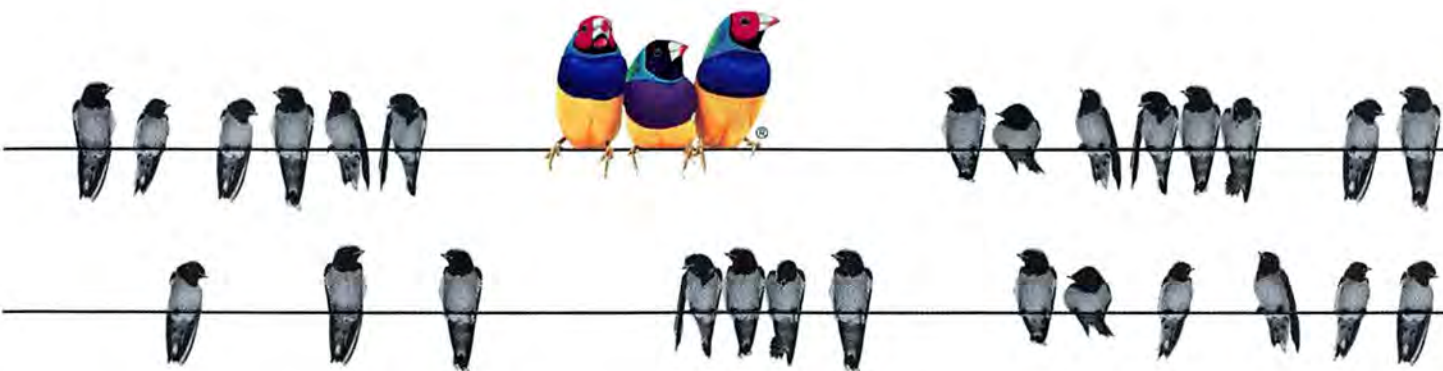
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Nine Timeless Tips for Tech Buyers

Whether you're seeking a loaded PC or a featherlight camera, heed this advice.

FEW THINGS IN THIS WORLD change as rapidly or thoroughly as technology. That's why publications like *PC World* exist—to keep you up-to-date. And this special how-to issue contains more timely and useful advice about the latest technology than any in our nearly 20-year history.

Before you get started, though, here's some not-so-timely advice: nine buying tips that apply to virtually any tech purchase, large or small. Many of these are painful lessons gleaned from personal experience. Others are plain common sense. All will be as appropriate for selecting a personal matter transporter in 2102 as they are for choosing a PC, printer, handheld, or cell phone today.

>>TIP Choose quality over price: It's nice to get a bargain, but you'll usually do better by paying a few dollars more for durable technology that does exactly what you want. This doesn't mean you should splurge on everything. But choose the right technology first and then look for bargains, not the other way around.

>>TIP Buy yesterday's hot model: Specifically, buy it about two to three months after *today's* hot model hits the stores. The newer gear may be sexier, but it's nearly always plagued with bugs. So unless you specifically need the latest and greatest, let others blaze that trail.

>>TIP Lean toward what's popular: What a shame to have to offer this advice. But the best technology doesn't always win in the market (classic example: Betamax versus VHS), and, other things being equal, market winners tend to have better support, more software, and easier upgrade paths.

>>TIP Don't skimp on storage: You can never have too much RAM, flash memory, or hard disk space. For some reason, cramped storage tends to make gear obsolete faster than other seemingly serious

deficiencies, such as a poky processor or limited input/output options.

>>TIP Wait before upgrading: Remember the vintner that promised to "sell no wine before its time"? Don't hop on each new



trend (unless you work at *PC World*, where it's a way of life!). Instead, get as much use as possible from your old gear while not depriving yourself of significant new developments if they occur.

>>TIP Never upgrade on deadline: This sounds obvious, but it flies in the face of human nature. For example, I'm most likely to drop in a significant new application when there's an article due or a board

presentation looming. Such upgrades rarely make your articles or presentations any better. They're just a technophile's version of procrastination.

>>TIP Don't expect things to work as promised: Years ago, when I was an editor at a science magazine, we used to joke that if we ever ran out of story ideas, we could just pick some expensive new piece of military hardware and write an article saying it wouldn't work. Nine times out of ten, this kind of story proves prescient—not because military procurement officers are dense, but because *no* new technology works as promised. So count on spending more time installing, configuring, and fixing that new gear than you had expected.

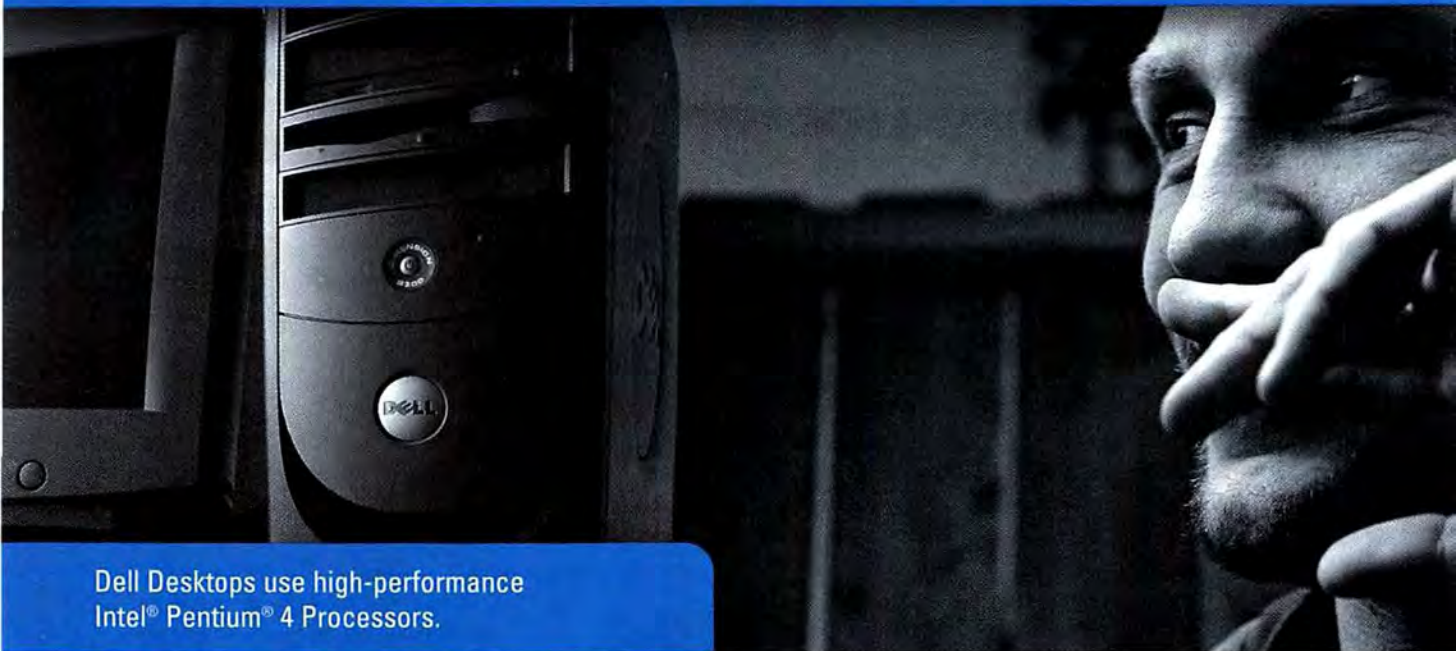
>>TIP Research, research, research: Okay, you don't need to do this for every cable. But investigate major purchases thoroughly beforehand. *PC World* and its Web site, PCWorld.com, are good places to start. You'll find many other suggestions in our shopping tips story, edited by Seán Captain, on page 92.

>>TIP If you get burned, howl: Finally, if you wind up with a lemon, complain to the merchant, the manufacturer, the Better Business Bureau, and especially your credit card company (assuming you purchased it using a card). If you present your case calmly with lots of evidence, the card company will often back you up. ■

Kevin McKean (kevin_mckean@pcworld.com) is editorial director of *PC World*.

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NEWS & TRENDS

ULTIMATE HOW-TO GUIDE

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DISASTERWARE?

MOST SHAREWARE IS GREAT, BUT BAD APPS CAN HURT A PC. HERE'S WHAT READERS SAY—AND WHAT TO DO. BY TOM MAINELLI

YOU USE IT and you probably love it. Without shareware and freeware, PCs would be considerably less useful, not to mention more expensive to operate. And most of these programs are every bit as solid and reliable as their store-bought, shrink-wrapped counterparts.

But some free or low-cost software available online suffers from design deficiencies that make it difficult to install or uninstall, and may cause problems with operating systems. Other software downloads may come packed with adware that bombards you with marketing pitches. For some users, this bargain stuff carries too high a price.

Perhaps because of the economic downturn, freeware (software you download and keep for free) and shareware

(software you try for free and keep for a fee) appear to be growing in popularity. Web-sense, an Internet management software service, reports that the number of shareware download sites rose 500 percent from February 2001 to February 2002—from about 780 to 4900 sites.

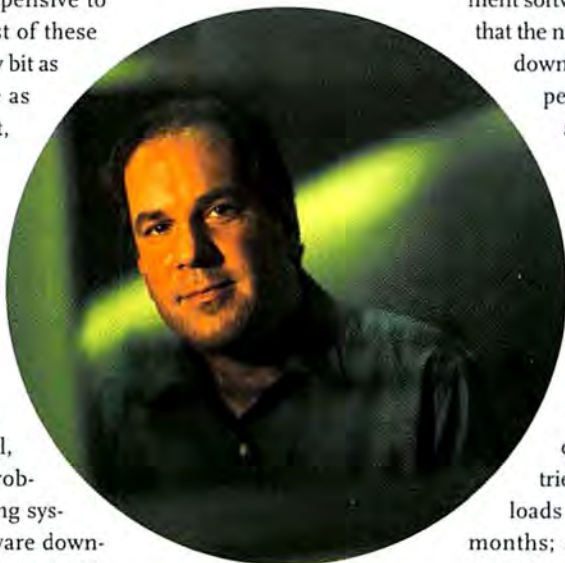
At PCWorld.com, a recent informal survey of site visitors revealed that of the more than 1400 respondents, over one-third had tried out 5 to 10 downloads in the previous 12 months; another third had test-driven more than 15.

The most popular category of downloads? System utilities, cited by nearly 60 percent of those surveyed.

Half of all respondents said that at least some downloads had caused system crashes, driver overwrites, and other significant PC problems. Half of all respondents also cited problems with uninstalls.

Teacher Thomas Bailey of Kirtland, Ohio, loved Zone Labs' highly touted firewall software, ZoneAlarm 2.6—until, that is, he installed an upgrade. Then he encountered browser conflicts, system freezes, and disconnects, all of which made contacting Zone Labs by e-mail impossible. Since the company does not provide technical support via phone or fax, Bailey was stuck. "My last resort was to use the Dell Solutions documents and uninstall/reinstall my operating system," he wrote. (For a review of the most recent version of ZoneAlarm Pro, see page 72.)

Despite such headaches, a majority of respondents said that when they factored in



NO DOWNLOADS: Law firm IT director Frank Gillman says blocking workplace downloads helps avoid network problems.

cost, ease of use, and quality, freeware and shareware still turned out to be either "about as good" as or "a better deal" than software available from major manufacturers—especially for users on a budget.

Daniel Leppington, a system administrator at École Zenon Park in Zenon Park, Saskatchewan, Canada, says he uses shareware because he's on a budget. "Saving the school division [district] several thousand dollars each year would be appealing, even if there are a few turnover pains," he explained.

Or as another survey respondent succinctly put it when discussing the attractions of freeware: "Free is free; if it works, it works."

NET EFFECTS

SHAREWARE—especially if it's untested—can be a major headache for corporate IT people, says Harold Kester, chief technology officer at Websense. "If you're managing 500 to 1000 PCs, and half are downloading freeware, you can imagine the problems that can result," Kester says.

Sam Ash Music, a national chain based in Hicksville, New York, uses Websense's service to prevent downloads. If each of the company's PCs carried different software, IT simply couldn't cope, says David Ash, chief operating officer.

Worse yet, if your work PC is on a corporate computer network, your system's freeware problem can quickly escalate to epic proportions, says Frank Gillman, director of

technology for the California-based law firm Allen Matkins, which blocks all employee software downloads.

"You may not know that you are connecting to 250 other devices in the firm," Gillman says. "So if you add something



EASY COME, EASY GO: Cheryl Bettin of Wausau, Wisconsin, found spyware on her PC, but removed it. She still downloads.

to your machine that causes a problem, you can affect a much wider group."

In addition to dealing with crashing PCs, IT professionals must cope with adware—software that displays advertising when you use a program. While many users consider it annoying, it's largely (but not always) harmless.

SNEAKY SOFTWARE

RADIATE (formerly Aureate), for example, supplies adware delivered by Radiate's GoZilla download manager and—at one time—dozens of other shareware applications. Microsoft's support site says Radiate's software has been known to cause severe crash-

es with several versions of Internet Explorer (see find.pcworld.com/26341). Radiate chief executive Aaron Maedge says that the company is aware of the problem, but he points out that its software is currently licensed to only 25 apps. Radiate can do little to address problems with legacy shareware, Maedge adds.

A subset of adware, often termed spyware, transmits system and Web-browsing data to advertisers via the PC's Internet connection, sometimes unbeknownst to the person using the PC. These programs not only tie up network bandwidth, but could compromise security.

"As CTO, I could download something compelling, maybe a functional tool, but on the back end of it might be something that could upload all of Websense's financials," Kester says. "There is a risk here, and it's a very real risk."

One example of software doing the unexpected: A company named Brilliant Digital Entertainment recently acknowledged that users of the popular file-sharing program Kazaa had also downloaded Brilliant's software; when activated, this software enables the company to use customers' PCs in a distributed computing network. The company says that it will ask permission first, and that it plans to offer prizes to participants. But Kazaa's terms of service already authorize Brilliant to use your PC in this way for free.

Even if its activities are mentioned in the license agree- ▶

IN BRIEF

Product Pipeline

3G POCKET PC: Verizon Wireless and, later, Sprint will offer customized versions of the first Pocket PC equipped to send voice and data over the companies' next-generation wireless networks. Audiovox's Thera will have a built-in Sierra Wireless modem for CDMA 2000 1x networks, supporting data transfer speeds of up to 144 kbps, but averaging 40 to 70 kbps, depending on carrier. Verizon expected to introduce the device this spring for about \$799 with the signing of a service plan. Sprint, which launches its CDMA 2000 1x network this summer, hasn't announced any pricing.



NOMAD JUKEBOX 3: The next-generation version of Creative Labs' popular mass-storage MP3 player will offer improved audio quality, up to 11 hours of playback on a single lithium ion battery (or 22 hours with an optional extra battery in the available bay), USB 1.1 and FireWire support, and an interface upgrade that makes finding tracks easier. The new Nomad will be available in 20GB (\$399) and 40GB (\$499) editions.

ment, spyware can take users by surprise. Cheryl Bettin, an administrative assistant in Wausau, Wisconsin—and a savvy software downloader—says that she didn't realize she had spyware on her PC until

her firewall caught it trying to send information back to the software's vendor.

Bettin used another free-ware program—Lavaso's Ad-aware (see "9 Safe Download Strategies," below)—to locate

and remove the offending software. Although the experience has made her more wary, it hasn't prevented her from downloading shareware.

"I've found some shareware apps that are a royal pain, and

I can hardly delete them fast enough," she says. "I've found others that worked so well, I could barely wait to send in the registration fee."

WORTH THE HASSLE?

THE OCCASIONAL headaches are also worth it to school IT manager Leppington, who is considering a free download of Linux for his school's 42 computers. He's also experimenting with Sun's StarOffice (www.sun.com/staroffice) and with an open-source word processing program called AbiWord (www.abisource.com) as alternatives to Microsoft's pricey Office suite.

Many top-notch shareware and freeware programs never cause users a minute's worth of extra trouble. But if you're considering downloading software from the

Internet, it's clearly a sensible practice to do your homework first (to determine whether there might be compatibility problems, for example) and to discuss your proposed downloads with your favorite IT person.

Finding exactly the right piece of software online—one that does just what you need it to do, either for free or at a price you can easily afford—can be exciting and exemplifies the best of the Internet.

But stumbling on a program that causes system problems or that shares your personal information with somebody else can make you wish you'd never heard the words *freeware* and *shareware*.

SHAREWARE

9 SAFE DOWNLOAD STRATEGIES



NIGHTMARES OF CRASHING PCs and out-of-control adware notwithstanding, some shareware and freeware options are simply too tempting to ignore. When you download software, be sure to follow these commonsense guidelines. If you hit a snag, some freeware and shareware programs may even help solve your problems.

>>TIP Choose your download site carefully. Not all sites test software for stability, usability, spyware, and viruses. Editors of PCWorld.com's Downloads section, on the other hand, carefully screen and review each program.

>>TIP Before you download, look for professional reviews or for comments from everyday users. The best download sites offer informed reviews from editors; others let visitors comment on the pros and cons of the software. Let somebody else's PC serve as the guinea pig.

>>TIP Ask yourself whether you need the software. Microsoft bundles numerous utilities in each version of Windows, including hard drive scanners and defragmenters, system monitors, and data backup programs. If a Windows tool can do the trick, why bother with a download?

>>TIP Check whether the software author or vendor offers technical support. If the software you want is a demo version of a retail package, you may find a phone number; if it's a home-made utility from a single programmer, you may have to settle for an e-mail address.

>>TIP Read the software agreement—yes, the whole thing—before you download; and monitor the installation closely. These two steps are the best way to find out whether your nifty free program carries an extra, unadvertised spyware bonus pack. If you have trouble deciphering the agreement, check to see whether the download shows up on Spychecker.com, an easily searchable public database that has information on

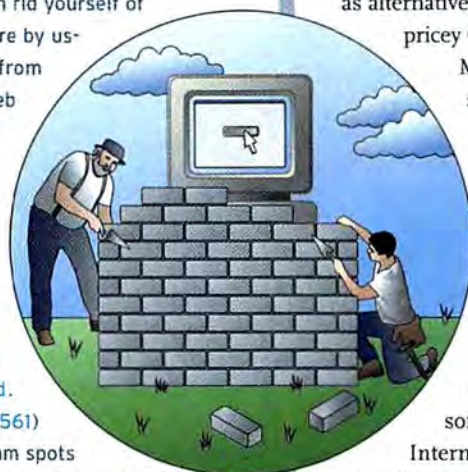
which downloads include spyware and adware.

>>TIP If you've accidentally downloaded adware or spyware and now you want to get rid of it, start by determining whether the program's vendor offers an uninstall program. For example, you can rid yourself of Radiate's software by using a download from the company's Web site (available at find.pcworld.com/26381).

>>TIP If you want to scan your PC for spyware, give Lavaso's free Ad-aware (find.pcworld.com/26561) a try; this program spots and removes most of the major offenders. Make sure that you get the most up-to-date files so you don't miss anything.

>>TIP Uninstall with prejudice. If you run into problems with software, don't hesitate—just get rid of it. If a program doesn't come with an uninstall feature, try using Windows' Add/Remove program. If that doesn't work, consider 4Developers' Add/Remove 4Good (find.pcworld.com/26562), a \$13 shareware product that lets you completely remove up to seven programs during its free trial period.

>>TIP Clean out the stray DLLs and leftover Windows Registry entries that uninstalled software leaves behind. Knowledgeable, confident users can do this manually; the rest of us are probably better off letting a reliable program do the job. We recommend Easy Desk Software's Perfect Companion (find.pcworld.com/26563), which is free to try and \$30 to keep.



CAMERA PRICES PLUMMET

SIGNIFICANT DROPS IN DIGITAL CAMERA PRICES—ESPECIALLY ON 2- AND 3-MEGAPIXEL MODELS—MEAN DEALS ABOUND FOR BUYERS.

TECHNOLOGY'S unrelenting pace may frustrate those who always want to own the latest and greatest, but for everyone else it can mean better deals on older models. Nowhere is this more apparent than with digital cameras, whose prices are in a state of near free fall.

For now, the best buys are in 2-megapixel models. Olympus has just introduced its 2-megapixel D-380 for \$199, and other cameras, such as HP's Photosmart 318, can be had for about the same price. Not bad for a product class that ran upwards of \$460 just a year ago (see chart at right). And these cameras all pack enough pixels to yield high-quality 8-by-10-inch prints.

Today, 2-megapixel cameras are so affordable that Richard Campbell, Olympus's senior marketing manager for digital products, predicts, "Eventually, still-imaging 1.3-megapixel cameras will go away entirely." But that won't happen this year, since lower-resolution cameras are still a good way for newcomers to get their feet wet with digital photography.

SHARPER SHOTS

WANT A high-end camera? Don't worry, prices have dropped for those as well, especially at the 3-megapixel level.

These days, a lot of new 3-megapixel cameras cost \$500 or even less. Take Sony's new Cyber-shot DSC-P71, a 3.2-megapixel model, selling for just \$400. Slightly older units,

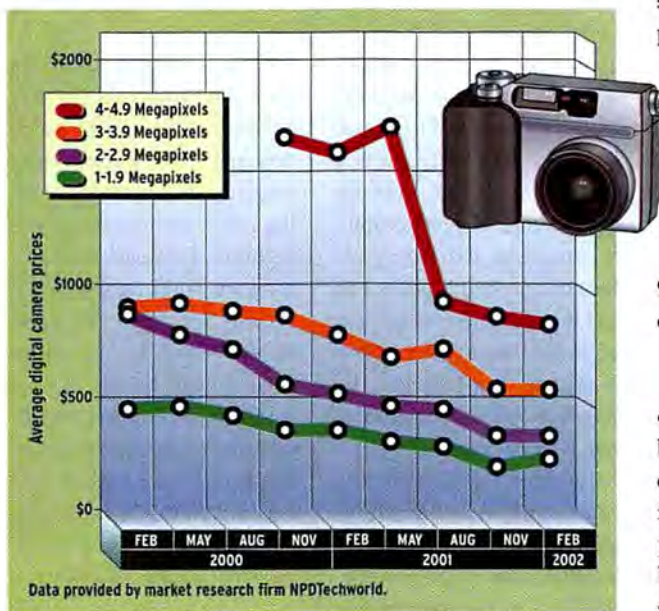
such as this month's Best Buy, Toshiba's 3.1-megapixel PDR-M71, and the 3.34-megapixel Konica KD-300Z sell for \$399. Or you can purchase Kodak's 3.1-megapixel DX3900 for just \$349 (see *Top 10 Digital Cameras* on page 136).

Some of these inexpensive 3-megapixel units may skip on certain features their predecessors offered. You may locate a better bargain in an older model whose price has dropped since release. The

As 5-megapixel and higher-resolution cameras have arrived, prices of 4-megapixel units have also dropped, but remain relatively high, hovering in the \$700 to \$800 range.

BEHIND THE FALL

WHY ARE prices free-falling? "Digital cameras are driven entirely by technology," says Martin Reynolds, a Gartner research fellow who tracks this field. When tech costs drop, so do camera prices.



PRICES ON ALL types of digital cameras continue to drop, and new 2-megapixel cameras like Olympus's D-380 are debuting at just \$199.

3.3-megapixel Nikon Coolpix 995, for example, first sold for \$900 but now costs \$600. And Epson's 3-megapixel PhotoPC 3100Z dropped from \$799 to \$599 over one year, even after Epson added new capabilities like Print Image Matching.

Flash memory and CCDs (charge-coupled devices)—components essential to digital cameras—have undergone large price drops. Jeff Lengyel, Ricoh's marketing manager for digital cameras, says 4-megapixel sensors are cheaper

Event

EBAY OFFLINE: Interested in meeting the guy who beat you out for that antique anti-macassar or the gal who sold you that funky 1950s board game? You could get lucky at the first ever EBay Live, an event that the online auction giant is hosting to bring its faithful together in person. Dates: June 21-23 in Anaheim, California. Visit find.pcworld.com/26641 for details.

today than 1-megapixel CCDs were three years ago.

Gartner's Reynolds thinks prices will continue to drop as vendors master new technical solutions to traditional photo problems, such as enlarging with pixels (digital zoom) instead of having to use more-expensive optical zoom. Most cameras already include a digital zoom, but cameras may require CCDs capable of 9 megapixels and beyond to displace an optical zoom.

PHOTO FINISH

GREAT DEALS are out there, but shop wisely. Beware of cheap cameras that discard features to hit an appealing price. "Right now, you can't buy a camera for \$100 without sacrificing something," says Olympus's Campbell.

>>TIP In the lower price ranges, vendors may use plastic lenses instead of glass, or may reduce the number of elements in the lens (try reading the specs or calling the maker to check). Both shortcuts, especially plastic lenses, mean pictures will be less sharp.

—Dave Johnson ▶

WI-FI

WIRELESS NETS GO PUBLIC

FREE AND FEE-BASED 802.11B NETWORK ACCESS POINTS ARE EXPANDING, AND HOPPING ON THEM IS GETTING EASIER THAN EVER.

GOT A WI-FI network card and a notebook or a PDA? Then you've got Net access—if you happen to be in the right place. And if you're really lucky, it might even be free.

In a growing number of locations, from airports and cafés to homes, wireless access points based on the 802.11b (Wi-Fi) protocol are making broadband Internet access available to anybody within antenna range. Some of these access points (also called APs or "hot spots") are free, set up by public-minded individuals and organizations, while others charge for access.

SURFING FOR DOLLARS

PUBLIC WI-FI networks that require an access fee are typically set up by companies that share revenue with the location's owner. To get on the network, you must create an account with the network operator and enter the appropriate settings (network name and encryption key, if any) on your computer or handheld. If you use several access points, changing settings and managing bills from different operators can be time-consuming. A few companies are working to simplify the process.

Boingo (www.boingo.com), a service launched by EarthLink founder Sky Dayton, has partnered with several Wi-Fi networks, including the Surf and Sip Network and Wayport, to form an uber-network that, at the end of April, had



about 600 locations nationwide. When used on a PC equipped with a Wi-Fi card, Boingo's free software will detect any Wi-Fi network within range of your computer, including free hot spots. Boingo account holders can use the software for easy log-on to fee-based partner sites; if security is a concern, the software offers a Virtual Private Network option.

Boingo bills users by the connect-day—a unit that includes all log-ins to a single location within a 24-hour period (log-ins to separate locations, even during the same day, count as additional connect-days). Infrequent users can pay \$8 per connect-day; heavier users can opt for monthly plans costing \$25 for up to ten connect-days or \$75 for unlimited connect-days.

In my tests with a Windows 98 notebook and an Orinoco Wi-Fi card, the Boingo soft-

ware easily logged me on to a Surf and Sip access point at a San Francisco café; it also detected about a dozen non-Boingo Wi-Fi networks during a 20-minute drive on the highway. However, Boingo's software works only with Wi-Fi cards that support the latest drivers (NDIS 5.1). If you've successfully installed your card on a Windows XP PC, you're probably in good shape, but Windows 98 users will need an Avaya, Cisco, D-Link, or Orinoco card, and you'll have to upgrade the driver.

ACCESS FOR ALL?

JOLTAGE (www.joltage.com) takes a more grassroots approach to network building. Anyone with a broadband hookup and a Wi-Fi access point can install Joltage's AP software, which allows access to Joltage account holders. Joltage tracks how much an AP is being used by sub-

scribers and then reimburses member sites accordingly. Joltage, which began operating in late March with a handful of APs, charges by connect time: \$2 an hour, or \$25 a month for up to 60 hours.

Don't feel like paying? Try sniffing out 802.11b net access with no-cost programs like Boingo or NetStumbler (www.netstumbler.com), or by checking the listings on Web sites such as Freenetworks (www.freenetworks.org).

Internet service providers are keeping a close eye on public Wi-Fi networks, which suck up bandwidth without adding to ISP revenue. "While our policy does not prohibit this, it's not the intended use of our service, and we discourage it," says SBC spokesperson Fletcher Cook.

Those who offer free access to their unsecured wireless network face security hazards as well. To address this, Sputnik (www.sputnik.com) offers free software that turns any Intel-based PC with a wireless card into a Wi-Fi hot spot with a firewall and other security features. The Sputnik Gateway software also is intended to help Sputnik build a Joltage-like network—it's configured to grant access to other Sputnik Gateway users, and eventually to participants in a planned subscriber service.

Public Wi-Fi APs are still too scarce to be a reliable source of Net access for business travelers. But they are the fastest and cheapest source of public connectivity—and for those who chase them down, well worth the investment of \$100 or so in a Wi-Fi adapter.

—Yardena Arar ►

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CREATIVE

CONSUMER ALERT

FEDS EYE COPY LOCKS FOR PC GEAR

CONGRESS GETS INTO COPY CONTROLS FRAY AS TECH FIRMS, HOLLYWOOD DUKE IT OUT.

YOU MIGHT want to stock up on CD and DVD burners now, before both are considered contraband.

That's no joke: Hollywood wants to put hardware-based copy protection into everything from PCs to MP3 players. And Congress is giving the idea serious consideration.

In late March, Senate Commerce Committee chair Ernest Hollings (D-SC) introduced legislation that requires the entertainment industry and Silicon Valley to work together on technology to protect copyrighted material that is for use in any digital media devices, including PCs.

If enacted, the law would severely restrict your ability to enjoy and transfer content you already own—but its impact may not end there. Some believe this proposal would cripple the utility of PCs and other digital products, reducing demand and lowering incentives for tech firms to develop innovative products.

"We need to be very careful powerful industries don't veto the future," says economist W. Brian Arthur, a professor at the Santa Fe Institute.

NASTY BUSINESS

THE FIGHT IS getting nasty. The entertainment industry, led by Michael Eisner, Disney chief executive officer, takes the position that tech firms rely on piracy of Hollywood's products to sell their PCs and recording devices. In a recent

congressional hearing, Eisner said, "It's very hard to negotiate with an industry that thinks its short-term growth is dependent on theft." Hollywood claims that piracy losses hit \$3.6 billion in 2001.



JOE KRAUS (LEFT) AND GRAHAM SPENCER, cofounders of DigitalConsumer.org, are lobbying for fair-use rights to digital content.

Such accusations anger tech companies, many of which have been working quietly with the entertainment industry to find a compromise solution. At the same hearing, Intel executive vice president Leslie Vadasz accused Disney and others of trying to "neuter" PCs into little more than a "expensive version of a dumb DVD player."

Government regulation of system designs would pose a "threat to [the] usefulness of computers and stifle Intel's ability to innovate," said Donald Whiteside, an Intel vice

president and director of its broadband and content program office. Dell, AOL Time Warner, and the Consumer Electronics Association trade group have roundly blasted the proposal. They liken mandatory copy cops inside PCs to ordering Detroit to build cars that stall when they break the

"We don't condone, permit, or support illegal copying of content," says Michael Alford, director of product marketing at Philips Consumer Electronics. "But consumers have fair-use rights to make personal copies of CDs they own." (Sales of Philips's CD-RW drives have climbed with the popularity of digital music.)

Fair use was the argument in the VCR debate, when Disney and Universal lost a 1984 lawsuit to force Sony to stop producing the Betamax. The Supreme Court upheld consumers' rights to tape for time-shifting and personal use. Moreover, videos are now a highly profitable revenue stream for Hollywood.

But some experts say Hollywood won't accept a fair-use compromise simply because it doesn't believe people have fair-use rights to its intellectual property. "A critical part of Hollywood's market power is the control over distribution and production," says Lawrence Lessig, a Stanford University law professor. By limiting fair use, Hollywood can prevent new markets and new competitors, he says.

CONSUMERS RALLY

LOBBYING FOR customer rights are organizations like DigitalConsumer.org, which says you should be able to save, copy, and move movies and music you own. "We really want to clarify the legal rights of the consumer before it is too late," says cofounder Graham Spencer. Another outspoken watchdog is the ►

speed limit. And in April, Gateway launched an advertising campaign promoting digital music and warning consumers about the Hollings bill (see find.pcworld.com/26761).

It's not that tech companies are unsympathetic. Software piracy is estimated to cost the industry \$12 billion yearly worldwide. But software firms learned a decade ago that imposing onerous copy protection angered legitimate customers more than it deterred pirates. To some extent, they have come to consider piracy a cost of doing business.



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Electronic Frontier Foundation, which opposes both the Hollings legislation and the private peace talks between the two industries.

In the absence of a policy, some entertainment companies have already acted, with PC firms catching the fallout. Dell's technical support staff

reports increasing complaints of CD-ROM drives that won't play music CDs. Dell's staff must explain that the drive isn't broken, but rather, the music discs contain copy protection that makes them unplayable on any PC.

Music CDs are the canary in the coal mine of antipiracy

technology. Although music labels have received a firestorm of criticism for introducing even a few CDs that won't play on computers, they say it's the easiest way to keep music from ending up on file-swapping services like BearShare and Kazaa (see find.pcworld.com/26762).

"What we need is something mutually beneficial," says Jeff Joseph, Consumer Electronics Association vice president. That is, of course, the charge facing Hollywood and Silicon Valley. But can any compromise play—or record—in Peoria?

—Tom Spring

REWRITABLE DVD

NEW DVD BURNER SPINS FOR LESS

PIONEER'S NEW DVD-RW DRIVE UPGRADES SOME SPECS AND COMES WITH A NICE PRICE.

SEVERAL MONTHS ago, we would have embraced Pioneer's DVR-A04. After all, it creates DVD home movies on highly compatible, write-once DVD-R discs, backs up data to 4.7GB rewritable DVD-RW discs, and at \$499, ships at half the original price of the older DVD-A03.

The new drive offers only minor improvements over its forerunner, however. And the DVD Forum's DVD-RW/R standard is now under fire from the DVD+RW Alliance's DVD+R, the new write-once sibling of rival format DVD+RW. With competing drives likely out next month and also at \$499, it'll be a market donnybrook that confuses buyers. (For more on formats, see "The DVD Dilemma" at find.pcworld.com/26481.)

PLUS AND MINUS

PIONEER HAS improved the DVR-A04: It's slightly smaller, DVD-ROM read speed has stepped up to 6X from 4X, and CD-ROM read speed has

jumped to 24X from 16X. The drive also handles the high-speed CD-RW media its predecessor choked on. (See *New Products*, page 60, for a review



AT \$499, PIONEER'S DVR-A04 comes with a much better price than its predecessor.

of DVD authoring software.) But the unit is slower than the DVD+RW and +R competition in most respects. While its 2X DVD-R write speed rivals DVD+R's claimed 2.4X, its 1X DVD-RW write speed is less than half of the 2.4X of DVD+RW, and its 8X/4X CD-R/RW write speeds lag the 12X/10X speeds of DVD+RW drives. (With CD technology, 1X equals 150 KBps; with DVD, 1X equals 1.38 MBps.)

The older DVR-A03's over-

whelming advantage over the first crop of DVD+RW drives was that, besides supporting low-reflectivity, rewritable media, the DVR-A03 also wrote to far more compatible high-reflectivity, write-once discs. But new DVD+RW drives will write to their own high-reflectivity, write-once media. We haven't tested the DVD+R media's compatibility with legacy DVD-ROM drives and DVD movie players, but the simple fact that older devices won't mistake DVD+R for a dual-layer disc as they do DVD+RW media should bring a huge improvement.

In the end, we expect the rewritable and write-once discs from both camps to play in movie players and DVD drives with the same respective degree of compatibility. In background discussions, industry experts estimated 50 percent compatibility with older movie players and drives for +RW and -RW discs, and about 85 percent for -R and +R discs. (Note: The older the device, the less chance it will play any homemade disc.)

Thanks to the DVR-A03's

large installed base and nearly a year's head start for DVD+RW and DVD-R, however, the DVR-A04 still has a big advantage over its rivals: cheaper media. DVD-Rs cost about \$2 a disc and are dropping. With DVD+Rs debuting at \$7, you can burn three DVD+Rs for every DVD+R—a substantial savings. It's unclear how long this will last, but for now Pioneer holds an economic edge (+RW and -RW disc prices are on a par with each other).

CHOICES, CHOICES

THE UPSHOT is, users face confusing choices. DVD+RW drives hold a speed edge, but DVD+R is unproven, and currently DVD-R media is much cheaper than DVD+R. Our advice: Stick with what you have, track media and drive prices, and see how DVD+R stacks up before you buy a new drive. And keep an eye out: There are rumors of upcoming drives that will write and read all four media types.

—Jon L. Jacobi ►

DVR-A04

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HANDHELDS

PDAs FOR TYPISTS

SONY AND SHARP LAUNCH INNOVATIVELY DESIGNED PERSONAL DIGITAL ASSISTANTS WITH TRENDY THUMB KEYBOARDS.

PEOPLE WHO don't like using a stylus to enter data into a personal digital assistant will welcome the two latest entries in a growing pool of handhelds with BlackBerryesque thumb keyboards—the Sony Clie PEG-NR70V and the Sharp Zaurus SL-5500.

While both keyboards are relatively good, the Sony keyboard has the edge, as it is slightly larger and feels firmer. Still, though both are fine for entering addresses or short notes, you won't want to try writing a book on either.

The Sony device runs Palm OS 4.1 and has an innovative design. Much like the viewers on some camcorders, the screen can flip up and twist around 180 degrees. When the clamshell is open, you can hold it to view the screen while you're typing on the keyboard; or you can twist the screen around, close the unit, and write or tap on the screen just as you would with a conventional handheld. A camera contained inside a small cylinder at the hinge takes pretty good photographs at a resolution of 320 by

240 (a cheaper version of the Sony, the PEG-NR70, doesn't include the camera).

The screen in my preproduction unit looked great in all lighting conditions; its software-based graffiti area van-

hidden keyboard, you slide the screen area away from the navigation button. The Zaurus runs a version of Linux, so you can't use Palm OS or Pocket PC software (though the PDA can run Java apps).

Fortunately it comes with Hancorn's excellent spreadsheet, word processor, and presentation program, all of which are compatible with their counterparts in Microsoft Office. You also get an e-mail program and a Web browser for use with an optional wireless modem.

Both handhelds come equipped with headphone sockets and with software for playing digital audio; Sony also throws in a wired remote control for the music player, as well as a hold switch that turns off the screen, thus extending the battery life. Both devices, however, were a little finicky about playing back some MP3 files, especially those that were not encoded by the programs supplied with the PDAs.

In contrast, my shipping Zaurus had a screen that was a bit murky as well as slightly brighter on the right-hand side, where the front light is located, than on the left.

To access the



ALL THUMBS: Sharp's Zaurus and Sony's Clie PEG-NR70V both sport keyboards suitable for quick notes.

Clie PEG-NR70V

Sony

★★★★★

\$599

find.pcworld.com/25621

Zaurus SL-5500

Sharp

★★★★☆

\$499

find.pcworld.com/26501

IN BRIEF

Diagnostic

SECURITY CHECK: In an effort to bolster its tarnished security image, Microsoft has released a free tool that checks Windows 2000 and XP PCs for "common security misconfigurations." The Microsoft Baseline Security Analyzer doesn't fix anything, but it does offer suggestions on repairing the vulnerabilities it identifies. See find.pcworld.com/26721.

Tidbyte

SPAM ALERT: If you have a Yahoo user account and haven't checked your settings lately, be prepared for a slew of e-mail marketing pitches. In March, Yahoo quietly added a new "marketing preferences" section to user profiles that by default accepts about a dozen categories of marketing messages. You have to log on and change those preferences to avoid the spam.

Downloads

Head to find.pcworld.com/24741 to find these free files.

TOP 5

- 1 DivX Video Bundle 5** 2610KB
Watch movies and create your own compressed video files.
- 2 WebWasher 3** 1197KB
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- 3 Ad-aware 5.7** 856KB
Rid your system of ad spyware.
- 4 PowerToys for Windows XP** 1027KB
Add applications and adjust hidden settings with Microsoft's suite of system tools.
- 5 Ulead Photo Explorer 6** 6610KB
Organize your photo collection quickly and easily.

—Richard Baguley ▶

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While System is On or Off
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LETTERS

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ULTIMATE HOW-TO GUIDE

POWER-LINE NETS: A WARNING FLAG

COMPLAINT RESOLUTION

LINUX? XP? THE OS DEBATE



MORE WEB SITE WOES

IT IS AMAZING how many bad Web site interfaces are out there—probably on most sites [“Revealed! Why Web Sites Bring Us Woe,” *Full Disclosure*, April].

Here are a few other peeves:

- Sites whose colored backgrounds contrast so little with the foreground text that they’re almost impossible to read, and gaudy backgrounds that scream at the user. I end up having to copy and paste the text into Word just so I can read it.
- Meaningless banners that crowd out what you want to read.
- Site pages that don’t fit the screen, requiring the user to scroll in all directions in order to read the material.

Rick Lambert, via the Internet

ELECTRICAL INTERFERENCE

A WORD OF WARNING regarding power-line networks [“Just Plug It In,” *News and Trends*, April]: Many electric utilities require that you obtain permission from them before using power-line networking or an electronic home control system. The reason? The power companies use similar systems to control distribution equipment such as voltage support capacitors and section switches, and one system

might interfere with another. This could even cause injury or loss of life if an interfering signal accidentally closes a circuit breaker when the power needs to be turned off because of storm damage.

Your power company may require you to install an isolation filter to prevent such interference. If you do install a power-line communication system without the company’s permission, it can sue you for the cost of disruptions.

Michael Cole, Seven Hills, Ohio

THE WORD FROM THE BBB

I ENJOYED Daniel Tynan’s article “Do Online Complaints Pay Off?” [April]. One point, though: The “40-day” BBB case-handling period Tynan refers to is the BBB’s goal for taking a case from filing through mediation to arbitration. I would

not deny that such a time frame could be viewed as “glacial” in a world where consumers often receive responses in minutes, not days. When compared with the time frames that might be involved in filing a claim for redress in court (even a small claims court), however, 40 days may be a “breakneck” speed.

*Charles I. Underhill, Senior Vice President,
Council of Better Business Bureaus,
Arlington, Virginia*

LINUX VS. WINDOWS XP

MARCH’S “Fee vs. Free Software” had one of the few recent discussions of the Linux operating system your magazine has carried, but I think Linux deserves more. When the time came for me to add a dedicated server to our company’s small LAN, I decided to give Linux a try, using an old computer. That computer has ▶

YOUR TIPS

PRINTING, HOME PAGES



▶▶TIP TO EXTEND the life of printer cartridges, set the default quality to “draft” mode.

You can do this in Windows through **Start•Settings•Printers** or **Start•Printers and Faxes**, depending on your version of Windows. Right-click the default printer and select **Properties**. Look for a “print quality” setting in the printer properties dialog boxes. Select the lowest quality level and click **OK** until you’re back on your desktop.

David Mason, Buffalo Grove, Illinois

LINCOLN SPECTOR’S online article on default Web pages being changed to an unwanted site [“Invasion of the Brows-

er Snatchers,” find.pcworld.com/25781] offered helpful solutions. Here’s another. ▶▶TIP If you don’t have one, create an Internet Explorer shortcut (open Windows Explorer, navigate to and select the **\Program Files\Internet Explorer** folder, and drag **IEXPLORER.EXE** from the right pane to the desktop). Right-click the IE shortcut, click **Properties**, and press <End>. In the Target field on the Shortcut tab, type a space and the command switch **-nohome** (don’t forget the leading hyphen), and press <Enter>. From now on, IE will open just a blank page—not an unwanted page.

*David Baker, Doncaster,
South Yorkshire, England*

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LETTERS

now been running for about eight months with nary a whimper and has a far greater load on it than I originally anticipated. I'm now convinced that for a small server, Linux is definitely the way to go.

Jim Hubbard, Eden, North Carolina

A FEW MONTHS ago, I persuaded the IT department of our telecommunications company to migrate to Windows XP Professional. Our users couldn't be happier! The workstations never crash because XP is so stable, and remote access reduces the times IT must visit a workstation.

John R. Wells

Comcast of Alexandria/Arlington, Virginia

>>TIP To boost the chances of seeing your letter in print, keep it short, identify the article you're referring to, and provide your name (we also like to have your city and state). Send e-mail to letters@pcworld.com.

>>TIP To write to a particular column, find its e-mail address under "Questions and Submissions" in the masthead on page 14. ■

CORRECTIONS

MAY'S "Tools for Trouble-Free Computing" should have said Partition Commander 6 works on tasks one step at a time if you *don't* use a wizard. In the "Clean Up Your Hard Drive" chart, McAfee QuickClean 2's price should be \$40, and the Best Buy's name should be listed as Ontrack SystemSuite 4. We said LapLink's PCMover, part of PC Sync, failed to move My Documents and skipped Quicken data files. At LapLink's request, we retested PCMover; it moved all My Documents and Quicken data files after we changed some settings.

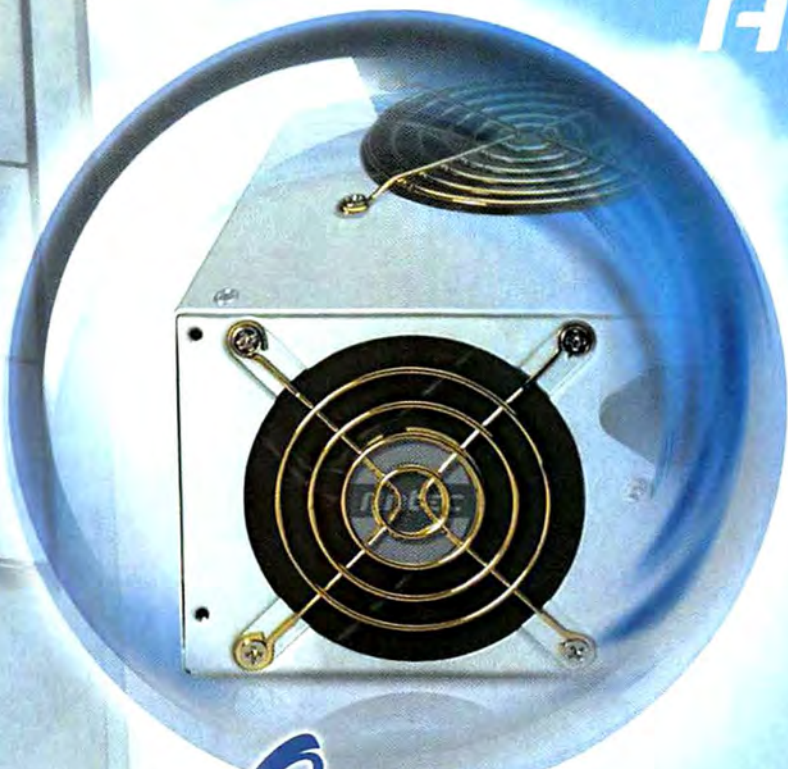
May's "Can the Feds Can Spam?" (page 22) should have identified Rep. Heather Wilson (NM) as a Republican.

April's "Next-Generation PDAs" should have said the Sony Clié PEG-N760C has 8MB of built-in memory.

March's *New Products* review of the Compaq IPaq H3850 should have noted that this PDA's cradle has a button on its back that, when pressed, releases wedges to hold the device securely.

PC World regrets the errors.

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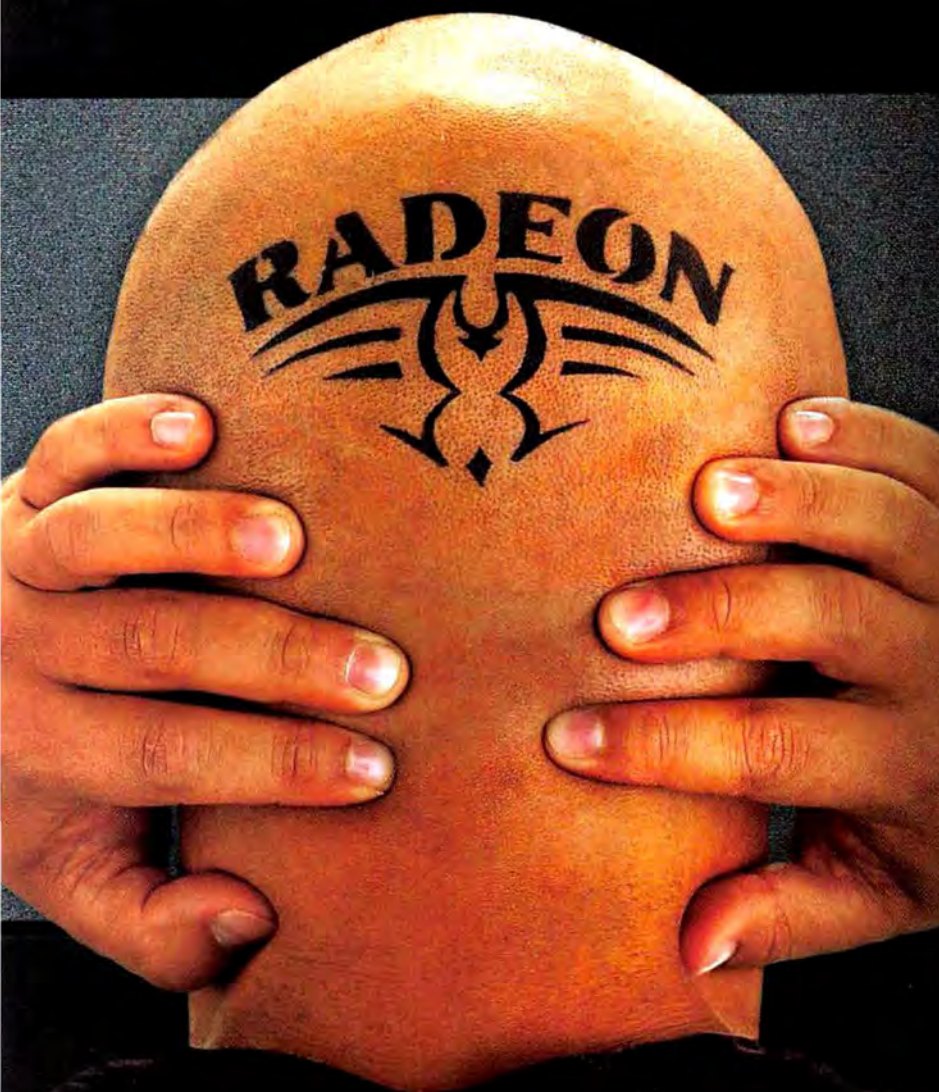
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CONSUMER WATCH

ANNE KANDRA

ULTIMATE HOW-TO GUIDE

**ONLINE AUCTION
SELLING TIPS**

**PRIVACY WATCH:
KEYSTROKE LOGGING**

**ON YOUR SIDE: SURGE
PROTECTOR SWITCH**

Make Your Trash Someone's Treasure

Twenty tips for using online auction sites to sell your unwanted stuff—safely.



IF YOU'RE LIKE a lot of people, you have an attic full of things you've been meaning to get rid of since the Carter administration. And the strange truth is that someone would probably give anything—or at least a few bucks—to own your 1976 Bicentennial commemorative fondue set. Finding the ideal buyer for your treasures is where online auction sites come in.

Sites such as EBay and Yahoo Auctions make posting a description and photo of your item only slightly harder than placing a bid. If you've caught the auction bidding bug, selling some equipment you no

longer use—last year's digital camera, say, or the electric guitar your son abandoned—is a great way to finance your habit. Before you start, here are a few tips to ensure that everyone logs off happy.

BEFORE YOU LIST

>>>TIP Sell to others as you'd have them sell to you. Try to equal a time when you received exceptional customer service.

>>>TIP Study the auction site's rules and policies thoroughly, including all payment options and requirements. Know which kinds of items can't be sold on the

site. Some things, such as plants, animals, and tobacco products, are prohibited; and items like airline and concert tickets may carry restrictions.

>>>TIP Make sure you understand the auction site's charges, which can be complicated. In most cases, sellers pay at least two fees (more if you want special placement, color banners, or other features to distinguish your offering). The first charge is a "listing" or "insertion" fee, which is usually nonrefundable and is generally based on the starting bid amount or minimum selling price that you set when you first list an item. The second fee is a percentage of the final sale price (known on EBay as a "final value fee"). Different auction sites have different fee structures, and the fees themselves vary by category of item, sale price, and other factors.

>>>TIP Know the charges you'll incur for using payment services such as PayPal and EBay Payments. Using these services expedites payment and is more convenient for the buyer, but you should plan on paying a small percentage (typically 2 to 3 percent) of the selling price, plus an additional transaction fee.

>>>TIP Consider holidays, seasons, and other factors that could affect the number of bids you'll get. For example, you might have better luck selling cross-country skis in January than in July, and you probably won't get barraged with bids if your auction is timed to close on Christmas Eve.

SETTING A PRICE

>>>TIP Don't set the minimum bid at the price you hope to get. If you're listing a watch worth about \$100, don't set a minimum of \$100. That kills prospective ▶

bidders' interest by removing any chance that they'll get the item at a bargain price. Instead, set the minimum bid low—many sellers set it at a dollar, even for valuable stuff—and let the magic of auction economics push the price up.

>>TIP You can set a reserve (an undisclosed minimum selling price) if you can't bear to part with an item for less than a certain amount. But most sites charge extra for this option, and many bidders won't bid on items with reserves.

>>TIP To learn how to set realistic minimum bids and reserves, look up the results of past auctions for similar items.

CREATING A LISTING

>>TIP To find a suitable category for your item, search the site for similar goods. If your item falls logically into two categories, consider listing it in both (for an extra fee). For example, if you're selling your great-grandfather's violin, list it in "Musical Instruments" and "Antiques."

>>TIP Many buyers will find your item

by searching, so list all relevant keywords in the item's title. For example, if you're selling a copy of the *Saturday Evening Post* with a Norman Rockwell painting of Uncle Sam, list "Saturday Evening Post 1/21/28 Norman Rockwell Uncle Sam." This will ensure that *Post* collectors, Norman Rockwell fans, and Uncle Sam aficionados all see your listing.

>>TIP When you write your listing, describe the product honestly and in detail, even if it has faults: Disclosing that your Wedgwood platter is chipped on one edge ensures that you won't have an unhappy buyer later. Include a photo if possible, but make sure it's clear and crisp; buyers might think you're trying to hide something with a fuzzy picture. And don't include a big picture that will take a long time to load over a dial-up connection.

>>TIP Offer a money-back guarantee. Buyers will be more comfortable bidding if they know they can get their money back. But be sure to set a relatively short time limit—say, a week after receipt—so

a buyer doesn't try to return your old scuba gear months later after flunking the certification test. To limit your expenses and discourage frivolous returns, state up front that you'll refund only the bid price, not the shipping charges.

>>TIP Include with the item description an estimate of shipping and insurance fees as a courtesy to bidders, who typically pay the fees. Visit www.usps.com/auctions for information on shipping costs.

MANAGING YOUR LISTING

>>TIP Use a counter, offered by most auction sites, to see how many people look at your items. If you sell similar items regularly, counters can help you determine the interest in that category.

>>TIP Check the feedback on people who are bidding. Most sites allow you to refuse to sell to bidders with shabby records, block unwanted bidders, or approve people before they're allowed to bid.

>>TIP Consider whether you want to sell internationally. Many U.S. sellers opt ▶

PRIVACY WATCH

Don't Let Anyone Secretly Track Your Keystrokes

OF ALL THE WAYS SNOOPS can track you these days, perhaps the most invasive method is keystroke logging. With an inconspicuous piece of hardware or software, a nosy boss, jealous spouse, or ingenious hacker can see every character you enter into your PC.

The worst part is that while the law requires your employer to inform you when it's tracking your typing, no laws protect users of a home PC. Fortunately, secret keystroke logging remains relatively rare. But if you suspect someone is keeping tabs on your keyboard, here are some tips for uncovering the truth.

>>TIP First, look for suspect hardware. Hardware keystroke loggers are typically small cylinders that plug in to the end of your keyboard's cable and connect to your PC. If you find one, simply remove it.

Finding keystroke logging software—such as WinWhatWhere's Investigator or Spectorsoft's Spector—is harder. The apps use cryptic names, and most can send logs of your keystrokes secretly over the Internet to a snoop.

>>TIP To prevent keystroke logging software from reporting on you via the Net, install a personal firewall, such as ZoneAlarm (find.pcworld.com/24441). If you already use a firewall, check the list of programs permitted to send information over the Net. If you see a

program you don't recognize, change settings so the program must ask for permission before sending a message. That will help you figure out whether the traffic is legit. If you open a program and immediately get a request to access the Internet, the request prob-

ably came from that program. If the request came from out of the blue, investigate further.

Keystroke loggers may save a record on your hard drive as you type or click. **>>TIP** Eliminate a logger from your hard drive by installing countersurveillance software such as SpyCop (free trial version, full version \$50, find.pcworld.com/25301) or SpyDetect (\$25, find.pcworld.com/25302). Both programs scan your hard drive for files created by keystroke loggers, and both can delete the applications and their data files. (SpyCop's demo version performs only a partial scan and can't delete files.) Delete any loggers you

find running; then restart your PC and run the scanner again.

Of course, upon discovering that you've deleted the keystroke logging program, the person who installed it on your PC in the first place may attempt to reinstall it. You could arrange to install your own keystroke logger, to spy on the spy. But really, is any relationship worth that degree of suspicion? —Andrew Brandt





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not to because there may be restrictions on goods that can be shipped. Another obstacle is arranging payment. Buyers may be required to pay large third-party fees with some types of payments, so you might want to stick with checks or money orders for international buyers.

CLOSING THE SALE

>>TIP When the auction is over, send the winner a prompt e-mail confirmation that includes the winning bid amount and your contact and payment information. Ask the buyer to confirm receipt of all the necessary information.

>>TIP Never ship a product until you have payment in hand. (Depending on how the buyer pays, you may have to wait for an electronic or paper check to clear.) Be wary of any buyer who pressures you to ship an item before you have the cash.

>>TIP When packing your item, use lots of protective materials. The U.S. Postal Service's Priority Mail option is a good

choice because it's fast and inexpensive, and you also get free, high-quality boxes.

>>TIP When the entire transaction is complete, post feedback about the buyer (positive, neutral, or negative) on the auction site. This will help make the site a safer, more reliable place for everyone.

Follow these rules and you'll be clutter-free by 2003—and possibly a few bucks

richer. Come to think of it, maybe you could use the extra cash to bid on that mint-condition set of golf clubs you saw posted on eBay.... ■

Anne Kandra is a contributing editor, Grace Aquino an associate editor, and Andrew Brandt a senior associate editor for PC World. Write to consumerwatch@pcworld.com.

ON YOUR SIDE

PC Connection Catalog Slipup

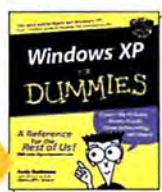
I ORDERED Tripp Lite's Isobar 6 Ultra surge protector from PC Connection. But what I received looks different from the same model protector I bought last year. Several PC Connection reps assured me that it's the same product. But after talking to a Tripp Lite rep, I found that my new surge protector is a different model (an Isobar 6 Ultra HG) with inferior features.

Reynaldo C. Gonzales, San Antonio

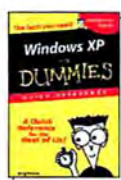
On Your Side responds: Customer service director Keith McKane says that PC Connection inadvertently listed the wrong product information in its catalog. The company exchanged Gonzales's surge protector and has corrected its latest catalog. **>>TIP** When you receive an item ordered over the phone or online, check it carefully to confirm that it matches the promised specifications. —Grace Aquino

Nobody Does Windows XP Like We Do

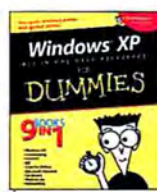
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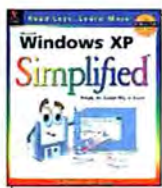
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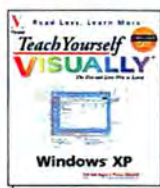
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WEB SAVVY

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ULTIMATE HOW-TO GUIDE

Expand Your Web Search Horizons

Six tips for finding the info you want by searching hidden corners of the Web.



SEARCHING THE WEB isn't an exact science. You could argue (as I do) that Google is the best search engine online, but it can't find everything. Nearly every major site has its own search function, so wouldn't a search for computer information at a site like PCWorld.com cut out the irrelevant results you'd get at a general-purpose search site? And isn't it possible a site you've never tried can find pages no other search tool turns up?

Google has been so good for so long that it's easy to ignore other sites, but these days I've learned to spread my searches around. Below I offer a few modest search strategies and sites that you probably haven't used lately.

>>TIP Try something new. I'm always looking for the next great search site, and so far I've been very happy with WiseNut (www.wisenut.com). The site has indexed more than 1.5 billion Web pages and includes a feature that suggests (and executes) additional search strings based on

what you enter. I'm also optimistic about Teoma (www.teoma.com), a new search engine from Ask Jeeves that returns results based, in part, on their popularity and groups pages together by topic.

>>TIP Comb the invisible Web. Search engines routinely miss certain types of information, such as scholarly tomes, government publications, and other online databases. If you're having trouble finding information that falls within this so-called "invisible Web," try Infomine (infomine.ucr.edu) and the Resource Discovery Network (www.rdn.ac.uk). Or you can use SearchEdu.com, which has links to SearchBooks.com (online books), SearchMil.com (military information), and SearchGov.com (government sites). Finally, the Librarians' Index to the Internet (www.iii.org) indexes site categories such as food, sports, and travel.

>>TIP Do a super search. Metasearching (using a single Web site to scour several search engines at once) is nothing new. MetaCrawler (www.metacrawler.com) and similar sites have been around a while, but other sites show some promise. SurfWax (www.surfwax.com) calls on major search engines like AltaVista and

AllTheWeb, as well as on tools such as SearchEdu.com. I also like Beaucoup (www.beaucoup.com) and QbSearch.com, which lets you select several results and view them in separate windows.

>>TIP Check the periodicals. A couple of wonderful sites catalog articles from a wide variety of publications. FindArticles.com has four years' worth of articles from over 300 magazines and journals organized by topic. MagPortal.com catalogs fewer publications, but it includes magazines such as *The Atlantic Monthly*, *Sports Illustrated*, and yes, *PC World*.

>>TIP Don't forget encyclopedias. Online encyclopedias are useful because they're known quantities, unlike the sometimes sketchy sites you find on the Web. Britannica.com is famous for hiring experts on thousands of topics, and it lets you search the encyclopedia's volumes, magazines, and Web sites—albeit for \$50 a year. To cast a wider (and free) net, go to Researchville (www.researchville.com), where you can access encyclopedias, newspapers, search engines, and more. ■

Contact PC World Contributing Editor Brad Grimes at websavvy@pcworld.com.

GIMME FIVE

Blogging: Create a Web Soapbox

>>TIP Web logs, or blogs, can be fascinating, very personal, and a great way to find information. Finding a blog you like or creating your own is quick and easy.

1. Blogger: The center of the blog universe. Create your own blog or read others' blogs. www.blogger.com

2. Blog Spot: Need a place to publish your blog? Try Blog Spot. www.blogspot.com

3. Blogdex: An index of blogs and the Web pages that the blogs talk about. blogdex.media.mit.edu

4. MetaFilter: A community blog where bloggers discuss the Web and other blogs. www.metafilter.com

5. UserLand Software: If you get serious about blogging, this site has software for heavy-duty blogs. www.userland.com

COMPLETE DISASTER!



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HOME OFFICE

STEVE BASS

ULTIMATE HOW-TO GUIDE

Here's a Tip: PC User Groups Are Great

Members get advice and support from everyday experts like these four folks.

IMAGINE THAT YOU have a problem with your PC. (Not particularly difficult, I know.) Now visualize describing your dilemma to an auditorium packed with 300 bright, well-informed, and witty computer professionals and enthusiasts. In no time flat, your problem is solved. That's a computer user group, folks. These amazing resources were the center of the PC user community in the pre-Web era. They may be less prominent these days, but they're still alive, kicking, and worthwhile.

You'll find user groups in most cities, and membership usually costs less than \$50 per year. To prove just how valuable these groups can be, I rustled up a sampling of PC tips from group members.

Instant System Properties: You needn't go through a series of cascading menus to open System Properties. **>>TIP** If you have a Windows keyboard, simply hold down the <Windows> key and simultaneously press <Pause> (at top-right of the keyboard) to access information on your PC.

—Roger Griffin, *The Users' Group Network* (www.tugnet.org), Granada Hills, California

Jump the print queue: Sometimes you realize that you've just sent several documents to your print queue, but the one you sent last is the one you want printed first. **>>TIP** Double-click the printer icon in your system tray and drag the last document to the top of the list of files in the queue. It will print immediately after the file currently being processed.

—Mean Drake, *the Colony Computer User Group* (ccug.apcug.org), Murrieta, California

How old is that Web page? Have you ever wondered when the Web page you're visiting was last updated? Here's a neat

Internet Explorer 6 trick for finding out.

>>TIP In IE 6's Address field, simply type `javascript:alert(document.lastModified)` and press <Enter> to see the most recent update's time and date in a pop-up window.

—Dennis Courtney, *the Capitol PC Users Group* (www.cpcug.org), Washington, D.C.

Old modems for new broadband: If you've switched to a cable-modem, DSL, or other broadband service, your old dial-up modem still has a good use. **>>TIP** Leave



your modem connected to the phone line and attached to the phone. When you want to call a phone number you see on a Web site or in your contact manager, have your modem dial the number with only a few mouse clicks. Windows' Phone Dialer applet makes this possible.

To open Phone Dialer in Windows 9x, Me, and 2000, click *Start>Programs>Accessories>Communications>Phone Dialer*. If it's not there, open Control Panel, double-click *Add/Remove Programs*, and choose the *Windows Setup* tab (*Add/Remove Windows Components* in Windows 2000). Select *Communications*, click *Details*, and check *Phone Dialer* (you may need your Windows CD-ROM to install it).

To place a shortcut to Phone Dialer on

Internet Explorer's Links toolbar, first open IE. (If the Links toolbar isn't visible, click *View>Toolbars* and check *Links*.) Then select *Start>Programs>Accessories>Communications*, hold down <Ctrl>, and drag the Phone Dialer icon to the Links toolbar.

Now when you want to dial a phone number listed on a Web site, copy the number, select the *Phone Dialer* shortcut on the Links toolbar, paste the number into Phone Dialer's 'Number to dial' field, and then click *Dial*. Pick up your phone and click *Hang up* once the dialing is complete. No more misdials from clumsy fingers or faulty memory.

—Steve Shank, *the Golden Gate Computer Society* (www.ggcs.org), San Rafael, California

>>TIP It's good to be grouped: Two great resources for finding a user group in your vicinity are the Association of Personal Computer User Groups at cdb.apcug.org/loclist.asp and Ash Nallawalla's list at easysrvp.com/ugotw.

And no, not all group members are pocket-protected propeller heads. Some members are IT executives and consultants, but many are ordinary folks who just want to get the most out of their PCs. Nearly all groups produce a newsletter, often with member listings (some with phone numbers) in case you need help. Groups frequently hold smaller meetings—called Special Interest Groups—that focus on specific topics. For example, the Pasadena IBM Users Group (www.pibmug.org) has Windows, Networking, Visual Basic, and Macromedia SIGs. By the way, that's the group I'm president of, but don't let it keep you from joining. ■

Contributing Editor Steve Bass can be contacted at homeoffice@pcworld.com.



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BUGS & FIXES

STUART J. JOHNSTON

ULTIMATE HOW-TO GUIDE

Top Tips for Busting Bugs

Follow our expert's favorite five tips to keep those nasty PC pests at bay.

I'M A BIG believer in the Boy Scout motto: Be prepared. It's wise to follow that old adage in this era of seemingly inevitable computing snarls. Every month in *Bugs and Fixes*, I keep you up-to-date on the latest bugs, security holes, and other software and hardware glitches. This month, though, I'm going to share some tips on how I protect myself from bugs and bad guys.

Strengthen your browser.

Take advantage of your browser's built-in security settings to exercise more control over the information that comes your way on the Internet. **>>TIP** If you use IE 5.5 or later, go to *Tools•Internet Options* and click *Security*. Then select the *Internet* icon, click *Default Level*, and set the slider bar to Medium.

To adjust Netscape's individual security settings, Net-

scape 4.x users need to select *Edit•Preferences•Advanced*. Netscape 6.x users can choose *Edit•Preferences* and then click the *Security & Privacy* tab.

Think before you click. Plenty of clues will tip you off when something isn't kosher. For



example, if an e-mail message from a coworker contains a subject line that seems unlike the person's usual style, view it with suspicion—especially if it includes an unexpected attachment. **>>TIP** Never open a file attachment from someone you don't know.

Ignore 'Microsoft updates' via e-mail. Don't click any e-mail with an attachment that purportedly contains an update to a Microsoft product. **>>TIP**

Microsoft never sends out updates via e-mail, but in several cases viruses have been found masquerading as Microsoft updates.

Test beta software at your own risk. In my experience, beta software—the testable version made prior to the final product—is chock-full of bugs. Beta

software can destabilize your PC by damaging files that other programs depend on or by overwriting important data in the Windows Registry. You could end up losing the entire contents of your hard drive.

>>TIP So avoid beta software unless you can't bear to wait for the shipping version of software—or you plan to use a separate test machine.

Practice safe computing before disaster strikes. My last piece of advice takes its cue from the Boy Scout strategy. **>>TIP** Back up all of your essential data—religiously. Stay on top of your antivirus software updates. And if you maintain an always-on broadband connection, make sure you use an Internet firewall program. ■

Stuart J. Johnston is a contributing editor for PC World.

IN BRIEF

Printer Cord Recall

HP IS RECALLING power cords for over a million ink jet printers shipped between April 2001 and January 2002. The company discovered that the two-wire, gray-colored cord sets it included with the Deskjet 800 and 900 series and with the Photosmart 1000 through 1300 series may pose an electric shock hazard. Nobody has been harmed, says HP. It is replacing the cords free of charge (pardon the pun). Go to find.pcworld.com/25322 to order a replacement.

IM Hack Attack

ARE YOU AN instant messaging or Internet Relay Chat fan? Beware. According to the CERT Coordination Center at Carnegie Mellon University, crackers have made trouble for thousands of IM users. The rogues send users bogus virus warnings that direct them to a "virus removal" site, which turns out to be an infected site. Go to find.pcworld.com/25361 for CERT's advisory.

BUGGED?

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

PALM REPLACES FAULTY PDA CRADLES

IF YOU OWN a Palm M500 or M505 PDA, you should know that the company is replacing the HotSync cradles for certain units. When users place the PDAs into the cradles, reports Palm, any electrostatic discharge that results can prevent proper syncing. Palm says that it has fixed the problem. If your cradle has a sticker with an "E" or an "H" on the bottom, you already have the newer unit with enhanced static discharge protection. Otherwise, go to find.pcworld.com/25341 for cradle replacement details.

Palm denies that defects in the original cradles have any connection to reports of damaged serial ports on some users' PCs—an alleged association led to a proposed class action lawsuit filed against Palm last year. Visit find.pcworld.com/25921 and find.pcworld.com/13743 for more information about the lawsuit.

WORRIES BEGONE

Micro Exchange puts quality and confidence in buying pre-owned hardware



Pre-owned computers make sense!

Many savvy users seek sellers of factory-refurbished PCs and peripherals for their deep discounts on name-brand hardware. They also worry that renewed products might be less reliable than unused hardware.

One vendor, Micro Exchange Inc. (www.microexchange.com), is bringing integrity to the pre-owned hardware market by backing brand-name PCs with 90-day warranties and outstanding technical support.

Visitors to www.microexchange.com are finding low prices on high-performance notebooks, PCs, monitors, and printers—even the latest PDAs. Many are also shopping among 300,000 parts and accessories at Micro Exchange's sister site, Service Electronics, (www.separts.com).

Micro Exchange's enterprise customers depend on the site for servers, PCs, and peripherals matching their current networked environments. Service Electronics supplies them with hard-to-find replacement parts for their irreplaceable systems.

"We make full use of every system that we receive from the nation's leading retailers and OEMs," says CEO Philip Calvanico. "Not only that, but our stringent quality-control measures and our full warranties guarantee the performance of every system and part we sell."

Call In a Specialist

Micro Exchange employs over 300 technology specialists (with over 700 employees at five facilities nationwide) to ensure that the products meet the manufacturers' original specifications and configurations. Each specialist has his or her own area of expertise, and many are certified to refurbish and repair the world's largest PC manufacturers' systems—right down to the chip-and-component level.

Micro Exchange also covers products with a 90-day warranty. Customers during that period may call the company's technology specialists for toll-free technical support.

Micro Exchange's live tech support and three-month warranties have helped the company build a loyal following among IT leaders, students, professionals, university administrators, and consumers alike.

"We strive to provide our customers with the same level of satisfaction they would receive when purchasing a new computer," notes Calvanico. **"Our rate of return is lower than or the same as that enjoyed by many direct sellers of new hardware."**

The Savings Speak for Themselves

At Micro Exchange, savvy users are finding the same lightning-fast multimedia PCs being sold directly by manufacturers. The company gets its systems directly from OEMs and retailers and passes along its savings to buyers on the Web.

Micro Exchange's enterprise customers have for years been returning to www.microexchange.com to find the hardware that will keep their networks up and running. They can even trade in their current computer inventories for newer hardware.

"We're actually helping enterprises fund their technology rotations," says Calvanico, **"by letting them turn in their owned and off-lease assets, and putting that money toward the modern equipment they need to meet their current business goals and technology requirements."**

Mark Clauder, Director of Product Marketing, adds that Micro Exchange and Service Electronics can fully outfit every customer, from the student on a budget to the IT director with an eye on the bottom line.

"Our aim," Calvanico says, **"is to be the most reliable source for technology buyers who want to save money—without compromising system performance."**

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NEW PRODUCTS

ULTIMATE HOW-TO GUIDE

EDITED BY STAFF

Author, Author: Burn Video Onto DVDs



SOFTWARE
for creating
DVD movies.

DVD SOFTWARE

SALES OF RECORDABLE- and rewritable-DVD drives are expected to skyrocket in coming months as prices fall to about \$500. And already, the competition to produce software that helps users create menus for and then burn video from camcorders, cameras, VCRs, and DVD movie players is growing. I looked at shipping versions

of three popular offerings for authoring your own DVDs.

If you purchase a DVD recorder these days, the movie-authoring application bundled with it is likely to be Sonic MyDVD, from Sonic Solutions. (Recently, however, Mediatek's NeoDVD—which was not available in time for us to review—has won contracts from hardware vendors

like Sony and Ricoh, thanks to its low price, excellent MPEG-2 encoding, and integrated transitional effects.) Sonic Solutions has been making DVD software since the inception of the technology.

If you prefer, you can purchase **Sonic MyDVD 3.1** separately for \$79. In my tests, I found that it provides all the tools a casual user needs for captur-

ing video, trimming the captured files, and burning DVDs. It's far from perfect, however.

Sonic MyDVD 3.1's main strengths are its ease of use and its simplicity: It employs a wizard to step you through the DVD creation process. And unlike most of its competitors, the program also allows you to drag and drop media files using Windows Explorer—the easiest way to import large collections of video clips.

Its Direct-to-Disc feature speeds video transfers to your hard drive by skipping the authoring process: Your video is captured on your hard drive, but no interim image file is created, and you don't have to intervene after you start it running. Sonic MyDVD 3.1 also utilizes the OpenDVD standard. A free 3.5 upgrade (which should be available by the time you read this) is expected to permit users to edit menus and content directly on a rewritable-DVD disc, saving the considerable time it now takes to import them.

This program's major weakness is its lack of advanced video and DVD-menu editing. Sonic MyDVD 3.1 allows only

A High-Quality, Shirt-Pocket Camera

DIGITAL CAMERA

YOU'LL BE hard-pressed to find a smaller full-featured point-and-shoot than Minolta's new 2-megapixel **Dimage X**. This digital camera is slightly smaller than a deck of cards, and less than an inch deep—even when it's turned on and ready to shoot. That's a neat trick, considering that this silver rectangle hides a 3X optical zoom lens inside its case. Minolta's unusual design mounts the lens vertically inside the camera's body with a right-angle prism on top—visualize a tiny periscope. The unit's stylish brushed-metal case gives this eye-catching camera a solid, durable feel.

And the Dimage X offers

more than simply convenient size. The images my shipping unit produced looked sharp and pleasing, both with and without flash. You can capture JPEG movies that last up to 35 seconds, add 15-second sound captions to your still shots, and even use the camera as a handy (albeit expensive) voice recorder. The Dimage X is easy to operate, too: You can change the flash settings and exposure values with its sim-

Dimage X

Minolta

★★★★

Highly portable size also means the camera's controls are tiny.

List: \$399

find.pcworld.com/26102

ple (but tiny) control buttons and manage nearly all the other settings through uncomplicated menus. Deleting unwanted shots does take a bit of time, however. And you'll have to settle for relatively short shooting sessions: The tiny, rechargeable lithium ion battery is rated by Minolta to last for about 2 hours. The included 8MB Secure Digital card can hold approximately six JPEG images at the camera's best image settings.

A true point-and-shoot camera, the Dimage X has far fewer controls than some of its slightly larger (and more expensive) competitors, such



A 3X ZOOM LENS is hidden inside the Dimage X.

as Canon's Digital Elph and Kyocera's Finecam S3.

The Dimage is for people who put a premium on convenience and who don't want or need to use manual focus, aperture- or shutter-priority modes, or any other, more advanced exposure options.

—Tracey Capen

Four Megapixels for \$400

DIGITAL CAMERA

AT 4 MEGAPIXELS for only \$400, Kodak's **EasyShare DX4900** offers more pixels for the price than any other digital camera you can buy. But compared with other 4-megapixel models, this simple unit does not have much to offer beyond its high resolution.

Like all Kodak digital cameras, the DX4900 is very easy to use because it provides few sophisticated controls. You can adjust the shutter speed, for

example, but only from 7/10 of a second to 16 seconds (you can adjust other cameras' shutter speeds to at least 1/1000 of a second). Worse, if you stray from the automatic speed setting, the camera won't adjust the aperture to compensate (that is, it won't operate in shutter-priority mode) nor will it let you do so manually; as a result, the exposure is almost always off, making the function practically useless.

The DX4900's 2X zoom lens moves quickly enough, but it keeps traveling a bit after you stop pressing the zoom button. The LCD screen is hard to see in sunlight; at 1.5 inches, it's smaller than average, and about 15 percent of the image is blacked out for information displays. Fortunately, the DX-

4900 operates more quickly than the truly lethargic Kodak DX3700—but it's still slower than many other cameras.

All those pixels do help: In my tests, a shipping DX4900 took sharp photos, although many looked dark or noisy (I saw speckled color areas, not smooth color gradients).

The camera works with Kodak's EasyShare dock (about \$80), which doesn't simplify transfers substantially but does juice up the rechargeable NiMH battery that accompanies the dock. The DX4900 ships with a nonrechargeable CRV3 battery (a replacement battery costs about \$10).

Credit Kodak for packing in more pixels at this price than anyone else. But several 3.3-megapixel digital cameras—including the Toshiba PDR-M71, a *PC World* Best Buy (go to find.pcworld.com/17961)—

cost about the same as the DX4900, take pictures that are as good or better, and offer more sophistication.

—Alan Stafford ▶

TRY THIS

SHOOT IT



>>TIP All digital cameras use internal processors. Some are less powerful than others, slowing the camera's operating speed (by requiring more time to take an image, display images in playback mode, and implement settings changes). Processor specs aren't listed, though, so do your own hands-on evaluation before you buy.

EasyShare DX4900

Kodak

★★★★

Oodles of pixels for the price, but lacks the features of other 4-megapixel cameras.

List: \$400

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*Internet applications require purchase of a modem and available service. Screen image simulated.

be sharp™

Are 40X CD-RWs Worth It?

CD-RW DRIVES

TEST Center ONCE UPON a time, a big jump in CD-R write speed ratings for CD-Rewritable drives meant that new drives could reduce the time needed to write a disc by as much as one-third. We tested two shipping models of the new 40X generation—CenDyne's **Lightning III 40x12x48**

and Plextor's **PlexWriter 40/12/40A**—and found that they cut only about 16 seconds off the average time that a 32X drive needs to burn a 650MB disc.

The diminishing return on speed is attributable in part to the new drives' use of Zone-CLV technology for writing to CD-R media, which divides a disc into three write zones. At

the outset of each, the drive speed jumps up, but then it plateaus. Although the maximum is 40X, these drives won't write at 40X until they reach the disc's outer third.

In our tests, CenDyne's 40X drive (priced at \$140) took 3 minutes, 23 seconds to write a 650MB CD-R on the fly, beating out its 40X Plextor rival (at \$160) by just 3 seconds. The packet-writing results were not as close: CenDyne's 40X drive took 1 minute, 6 seconds to write a 100MB folder of files to CD-RW, while Plextor's required an additional 14 seconds. The 40X CenDyne was also slightly faster in our tests of digital audio extraction and application installation.

Both drives installed easily, but Plextor includes a detailed fold-out installation poster and well-written manual.

CenDyne's drive comes with

Lightning III 40x12x48

CenDyne

★★★★☆

Excellent performance and a good price make this drive stand out.

Street: \$140

find.pcworld.com/26361

PlexWriter 40/12/40A

Plextor

★★★★☆

Great CD-R write performance, plus excellent documentation.

Street: \$160

find.pcworld.com/26281



NEW drives from Plextor (top), CenDyne.

Download Apps to a Phone

CELL PHONE

MOST CELL PHONES that let you add customization options have to be connected to a PC first. Verizon Wireless's **Z-800** helps pioneer a new generation of phones that let you download applications over the wireless cell phone network itself. The technology, however, is more interesting than this phone.

Manufactured for Verizon by Sharp, the trimode (CDMA, PCS, and analog) Z-800 is one of the first cell phones to use Qualcomm's BREW (Binary Runtime Environment for Wireless) technology, a complete system for developing and delivering applications to small wireless devices. After

you flip up the Z-800's clamshell lid to reveal a 2-inch, 256-color screen (which looks a bit dark indoors), select BREW Apps from the main menu, using the navigation buttons, and then browse the offerings in categories such as Sports Games, Digital Arcade, and Productivity. You can download any app on the spot—for free, if a demo version is avail-

Z-800

Verizon Wireless

★★★★☆

Ability to download and run applications distinguishes this expensive color cell phone.

Street: \$400 (with two-year service plan)

find.pcworld.com/26261

able. Otherwise, you must either pay a one-time fee or buy a subscription (all charges appear on your Verizon bill). The BREW version of Tiger Woods Golf, for example, costs subscribers \$3 a month. Air-time charges apply during purchase and download, but not while you use the app (unless it runs online).

Using a shipping Z-800, I was able to purchase, download, and begin to play a game in about a minute. At launch, most BREW applications were entertainment oriented; Verizon says that other apps are in the works.

The Z-800's \$400 price and two-year service commitment are in line with those demand-



THE Z-800 sports a 256-color screen.

ed for other high-end, Web-enabled cell phones. However, the Z-800's so-so screen, its lack of Windows XP support, and the inability of its phone book to sync with any existing contact manager all limit this model's appeal. I'd let BREW percolate for now.

—Yardena Arar ►

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Apps for Tweaking PC Performance

SHAREWARE

WANT TO KNOW what's in your computer and how it's configured? Want to fine-tune that configuration for peak performance? I looked at a trio of try-before-you-buy shareware programs, available in PCWorld.com's Downloads section (find.pcworld.com/12285), that can help you learn about and perfect your PC.

INFO OVERLOAD

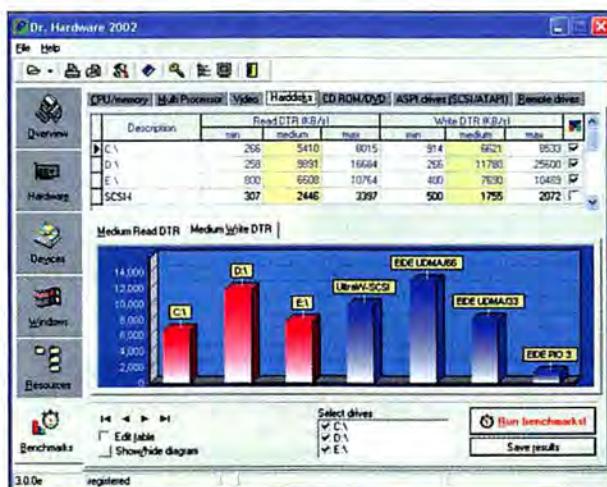
Dr. Hardware 2002 3.0.0e works so close to the hardware, it warns you from the outset that it may cause your system to crash. For the record, my Celeron 433-based machine didn't. (I performed all tests using both Windows Me and Windows XP Home.)

The \$19 program tells you almost everything about your system and how Windows is using it. Much of the information the application provides goes well beyond what most users are likely to need—for example, your computer's "CAS Latency" number (helps to measure memory access

speed). If you can't define it, though, Dr. Hardware rarely explains it to you.

But this shareware does provide useful data. You don't need to be a system engineer

You can save configurations and return to them later, or easily go back to the configuration you were using when you installed Cacheman. The program can also boost your



HOW FAST ARE YOUR HARD DRIVES? Dr. Hardware 2002 can tell you that, as well as other information on how your PC is performing.

to know the significance of your CPU temperature, or to know the meaning of performance benchmarks.

FASTER, FASTER

Cacheman 5.1, \$10, is for the truly performance-obsessed—those who want to wring every last bit of speed out of their system by tweaking Windows' various caches.

Thanks to Cacheman's wizards and help system, you can make these adjustments without having extensive knowledge of how Windows works. The wizards, for instance, provide far more explanatory text than is usually seen in shareware—this program ensures that you understand a decision before you make it. And if you change settings without using a wizard, context-sensitive help is always ready.

system's performance by recovering inaccessible RAM.

STRONG CONNECTIONS

TweakMaster 1.61, \$20, gives you an opportunity to optimize the performance of your Internet connection. Like Cacheman, it's designed with the non-techie user in mind.

In fact, when the program's Optimization Wizard asks if you have a dial-up or broadband connection, you can bring up a help window explaining how to tell the difference. After asking two or three questions, this wizard offers multiple unexplained "Optimization Strategies." You don't need to know what they do, simply try them and stick to the one you like best.

More technically minded users may want to visit the Advanced Optimization page.

My favorite mystery option here was "Time to Live"—I chose 128, hoping that meant years. Seriously, though, you'll find a good explanation of what "Time to Live" and other settings mean in the help file. But since the program help isn't context-sensitive, you'll have to do some searching.

Just as with Cacheman, you can save your settings for later restoration as you experiment to find the ones that are best for your system. In addition, this program has a DNS (domain name system) cache that should reduce DNS server searches over the Internet; a clock synchronizer; and a handy tool that tricks AOL into staying connected.

—Lincoln Spector ▶

Dr. Hardware 2002 3.0.0e

Peter A. Gebhard

★★★★☆

Tells you just about everything regarding your hardware, but you need to be technically proficient to understand what the program is saying.

Registration: \$19

find.pcworld.com/25742

Cacheman 5.1

Outer Technologies

★★★★☆

Helps you get more speed out of Windows, and it doesn't expect you to be a technical expert to make the adjustments.

Registration: \$10

find.pcworld.com/25741

TweakMaster 1.61

Hage! Technologies

★★★★☆

If you want to eke out every possible bit of performance from your Internet connection, this program will help.

Registration: \$20

find.pcworld.com/25721

TRY THIS

ONLY ONE



>>> TIP A bad shareware program can cause conflicts. If you install more than one and then have trouble, you won't be able to pinpoint the culprit. So after you've installed a new program, wait a few days before you install another one.



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Sun Microsystems

★★★★☆

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four-slice toaster and can provide Web serving, e-mail, FTP, Telnet, domain name service, page caching, site filtering, and file and print serving. About the only thing missing is the ability to use SSL encryption for a shopping cart. I looked at a shipping version of the top-of-the-line, \$2099 **Sun Cobalt Qube 3 Professional Plus Edition Server Appliance**, which includes 512MB of RAM, two 40GB hard drives functioning as a RAID-1 array, and a 450-MHz AMD processor. It also has two 10/100 base-T ethernet interfaces; serial, USB, and SCSI ports; and an LCD screen with a control panel.

Aside from having more

RAM and hard disk space within, the hardware is the same as in earlier models and relatively slow. However, the well-organized quick-start guide makes setting up the unit easy, even for a novice.

Sun has revamped the Web administration interface, which is now available in seven languages. And the server's administrative responsibilities can be shared. For example, a company employee may be deputized to assign user names and passwords, but prevented from inadvertently damaging the network configuration. Sun also has improved the Cobalt Qube 3's

Windows Networking support. Users can share files, a single local USB printer, and several network printers. And you may employ a Cobalt Qube 3 instead of a Windows server on many simple LANs.

—Jamie Fenton



LITTLE BLUE: Sun's Cobalt Qube 3 server.

PHOTOGRAPH: MARC SIMON

"Mission Critical" shouldn't refer to your tech budget.



Monitors



Wireless Routers

Jumbo Screen From Sony

NOTEBOOK

TEST Center CAN ONE EXTRA inch of screen on a laptop really make a difference? Most emphatically yes, as shown by Sony's new **VAIO PCG-GRX570**, the first desktop replacement notebook with a huge 16.1-inch display.

I looked at a preproduction version of the \$2500, dark gray GRX570, and I was very impressed by both the colors and the text on its bright display. However, at its native 1600 by 1200 resolution, desktop icons were tiny and hard to read from a normal viewing angle. (To magnify the icons, you can change the resolution, or choose Large Icons in the

Properties menu of your OS.)

We know that larger screens affect power consumption, and that was true here: The GRX570's main battery lasted only 2 hours, 11 minutes in our tests, short of the 3-hour average for desktop replacements. The notebook uses a 1.6-GHz Intel Pentium 4-M SpeedStep processor (the clock speed drops to 1.2-GHz on

VAIO PCG-GRX570

Sony

(Preproduction unit, not rated)

Multimedia pros and enthusiasts will enjoy this laptop's enormous screen and graphics capabilities.

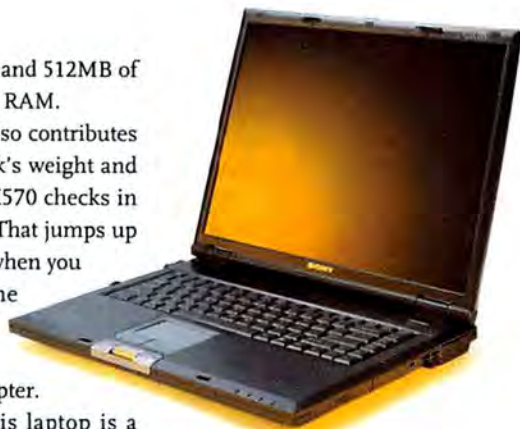
List: \$2500

find.pcworld.com/25601

battery power), and 512MB of 266-MHz DDR RAM.

The screen also contributes to the notebook's weight and bulk: The GRX570 checks in at 8.3 pounds. That jumps up to 9.8 pounds when you include a phone cord and the uncommonly large AC adapter.

However, this laptop is a digital powerhouse. It has Windows XP Home, an i.Link (IEEE 1394 or FireWire) port, three USB ports, ATI Radeon Mobility graphics with 32MB of DDR SDRAM, and a 40GB hard drive. One small beef: Some ports sit behind flimsy covers with weak hinges. The unit also has Sony's unique Jog Dial pointing device, a well-laid-out, easy-to-use key-



SONY'S VAIO PCG-GRX570.

board, and a DVD/CD-RW combo drive that you can swap out for a second battery.

At \$2500 for all of these features, and a mobile P4 processor to boot, this notebook with screen to spare is worth the cost, as long as you work near a power outlet. —*Kalpana Narayanamurthi*

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PC Security in the Zone

FIREWALL

IF YOU HAVE an always-on broadband connection for your PC, you need continuous protection that's as mean as a junkyard dog—and as easy for you to train as Lassie.

Fortunately, **ZoneAlarm Pro 3** is on nogoodniks like cheese on a Whopper. The \$50 firewall contains new and enhanced features, including the ability to block potentially menacing ActiveX controls (applets that have access to your operating system), as well as Web bugs and cookies. I put a shipping version through its paces and found it simple enough for newbies to use, but filled with powerful controls that security

pros will appreciate. It offers wireless LAN support, and is compatible with Windows 98, Me, NT, 2000, and XP.

I pitted the firewall against tests from Gibson Research (www.grc.com)—namely, its Internet security ShieldsUp tests and its LeakTest program. ZoneAlarm Pro 3 made my computer comfortably invisible to outsiders, and LeakTest was unable to surreptitiously send data from my test system (à la spyware).

ZoneAlarm Pro 3's new privacy features are just as tough. The firewall blocked ads ranging from skyscrapers to pop-ups, prevented ActiveX controls from downloading, and nabbed suspect e-mail attachments. The program not only indicates the severity of an intrusion, it also identifies the attacker's IP address and loca-

tion on a map. Although the location is not always accurate, you can notify the company or ISP whose server the hacker is using.

A few gripes: The program currently can't scan AOL e-mail attachments. Occasionally, the firewall trips over itself and crashes as it leaps to your defense, and its disk tutorial and help system are fairly limited. But overall, it's an excel-



ZONEALARM PRO maps attackers' locations.

lent product. If you're comfortable installing and using an antivirus program, then working with ZoneAlarm Pro 3 shouldn't present too many challenges. AOL users who want the full smorgasbord of features should wait.

Zone Labs also has a free version of ZoneAlarm (go to find.pcworld.com/26821), which offers Pro 3's core firewall functions but lacks its extra privacy, password, and network features.

—Robert Luhn ▶

ZoneAlarm Pro 3

Zone Labs

★★★★☆

Well worth its price for stopping hackers and putting the kibosh on ads, cookies, and spyware. List: \$50 (includes one year of updates and online support) find.pcworld.com/25641

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Smile When You Say That: Easy-to-Use Video E-Mail

E - M A I L

WANT TO SPEND face time with friends, relatives, or business contacts but just can't do it in person? Look into Talkway Communications' nifty video e-mail service. You need the company's **VMailTalk Express** software and a Webcam to create your message, but

text you've entered. Recipients need only a Java-enabled e-mail client to be able to view your missive.

Most recipients of the video e-mail I sent using a final version of VMailTalk Express reported that they could open it easily and that it had good—but not great—sound and



YOU'RE ON WEBCAM: Talkway Communications' software inserts a small video recorder into your usual e-mail message format.

the recipient doesn't need any sort of special software or hardware to view it.

For \$40 you get a USB Webcam, VMailTalk Express, and a 12-month account for 25 video minutes per month. The company offers a variety of other paid service plans.

To send your message, you must use Outlook 2000 or later, or Outlook Express 4 or later. (Support for more e-mail clients is in the works.) VMailTalk Express adds a small audio/video recorder to the usual Outlook e-mail message form. Using the recorder is easy: Click *Record*, chat until done, then click *Stop*. You may also type a text message.

When you click *Send*, your compressed video file is sent to Talkway's server; your recipient gets an HTML-format e-mail that also includes any

video, with occasional jerks and lags during the playback.

The company says that a 30-second video e-mail sent to three friends will use 2 minutes of account time—including 30 seconds of recording time and 30 seconds to cover its costs for the viewing time for each e-mail. (The videos reside on Talkway's servers.)

It's fun to use, but remember that this type of e-mail is no more and no less secure than any other nonencrypted e-mail, so don't divulge private personal or business information as you chatter.

—Anne B. McDonald ■

VMailTalk Express

Talkway Communications

★★★★☆

Video of sender spices up e-mail.

List: \$40, includes Webcam

find.pcworld.com/25901

PROTECT YOUR PC

VIRUSSCAN ONLINE

FROM VIRTUAL EVIL

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02 Scan Status Scan Completed: 1 virus detected
03 Folder(s) Scanned C:\
04 Scan Options Include Subfolders, Scan All Files
05 File(s) Scanned 7172
06 File(s) Infected 1
07 Scan Results Infected with W32/DAZ-worm

0100 0A111111110010101010000000000 0111101010000101111101110110101101
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Customer-First Technology

[Delight Your Customer With The Best in IT]

Customer relationships have never seemed more precious. Over the past 12 months, U.S. businesses have been rocked by recession and shifts in demand for their goods and services. That's why, even at growing companies, IT executives are seeking scalable hardware and software that can be adapted for changing work environments.

"It seems like we're moving every 90 days," says Robert Sanders, IT director for At Home Healthcare, a healthcare services provider based in Tyler, Tex.

"That's why we tend to use equipment that is highly adaptable."

At Home recently opened two new locations in eastern Texas, where Sanders established what he calls a "starter set

for new business." In a few hours, Sanders can set up four workstations for PCs, monitors, and phones, along with a multifunction output device.

Networking new offices can be very tricky, and work surfaces and workstations can be an IT director's greatest obstacle. "Office furniture often doesn't lend itself to easy cabling," Sanders says. "And that's a feature I look for when buying new computer furniture."

Anthro: Computer Furniture That Makes Sense

Sanders typically uses computer carts, desks, and lab benches manufactured at Tualatin, Ore.-based Anthro Corp. Since 1984, Anthro has been making computer furniture that is rugged, aesthetically pleasing, and ergonomically sound. The company warranties—for life—all of its furniture against manufacturing defects.

Furniture that is both durable and aesthetically pleasing not only reduces ownership costs—it may even save businesses money by reducing employee turnover.

"It might seem insignificant to spend time choosing the right furniture," says Lisa Kanarek, a home- and small-office expert and founder of HomeOfficeLife.com. "Workers appreciate it when you make the effort to buy furniture that is ergonomically cor-



ANTHRO FURNITURE: Rugged, aesthetically pleasing, ergonomically sound, and easy to move.

rect, comfortable, and functional."

Anthro's **fit system** furniture accommodates most hardware and work preferences, while maintaining an innovative, contemporary, and elegant look. But At Home's Sanders especially appreciates being able to move the furniture at a moment's notice.

"As we add new staff and expand into new spaces in the same building," Sanders says, "it's great to be able to unlock the castors on the bottom of a unit, and roll it down the hallway."

Anthro's flagship product, the AnthroCart, may also be the manufacturer's most highly adaptable work unit. With over 75 accessory options, like document holders, CPU sideracks, and keyboard caddies, Anthro is making sure Sanders won't have to replace a single AnthroCart.

"If someone wants a new monitor," Sanders says, "I simply adjust the shelving or add a new work surface, depending on the monitor's size. If we need to make the workstation more comfortable for the user, we can add or move a keyboard drawer with no hassle."

The AnthroCart is also very strong: its 16-gauge steel tubes and laminated, high-grade 45-lb. particle-board shelves support up to 150 lbs.

"And that's a must when you're growing," says Sanders. "You don't want furniture that can't take the wear and tear of daily use and frequent moves."

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PC Magazine Editors' Choice

Latitude C400 Notebook

– November 2001

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HOW TO

Solve the Weirdest PC Mysteries

40 top-secret methods for ridding your hardware and software of alien phenomena. The truth is in here.



DO YOU EVER WONDER IF your PC was manufactured in Roswell, New Mexico? If it had been, that would explain an awful lot—such as all those close encounters with paranormal crashes, extraterrestrial error messages, and strange hardware phenomena. They're enough to leave even the most rational PC user ranting about insidious conspiracies.

That's where we come in—the problem-solving team of software wizard and *Home Office* columnist Steve Bass, and hardware maven and *Hardware Tips* host Kirk Steers. Our mission: to solve the mysterious glitches and techno-riddles that can cause your work to grind to a halt. Call us the PC Repairmen in Black.

For this, our second annual troubleshooting extravaganza, we scoured the Web, polled *PC World* readers, and grappled with our own PCs to find the most aggravating, inexplicable errors. Then we looked for clues and came up with ways to eradicate these pesky PC problems. So when computing disaster strikes, don't get paranoid. Start troubleshooting—with our help. ►

BY STEVE BASS
AND KIRK STEERS

ILLUSTRATION BY
PETER AND MARIA HOEY

Steve Bass and Kirk Steers are contributing editors for PC World. Visit find.pcworld.com/26781 to download any of the programs mentioned in this article, and go to find.pcworld.com/26703 for other troubleshooting and tune-up tools.

IT WAS BROKEN



STEVE



KIRK



AND



IT!



THEY FIXED

IT!



How to Revive a Dead PC

I ENJOY PONDERING the unexplained—crop circles, UFO sightings, the actual miracle behind Miracle Whip. But when my PC won't start, I don't have time for leisurely musing. I need practical answers quick. Here's my emergency checklist:

Stay calm. First take a deep breath. Catastrophic failures do happen, but fixable problems are likelier. **>>TIP** Turn off your PC, wait 10 seconds, and then turn it back on—it often works.

>>TIP Check the obvious. Make sure power cords, cables,

and connectors are firmly connected. Check your surge protector for a blown fuse, or for damage from a power surge.

Look for clues. When a PC boots up, it runs a test of hardware components called POST (Power-On Self Test). **>>TIP** Watch your monitor for system warnings and error messages. (Press <Pause> to freeze the screen if the messages disappear too quickly.) After running POST, your PC initializes higher-level devices like the CD-ROM drive. Watch for warnings

or note the last initialized device to appear before the PC locks up.

Listen for clues. Pay close attention as your PC starts up.

>>TIP You should hear both the power supply fan and the hard disk rev up. If either one is quiet, it may be the culprit. You may also hear a series of beeps before your system freezes; that's a primitive error message. Note the number and the length (long or short) of the beeps. Your system manual or the computer manufacturer

may tell you how to decode the PC's audio error message.

Smell for clues. Though rare, monitors have been known to spontaneously combust. And a fried hard disk can release smoke. **>>TIP** If you smell the delicate bouquet of burning circuitry, unplug your computer immediately and get help from a trained technician. —K.S.



Not So Normal.dot

Mystery: You click the Word icon, but it doesn't load. Instead, an error appears. After trying again and scanning for alien life-forms, you get a blue screen. Reinstalling Word doesn't help, nor does uninstalling and then reinstalling it.

Solved: Somehow the mother ship corrupted Word's normal.dot template file. **>>TIP** Use Windows' Find function to locate Normal.dot; then delete the file. Once the file is gone, Word will create a new Normal.dot file, and your PC will be fine.

Solved: The audio signal from the drive playing a music CD passes through your sound card via a small cable. Chances are, your CD-RW drive doesn't have one of these cables. Also, your sound card may have only one connector for audio input.

>>TIP To play audio CDs from either drive, you'll need a Y-cable (available at consumer electronics stores) that splits a single line into two, as a telephone-line splitter does, so that you can connect both drives' sound cables to the sound card. Or you can get a sound card with two ports.

buy a new CD-RW drive armed with technology that protects discs from buffer underrun errors. **>>TIP** Or follow my cheap method: Lower the drive's write speed in your CD-burning software. The drive will work at a slower pace, but you'll eliminate buffer underruns.

>>TIP Another approach is to maximize data flow to the CD-RW drive by reducing the CPU workload. Log off your network and close all open applications. If you're moving data from your CD-ROM or DVD-ROM drive to your CD-RW drive, consider copying the data to the hard drive first; hard drives move data faster than CD-ROM drives do. To optimize the hard drive, run Windows' ScanDisk and Disk Defragmenter; both utilities are in *Start•Programs (All Programs in XP)•Accessories•System Tools*.

>>TIP If your CD-RW drive is connected to your PC via the EIDE bus (as most internal drives are), make sure it's not attached to the same IDE cable as your hard drive. Most PCs come with two IDE channels. Each channel can have its own cable that supports two drives. ▶

CD-RW SECRETS



I REMEMBER when flying-disc sightings led to frantic calls to the FBI. Today, silvery circular objects hurtling through the air typically come from angry music fans frustrated by balky CD-RW drives. Here are my fixes.

Musical Malady

Mystery: You can play mind-blowing audio CDs on your CD-ROM or DVD-ROM drive but not your CD-RW drive.

CD-RWs Are From Mars...

Mystery: Your CD-RW drive stops halfway through a recording session, displays a "buffer underrun" error message, and leaves you with a useless CD. What's the matter? Doesn't that blankity-blank drive like Slim Whitman's music?

Solved: Many older CD-RW drives need an uninterrupted flow of data to write to CD-R discs. If the data stream runs dry even for a second, the process terminates and the target CD becomes unusable.

The easy but expensive solution is to

>>TIP Check your sound functionality by using DirectX Diagnostic tool (*Start•Run•dxdiag*). ...

WEB WEIRDNESS



IT HAPPENS ALL the time: I'm breezing along on the Internet, grabbing downloads and saving favorites, when my connection goes dead, Internet Explorer deals me a deadly page fault error, or I suffer from some other perturbation in the Force. Here's how I get myself back into hyperspace.

Jinxed Java

Mystery: On some Web pages, boxes pop up—with neat movies, time-consuming games, and funny animations. Yet on other sites, even though you know similar boxes should appear, they don't. Is a Romulan cloaking device responsible?

Solved: Perplexing, isn't it? Java programs and Flash animations should work perfectly, unless you—or some diagnostic utility you used—fiddled with your browser's settings. **>>TIP** Make sure Java is en-

abled. In IE, select *Tools•Internet Options•Advanced*; under 'Microsoft VM', check *Java logging enabled* and *JIT compiler for virtual machine enabled*. In Netscape, select *Edit•Preferences•Advanced*, and check *Enable Java* and *Enable Java Script*. If you use an ad-blocking program such as Ad-Subtract, uninstall it temporarily, clear your browser's cache, and then check to see if those sites work. If they do, configure the ad blocker to permit Java to run (on those selected sites, at least).

Online's Offline

Mystery: Yesterday you were browsing at warp speed. But today Internet Explorer tells you that your connection is gone.

Solved: If you can send and receive e-mail but you can't browse the Web (or vice versa), there's a good chance your ISP's Web (or mail) server isn't working. If you can't access either one, call your ISP and ask if its servers are down.

My good buddy Kirk (Steers, that is, not James T.) recommends: Before blaming your ISP—or space invaders—check to make sure that all cables are plugged in. If you're a DSL or cable modem user, re-sync your connection by turning the modem off and then back on again, and do the same with your PC.

>>TIP If your ISP seems to be working okay, check your browser options and make sure that they're set to 'no proxies'. If your browser still won't work, try using the operating system's Repair tool (*Control Panel•Add/Remove Programs•Microsoft Internet Explorer•Add/Remove•Repair Internet Explorer*) in Windows 98 and Me. Advanced users have yet another option at their disposal: Remove the Winsock keys from the Registry, uninstall the TCP/IP protocol (non-XP PCs only) from the network configuration, and reinstall TCP/IP (Windows will reinstall Winsock). Here's how to begin: Click *Start•*

SETUP BASICS

Inside the BIOS

AN UNSEEN FORCE controls your PC—its BIOS. The Basic Input/Output System manages the flow of data between the silicon synapses of your computer's hardware and the dysfunctional personality we know as Windows. Tweaking an imperfect setting can solve problems and improve performance.

>>TIP Access BIOS settings via the CMOS setup program. Watch your screen and press the named key—usually <Delete> or <F1>—as your PC starts up. You'll see a main menu screen and submenus leading to various hardware settings.

PCs are unforgiving of faulty

CMOS settings. If you think you've accidentally changed the wrong setting, select the *Exit without saving changes* option, exit the setup program, and start over.

Sometimes new hardware won't work with an older BIOS. Most PCs have flash BIOS that you can upgrade via a downloadable program. Get the date and version number of your BIOS (usually displayed on the PC start-up screen) and check with your PC manufacturer for updates. If you upgrade, follow all the program's directions to



BIOS WIZARD'S simple interface helps you easily check and identify your PC's BIOS.

>>TIP Scan them all; you'll find many useful settings. For example: Does your modem wake your PC every time the phone rings? Check the power-savings and modem settings, and disable 'Wake PC on Ring'.

Slow printer? The parallel port may need optimizing. **>>TIP** Set Parallel Port Settings for high-speed ECP or EPP mode operations.

Another BIOS trick, from my pal Steve: Use BIOS Wizard (find.pcworld.com/25881), a freebie utility that checks and identifies the BIOS. **—K.S.**

the letter; a botched BIOS upgrade can turn your motherboard into space junk.

CMOS setting language may be down-to-earth or downright extraterrestrial, such as 'CAS# Width to PCI master write'.

... **>>TIP** Got a flickery monitor? Check out www.xp-refresh.net, a site devoted to refresh rates.

Run, type **RegEdit**, make a full backup of the Registry (**File•Export**), and find and delete the `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Winsock` key, as well as the `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Winsock2` key.

Next, in Windows 98/2000/Me, choose **Control Panel•Network** (in 2000, you must then choose **Network and Dial-up Connections**, right-click **Local Area Connection**, and click **Properties**). Scroll to and double-click your TCP/IP component(s), record the information on each tab for later use, delete the TCP/IP protocol, and reboot. Return to the Network applet, click **Install** to add back the TCP/IP protocol, enter your recorded settings, reboot, and start browsing the Web.

GRAPHICS GREMLINS



VIDEO ABNORMALITIES are as frequent a sighting in computer households as UFOs converging around a vortex in the Mojave Desert. But unlike the government's data on Area 51, my solutions aren't classified.

Display Disturbances

Mystery: When you launch a program or view an image, your PC may freeze—but there's no pattern and no error message. At other times, your icons mutate into forms weirder than a pupating alien.

Solved: Rule #1: If Sigourney Weaver is in your crew, put in for a transfer immediately. >>>**TIP** Try reinstalling your graphics card's drivers. No help? >>>**TIP** Experiment by deselecting visual effects (in XP) or incrementally reducing your hardware acceleration (in other Windows versions). If you're an XP user, right-click **My Com-**

TAKE MY ADVICE

CURE WIN XP INCOMPATIBILITIES

I LOVE WINDOWS XP, except for one thing: Too many programs are not compatible with XP. >>>**TIP** If you try to install an older program only to be told that it's not compatible, follow these steps:

Open Windows Explorer to the folder holding the program's setup.exe file. Right-click the file, choose **Properties**, and then click the **Compatibility** tab. Check **Run this program in compatibility mode for**, and select one of the Windows versions (95, 98/Me, NT, or 2000) in the drop-down list. Now install the program as usual. If you run into a problem, follow the same steps for the file that opens and runs the program.

I used this technique to install eight of my favorite games on my XP system—games that I otherwise would have had to scrap. I've also salvaged five other useful programs in the same way.

—James W. "Lad" Brunner, Sergeant First Class, U.S. Army, Salt Lake City

puter and select **Properties** to open System Properties. Click the **Advanced** tab, and then click the Performance area's **Settings** button. On the Visual Effects tab, deselect individual effects or choose **Adjust for best performance** to deselect all of Windows' special visual effects. For all other Windows versions except 2000, open System Properties, select the **Performance** tab, click the **Graphics** button, and use the 'Hardware acceleration' slider. (Acceleration reduction may help with mouse problems, too.) Alternatively, try decreasing color depth and/or screen resolution. If you use Windows 2000, select **Start•Settings•Control Panel**, and open **Display**. Click the **Settings** tab, the **Advanced** button, and then the **Troubleshooting** tab; use the 'Hardware acceleration' slider to change the settings. Another option for setting up or calibrating your monitor is to try the free Display-Mate tool (find.pcworld.com/14740).

My colleague Kirk reminds you not to forget about "card creep," either—no, not the guy who sells Magic: The Gathering cards at the flea market. Over time, all cards—graphics and otherwise—on your

PC can slowly work their way out of their motherboard slots, leading to problems. Make sure they're seated properly.

Video Vexations

Mystery: Some videos—especially ones with an .asf or .asx extension—won't play.

Solved: My favorite Martian says that adjusting your antenna won't help. >>>**TIP** If you don't have Windows Media Player version 7.1, get it—it has lots of current codecs. Have the player already? Reinstall it. >>>**TIP** See if the video file is corrupt by running a different video with the same extension. Use File Investigator (free trial, \$10 to keep; find.pcworld.com/25523) to identify the video's codec. Then see if you have the codec: Go to Control Panel and open **Multimedia** (Windows 98), **Sounds and Multimedia** (Me/2000), or **Sounds and Audio Devices** (XP). Click the **Devices** tab (98/Me) or the **Hardware** tab (2000/XP), and double-click **Video Compression Codecs** (98/Me) or **Video Codecs** (2000/XP, at the bottom of the Devices list). Don't have the codec? Visit find.pcworld.com/25541 or gonow.to/codeczone to find it. ▶

>>>**TIP** Use a can of compressed air to disperse dust from your PC's delicate innards. ...

OTHER HARDWARE HASSLES



Kirk YOU'VE TRIED to troubleshoot your PC with everything from mind melds to phasers set on stun. Now try Windows' Device Manager. This powerful tool lets you reinstall drivers for hardware that has flaked out, force Windows to reexamine all of your PC's devices, and upgrade drivers as necessary.

Device Manager Magic

Mystery: You're still having weird problems—funny-looking icons, screen lock-ups, page fault errors, occasional mouse pointer freeze-ups, or scratchy audio.

Solved: Use Device Manager (in System Properties) to check the status of all the hardware installed on your PC. Before changing any settings, consider creating a shortcut to Device Manager. **>>TIP** Go to Control Panel (in XP Category View, select *Performance and Maintenance*), right-click *System*, and choose *Create Shortcut*.

>>TIP If you feel uneasy about making changes, print a record of the current settings. Open System Properties (see "Display Disturbances" on page 85) and the *Device Manager* tab (in 2000 or XP, click the *Hardware* tab). Click *Print* (in 2000, select *View•Print*; in XP, select your PC on



DEVICE MANAGER lets you view and modify properties of all devices attached to your PC.

the top line and choose *Action•Print*), choose *All devices and system summary*, and print a copy for reference. Force your system to take a new inventory of installed devices: Click the *Refresh* button (in 98 or Me), or right-click your PC on the top line and select *Scan for hardware changes*.

Now you're ready to solve the mystery. **>>TIP** Boot to Safe Mode (press <F5> as your system starts up), open *Device Manager*, and trawl for long-gone devices, discarding references to those that are no longer in your computer. You'll likely find duplicates of modems, mice, and graphics cards; ridding your system of its lengthy and sordid history of abandoned devices will help to eliminate conflicts.

Of course, the problem may be right in front of your nose—your monitor! Often, pushing its degauss button or removing nearby sources of electromagnetic radiation (another monitor, a microwave, an intergalactic-navigation beacon) can remedy splotchy discoloration.

Noises Hard Drives Make

Mystery: Strange noises have begun to emanate from your hard drive, and you're beginning to worry. Should you start checking for tiny green men?

Solved: Chances are good it's *not* your hard drive (or even ectoplasmic energy). Usually, when a hard drive fails, it grinds to a halt. Play it safe by backing up your PC (or at least your critical data). **>>TIP** Investigate other noise sources—the power supply, case, and CPU fan are all common culprits. The fan might be hampered by some dirt, or it could have a bad bearing. Try a trick that car mechanics use: Open the case and listen to the components through a piece of hose to home in on the noise source. If the problem is your hard drive, stop using it at once. To recover your data, use SpinRite, an \$89 hard drive disaster recovery tool from Gibson Research (www.grc.com). ■

TRUBLESHOOTING

Don't Try This at Home



THINK *PC World* editors and readers never fall into troubleshooting traps? Four anonymous experts confess their blunders below.

1 The power switch? What power switch? **>>TIP** Don't even consider fiddling with the insides of your PC without turning it off. I ignored my own advice and fried my wife's PC when I replaced the case's cover.

2 Cable conundrum: Are the cables loose? I always forget to check—and half the time, that's the only thing wrong. **>>TIP** Turn off your PC before reconnecting cables (except USB).

3 The connector shuffle: Once you have disconnected the cables in your PC, it can be impossible to remember what goes where, and how. **>>TIP** Label each cable (fold a mailing label around each cable or wire) *before* disconnecting it. Mark the connector so you'll reconnect it in the right direction.

4 PC encounters of the shocking kind: Want to see how well a RAM module holds up against static electricity? Grab it without a wrist strap. I did and toasted a 128MB SIMM. **>>TIP** Take this advice from Stan Miaszkowski, *PC World's Step-By-Step* upgrade columnist: Unplug your PC when you work on its insides, and don't touch it until you're electrically grounded. For more, read "Avoid Static Damage to Your PC" at find.pcworld.com/25582. —S.B.

... **>>TIP** If you're plagued by misbehaving windows, press <Alt>-<F4> to get rid of them.

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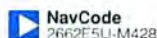
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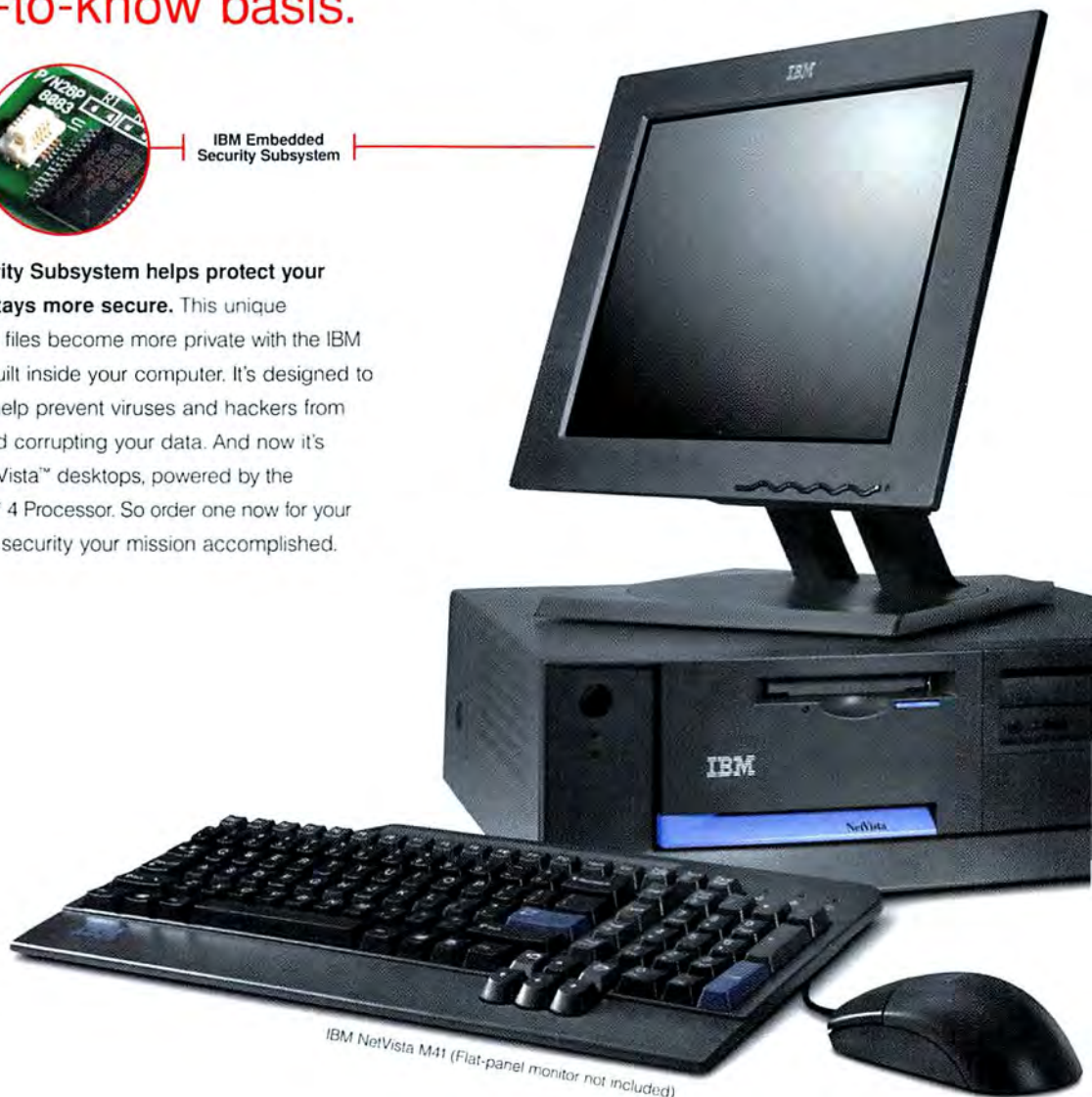
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on a need-to-know basis.



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We can't provide a one-on-one consultation for each of our 6 million readers, but this article is the next best thing. Here, the *PC World* Reviews editors and Test Center analysts, who track the latest developments in hardware month after month, tell you the 41 most important things you should know before buying a desktop system, notebook PC, monitor, graphics card, or optical drive. These tips, together with the information in our monthly *Top 100* product charts (beginning on page 124), should sufficiently prepare anyone to make the right buying decisions—but we still expect to get telephone calls from our mothers. ▶

EDITED BY SEÁN CAPTAIN

ILLUSTRATION BY
PETER AND MARIA HOEY

GOOD DEALS



LOW PRICES



LAB TESTED





HERE TO HELP: PC World staff members (from left) Seán Captain, Alan Stafford, Alexandra Krasne, Melissa J. Perenson, Elliott Kirschling, and Kalpana Narayanamurthi.

THE PERFECT PC

Alan Stafford, senior editor

PCS ARE GETTING to be like automobiles. At some point, everyone must trade in an old clunker for a zippy new model. Like car salespeople, some PC vendors will say anything to close a deal: "You shouldn't buy anything smaller than a 100GB hard drive." Yeah, I need room for at least 2500 music CDs. "Buy now before we run out." More like, buy now so we can make room for faster, cheaper systems. We can't change how salespeople talk, but we can share a few shopping secrets.

>>TIP Home PCs differ from business PCs—usually. Home PCs typically offer the hottest new hardware and include applications that appeal to families, such as games. And they tend to have no-haggle prices; you probably can't negotiate. Business computers, such as HP's Vectra, Dell's OptiPlex, and Compaq's Evo, typically offer components that aren't cutting

edge but are known for reliability and backward compatibility with older systems. Vendors often include software that allows an IT department to install applications and diagnose problems over a network. If you buy these PCs in bulk, you can probably negotiate a discount, but you may pay a premium for just one.

Some systems straddle the fence between home and business use. Dell's Dimension line, for instance, offers configurations and software suitable for either small-office or home users. Poking around a manufacturer's Web site can reveal deals on such PCs: For example, you may sometimes be able to get a PC for your home less expensively if you buy it from the small-office section of the site.

>>TIP Buy a system, not a processor. We won't—and can't—recommend a PC based solely on its CPU. While machines using AMD Athlon XP processors typically score higher on PC WorldBench 4 than systems with Pentium 4 processors,

few vendors allow you to choose one CPU make or the other, and most name-brand vendors (notably, Dell, Gateway, and IBM) don't sell Athlon systems at all. Shop for a computer as you would shop for a car: Base your decision not only on top speed, but also on price, the overall mix of components, service options, and the manufacturer's reliability record.

>>TIP Clip coupons. You can trim up to several hundred dollars (but more typically, about \$50) by applying a virtual online coupon. Web sites such as Dealnews (find.pcworld.com/24661) track these coupons; you can usually add them on top of other offers. OfficeMax.com and OfficeDepot.com also provide coupons for PCs and peripherals, and you may find more by entering a term such as "HP coupon" in your favorite search engine.

>>TIP Spend 10 percent more on some components, 10 percent less on others. Sometimes you get more than your money's worth. When we shopped, stepping up from Gateway's standard 17-inch shadow-mask CRT monitor to a flat-screen 17-inch Diamondtron model cost \$80 extra. That's a very reasonable premium for a product you'll stare at every day. But for RAM, we found it cheaper to do the upgrade ourselves. Gateway charged \$180 more for a 700SE system with 512MB of RAM instead of 256MB. We found several third-party vendors selling the extra RAM for less than \$100.

>>TIP The total cost of a new system may include the price of compatible new peripherals. Though you can order some business PCs with older operating systems, most new models come with Windows XP—and many older peripherals may lack drivers that work with the new OS. Find out ahead of time whether your older printer, scanner, or other peripheral will survive the upgrade by checking its manufacturer's Web site for XP-compatible drivers. —Ulrike Diehlmann, Test Center director

>>TIP Need more storage? Most systems can accommodate a second hard drive that you can

A SUPERIOR SCREEN

Kalpna Narayanamurthi, associate editor

SHOULD YOU GET an oh-so-sleek LCD or a regular old CRT monitor? You can find a 15-inch LCD for as little as \$350—about the same as a 19-inch CRT of comparable quality. So which one is the better buy?

The answer depends on how you use your monitor. CRTs have faster refresh rates that are better for displaying rapid motion, as in games. But bright, flicker-free LCDs usually display text better, and

they save both power and desk space. Whichever type of monitor you prefer, keep the following tips in mind.

>>TIP Pricier CRTs are often worth it. Shadow-mask displays, in which a screen with tiny holes keeps errant electrons from hitting the wrong color dot, are usually cheaper than aperture-grille monitors that use vertically aligned wires. But in our tests, aperture-grille models tend to display brighter, richer colors. Regardless of tube type, you'll get better image quality from a more-expensive, flat-faced CRT

because it reduces glare and tends to render images more accurately. You'll also pay more for a monitor that has convergence rings hand-tuned by skilled technicians, rather than adjusted by machine.

>>TIP Trust your eyes, not specs like dot pitch. In theory, the lower a CRT's dot pitch, or the distance from one phosphor dot to the closest dot of the same color, the sharper the image it renders. But there are two ways to measure dot pitch for shadow-mask tubes, and yet another method for aperture-grille monitors. ▶

NOTEBOOK BUYING

Pick the Right Portable

Carla Thornton, contributing editor

IT'S TOUGH CHOOSING A NOTEBOOK PC these days because you have so many options. Short on cash? Even \$999 machines have 12.1-inch screens, 20GB hard drives, and built-in floppy and CD-ROM drives. Spend twice that amount, and you'll find a notebook packed with a 1.2-GHz Pentium III-M CPU, a DVD-ROM/CD-RW combination drive, a 15.1-inch screen, and a 30GB hard drive. Even the top-end models—such as 1-inch-thin, 3-pound ultraportables—shouldn't cost over \$3200. In any event, you can get more for your money today, no matter what. Here are tips for getting the most.

>>TIP You don't need the latest Intel processor. Unless it has other features you want, don't spend the extra cash on a laptop with a brand-new Pentium 4 chip. Our PC WorldBench 4 tests show that 1.7-GHz P4 notebooks perform no better than models with a 1.2-GHz Pentium III-M chip. You can save an additional \$200 or \$300—and get at least 90 percent of the performance of a Pentium 4 processor—by opting for a 900-MHz or 866-MHz Pentium III-M CPU. —Tony K. Leung, performance analyst

>>TIP Wireless is a good investment. If you want a wireless laptop, buy one with a built-in antenna and receiver, instead of relying on an easy-to-lose \$100 PC Card. The 802.11b wireless stan-

dard will be around for a while, so you don't have to worry about obsolescence. Just be aware that it will be another year or two before you find many public places where you can surf wirelessly.

>>TIP You'll pay a premium for a gaming machine. In general, only portables costing \$1700 and up have the 32MB or 64MB of

graphics memory and the sophisticated graphics processors, like Nvidia's GeForce2 Go and S3's SuperSavage, that you'll need for smooth play and high color in 3D games. And notebooks still lag desktops in game performance.

>>TIP RAM upgrades have less kick than they used to. When most laptops came with 64MB of main memory, doubling RAM was a surefire way to boost performance by a respectable 10 percent. Now that most come with at least 128MB, doubling RAM typically gets you only a 2 to 5 percent speed increase, and it will cost an extra \$50 to \$150.

>>TIP Big hard drives are one of the best deals going. If you're buying a new notebook today, every additional 10GB of storage costs about another \$60—not a bad price for enough extra space to store over 10,000 high-resolution digital photos or two dozen huge applications. But notebook hard drives top out at 60GB, versus the current 160GB maximum in desktop drives.



GOING MOBILE: Tony K. Leung (left) and Carla Thornton put notebooks through their paces every month.

Rather than wrestle with these numbers, judge image quality with your own eyes. To best gauge sharpness, look at a screen of text, rather than colorful graphics.

>>TIP Pricier LCDs are often worth it. Some expensive models use complex pixel technologies, such as multidomain vertical alignment, to minimize distortion when the screen is viewed at an angle. Cheaper models frequently use only a less-effective light-diffusing film. Other features that add cost include a screen that can turn from landscape to portrait orientation; USB ports; and stands that allow you to adjust the height of the screen.

>>TIP Digital-input LCDs offer better image quality. You'll get the best quality with a graphics card that sends digital images directly to an LCD. Digital (or DVI) outputs are rare on older cards, but quite common on newer models. Buy a digital-

ready LCD even if your current PC does not have a DVI port—your next system (or graphics card upgrade) probably will.

>>TIP Get the right controls. Every monitor has brightness and contrast controls, but usually only higher-end models provide other key adjustments. Look for CRTs with convergence and moiré controls. For LCDs, all you really need is an auto-adjust button. Messing around with more-complex settings—such as phase control—can do more harm than good. —Jeff Kuta, senior performance analyst

THE GRAPHICS GAME

Alexandra Krasne, associate editor

EVERY SIX MONTHS OR SO, graphics chip vendors release new products that promise higher frame rates, better image quality, and all sorts of new special effects.

But not everyone needs the latest gee-whiz features. And even dedicated gamers will find that some features are worth more than others. Before you upgrade, follow these pointers.

>>TIP Know what you have: card, integrated, or NForce graphics. Graphics cards with dedicated memory for storing 3D images offer the best performance. By contrast, budget PCs often integrate a low-performance graphics engine onto the motherboard—usually in the PC's main chip set—and they typically borrow a few megabytes of RAM from the computer's main memory. These systems are not suitable for playing any but the simplest games, and they often don't provide AGP slots for upgrade cards. However, "integrated graphics" doesn't always mean "low-end": For example, NVidia's NForce system chip set, available in Athlon-based

FEATURES COMPARISON

Should You Buy New or Upgrade?

IS IT BETTER TO BUY new components for an old desktop PC or to replace the whole system? That depends on how much you want to change. **>>TIP** If the total cost of upgrades is over 40 percent of the price of a new PC with everything you need (including expandability), you're probably better off buying a new system—with a fresh warranty. But before you upgrade even one part, make sure it will provide the full benefit in your current PC.

>>TIP Some components add functionality independently of overall system performance. CD-RW drives, for example, should run the same in both newer and older systems. **>>TIP** A new graphics board, however, may not provide better game play if paired with an old CPU. **>>TIP** And if you need a new processor (which generally entails a new motherboard), it's probably time for a new system.

Check each item you want to replace	Rule-of-thumb upgrade requirements
Functionality enhancement	
<input type="radio"/> Monitor	Any PC built in the past five years can power even the largest monitors. >>TIP Before buying a monitor from your PC vendor, investigate offerings from other companies.
<input type="radio"/> CD-RW drive	A 300-MHz or faster CPU, an available 5.25-inch externally accessible drive bay, an IDE connector, and a power connector. >>TIP Add-in cards can provide additional IDE connectors.
<input type="radio"/> Hard drive	An available 3.5-inch or 5.25-inch bay (the latter requires special mounting brackets) and an IDE connection. >>TIP Sometimes a new hard drive can also boost performance.
Performance enhancement	
<input type="radio"/> Graphics board	At least a 2X AGP slot (not available in most systems with integrated graphics). >>TIP In general, don't install a cutting-edge board in a system that would be considered slow by other measures.
<input type="radio"/> RAM	An available DIMM socket. >>TIP Only extreme power users will see a significant performance boost with upgrades over 256MB.
>>TIP If you select three or more, consider buying a new PC.	>>TIP Check with component manufacturers for specific system requirements.

... networks. **>>TIP** Most monitors' integrated speakers sound tinny. **>>TIP** Graphics card drivers

PCs from vendors including Compaq and MicronPC, has a not-so-shabby integrated GeForce2 MX processor, and it's often paired with 32MB of dedicated memory.

>>TIP Don't spend a lot if you aren't a game fanatic. For business tasks such as e-mail and spreadsheet work, any graphics system—even a low-end integrated one—will do. If you're a casual gamer, a budget board—for example, one with a chip from NVidia's GeForce4 MX or ATI's Radeon 7500 lines—will perform well with current games.

>>TIP Cards that have the same graphics chip offer about the same performance. You can't buy a graphics board from NVidia, but you can buy cards from several companies that use the same NVidia graphics chip and reference design. ATI makes graphics chips for both its own and other companies' cards. Once you decide on a graphics chip, you won't see big performance differences from one card to the next, so base your decision on price, support policies, and features such as digital outputs.

>>TIP Graphics cards are always ahead of the game(s). New technologies appear in the cards first; the games come later. For example, cards supporting Microsoft's DirectX 8 programming interface appeared in early 2001, but the first major games to fully utilize its enhanced rendering effects are just now appearing. However, you aren't necessarily throwing your money away by purchasing the latest graphics card—it will likely provide smoother play not only with upcoming games but also with older titles.

>>TIP Upgrade to DDR RAM cards. Faster graphics memory will yield higher frame rates and smoother game play at higher resolutions. If your current board uses SDRAM, you'll get a considerable boost by upgrading to a new card that has

TAKE MY ADVICE

SAVE ON THE PROCESSOR

>>TIP TO GET THE BEST VALUE when you buy a desktop PC, look at the top-of-the-line model (or the one with the fastest CPU), and then go about two models cheaper. Add memory to the cheaper model and add hard drive capacity to match that of the top-of-the-line machine. And if you're buying a new monitor, remember that you'll probably use it with your next PC, so you might want to spend a little more for a higher-end display—if you can get a good deal.

—Matt Carlson, science teacher, Brookline, Massachusetts



DDR RAM. New boards (such as cards that are based on NVidia's GeForce4 line) typically come with DDR RAM, but older SDRAM cards may still be on the market. The amount of memory is less important: Even new budget cards have plenty. —Elliott Kirschling, senior performance analyst

THE SUPERB CD-RW

Melissa J. Perenson, associate editor

MAXIMUM CD-R write speeds have increased by more than 100 percent in the past year. A new CD-RW drive will definitely boost performance—but perhaps not as much as the specs indicate. And upgrades may involve hidden costs.

>>TIP You can add a cutting-edge CD-RW drive to your older PC. Plextor, for example, says that its top-end 40/12/40A upgrade kit will work in systems as old as a 300-MHz Pentium II PC.

>>TIP Faster is better—up to a point. You can save \$20 to \$40—and lose only 20 to 40 seconds burning a 650MB disc—if you buy a 24X/10X/40X or a 32X/10X/40X model instead of a top-of-the-line 40X drive. The drive reaches its maximum speed only when writing to the outer por-

tion of the disc, because CD-RW drive lasers start near the center of the disc and work their way toward the outer edge, increasing the write speed as they go.

>>TIP Buy the software, get the drive for (almost) free. If you're upgrading your operating system, you may also want to upgrade your drive. Roxio's Easy CD Creator 4.x, for example, won't work with Windows XP, and the price of a new drive with the basic (but more than adequate) edition of Creator 5.1 is only about \$40 or \$50 more than the full-featured Creator 5.1 Platinum software by itself.

>>TIP External drives are only as fast as the interface. If you choose an external drive for its portability, buy one with a USB 2.0 interface. You'll also need a USB 2.0 add-in card if your PC doesn't have the port (very few currently do). You can run a USB 2.0 drive from a USB 1.1 port, but our tests show that write speeds won't get beyond about 4X, regardless of the drive's rated maximum speed. —Thomas Luong, performance analyst

>>TIP Buy brand-name CD media. Poorly manufactured discs can take longer to write and sometimes fail to record data accurately. Be sure to use media rated for your drive's maximum speeds, too. ■

Visit find.pcworld.com/26701 for shareware that can help you with your buying decision.



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HOW

Evade Data Disaster

26 smart strategies for backing up your most vital files—and for recovering them if you didn't.



YOU'VE HEARD ALL THE REASONS you should back up your data files regularly: One errant click could wipe out a critical document; a virus could munch whole folders; and mechanical problems could destroy your hard drive.

So why do so few people do it? Perhaps because the backup process is confusing and time-consuming, and provides as much immediate gratification as updating your insurance coverage.

Okay, so I can't make backing up your files a thrill. But I can make it easier and faster. In this article I answer some common ►



BY LINCOLN SPECTOR

ILLUSTRATIONS BY
PETER AND MARIA HOEY

questions about data backups so you can keep the most important things in your computer—documents, spreadsheets, e-mail addresses, and financial information—safe from data disaster.

But even if you resolve to back up regularly, you may fall off the wagon occasionally. So I've included tips on ways to try to recover your data when you don't have a copy—and *that* really is a thrill.

BACKING UP DATA

How often should I back up? How can I make it easy?

>>TIP You should back up your data every day you use your computer. I know that sounds painful, but if you set things up properly, it takes only a minute or two. You can still be out the door before your boss arrives with that last-minute assignment.

You'll most often perform an incremental data backup. While a complete data backup copies every file in the folders that contain documents and other data you create, an incremental one backs up only the files created or changed since your last backup—thus it's much faster.

A good backup program makes it easy to back up your essential documents and files. It allows you to select what you will and won't back up, and lets you schedule complete and incremental data backups.

What program should you use? **>>TIP** I recommend Stomp's BackUp MyPC. It handles the basics and it's easy to use (for a full review, see "Tools for Trouble-Free Computing" at find.pcworld.com/24481).

>>TIP Apps like Iomega's QuickSync back up your data on the fly, as you save it to your hard drive. But if you back up to a CD, you still have to remember to put in the disc in the morning, then remove it to a safe place at night. And any program that works in the background will use some resources and could slow your PC.

There are good arguments for backing up your entire hard drive—not just your data, but your applications and OS as well. But the task is tedious and could incline you to avoid doing any backing up. And you already have copies of your software—the original CD-ROMs. (If you prefer to back up your entire drive, your best bet is to use a drive imaging program, such as PowerQuest's Drive Image.)

What kind of media should I back up to?

>>TIP This one's easy: CD-RWs.

There are lots of good reasons. Compact discs don't cost much, and they're removable, so you can store copies of your data off-site—your best protection against fire, flood, or theft. Rewritable CDs allow you to use the same media over and over again for regular incremental backups. CD-RW drives are fast enough that you won't need a good book every time you back up. And CDs are large enough (at 650MB) that you may be able to fit all your data on one disc.

If you collect many photos or music files, My Documents can outgrow a single CD. But since these files don't change much, you need not back them up regularly. **>>TIP** Move such files out of the backup folders and archive them on CD-R discs. These are the best option for long-term storage and will ensure that no one overwrites your favorite photos or tunes.

What files should I back up?

>>TIP If you're using Windows 98 or Me, you should back up the My Documents

FEATURES COMPARISON

Six Programs That Can Save the Day

PRODUCT	List price	What it does
Iomega QuickSync www.iomega.com	\$40	Backs up files in the background while you work, so you never have to remember to do it.
Ontrack EasyRecovery www.ontrack.com	Personal \$179; Professional \$489	Copies recovered data off damaged drives. Personal Edition supports DOS, Windows 3.x, 95, 98, and Me. Professional version adds support for Windows 2000, NT, and XP.
Ontrack EasyRecovery FileRepair www.ontrack.com	Individual programs \$129-\$379; full suite \$749	Programs restore damaged Office data files; a free demo will tell you if a file is salvageable.
Recoveronix OfficeRecovery www.officerecovery.com	Individual programs \$149-\$399; full suite \$899	Programs restore damaged Office data files; a free demo will tell you if a file is salvageable.
Runtime Software GetDataBack www.runtime.org	FAT version \$69; NTFS version \$129	Copies files off corrupted drives. FAT version supports FAT and FAT32 drives (typically Windows 95, 98, and Me systems). NTFS version supports NTFS drives (typically Windows 2000, NT, and XP systems).
Stomp BackUp MyPC www.stompinc.com	\$79	First-rate basic backup program backs up files and folders either completely or incrementally.

>>TIP Use *File•Save As* to preserve an additional version of the same file under a different name.

folder, usually located at C:\My Documents. You should also back up the following Windows subfolders (not every Windows installation has all of these folders; if you can't find one, don't worry): All Users, Application Data, Desktop, Favorites, Local Settings, and Start Menu.

>>TIP If you're using Windows 2000 or XP, back up C:\Documents and Settings. This folder contains a subfolder for every user registered for that computer. Each subfolder contains, among other things, a folder called Local Settings (this folder is hidden by default in Windows Explorer, but it should be visible through your backup program's interface). Each Local Settings folder contains three folders that you should not back up: Temporary Internet Files, Temp, and History. You definitely should back up Application Data (the other Local Settings subfolder).

Unfortunately, not all programs store their data in these folders. **>>TIP** If you're unsure where an app stores its data, go into the program and add a piece of information, such as an address. Then quit the program. Now look for the file, using the Search or Find option in the Start menu.

Search for files modified within the last day. When a file list appears, click the column header labeled Modified or Date Modified. This will show you the most recently changed files on your computer; near the top will be the file that you just changed. If you don't recognize the file name, look at the folder where it's stored; this information is shown to the right. The path will usually include the name of the program used to create the file.

If a program is storing data outside the folders you're backing up, you can include in your backup the file or folder that the program uses, or you can employ the program's customization options to change where the data is stored.

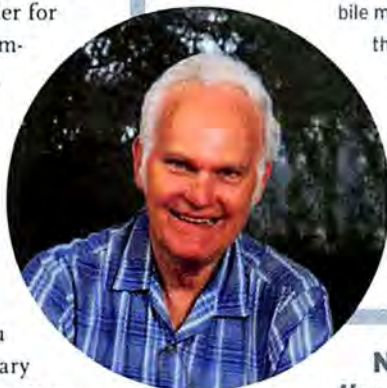
TAKE MY ADVICE

TWO HARD DRIVES BEAT TAPE

>>TIP I STOPPED USING tapes and Zip drives for backups and started backing up my data to another hard drive. A second hard drive is cheaper when you consider the cost of tapes and Zip disks. And swapping hard drives in an emergency is a snap.

I bought two hard drives with the same capacity; I then installed two mobile mounts in my PC case and connected the drives' IDE cables so the drive in the upper mount is an IDE1 master and the backup drive in the lower mount is an IDE2 master. I use PowerQuest's \$50 DriveCopy to copy data from the upper drive to the lower one. I back up at night and in the morning put the backup drive somewhere safe. On that sad day when my regular drive fails, I'll just replace it with my backup drive.

—Clifford Ford, supervisory civil engineer,
Pasadena, California



Now that I'm prepared, how do I actually go about creating my backup?

Most backup programs allow you to create jobs—sets of rules that define what should get backed up and how. The programs generally use a Windows Explorer-like interface to enable you to specify the folders and files to be copied.

>>TIP Define two jobs. The first should be a complete data backup that copies the files in essential data folders and overwrites everything already on the CD-RW you're using for the backup. The second job is an incremental data backup that's stored on the free space left on a CD and doesn't overwrite existing data.

You can't reliably back up a file if it's open in another program that may be writing data to it. **>>TIP** Close all apps that open or save data before backing up.

>>TIP Set aside three CD-RW discs for backups. The first time you use one, do a complete backup. Then, once a day, perform an incremental backup. Every couple of weeks—or when the first CD starts to get full—switch to another disc, starting

once again with a complete backup on that day and incremental ones after that. After a couple of weeks with the third disc, go back to the first one. With this system, you'll always have a copy of your most recent work as well as copies of versions as much as six weeks old—just in case the PowerPoint slides you killed last week suddenly become vital again.

RECOVERING DATA

How do I retrieve a single file from my backup?

In 19 years of computer use, I've had one hard drive die. But I can't tell you how many times I've overwritten a vital file. Mechanical problems can't hold a candle to human stupidity. Luckily, if you create backups regularly, restoring a lost file is no more than a minor hassle.

>>TIP Remember, if you do daily backups, you're likely to have several versions of a file. A good backup program like BackUp MyPC will aggregate the contents of all available backups into one file list. You can then find the file in this list and select a version to restore. ▶

>>TIP Keep backups of your work files at home, and vice versa, in case of fire or other catastrophe. ...

I just deleted a file with no backup. Can I get it back?

Be glad you only deleted it. If you had overwritten the file—saving another file with the same name to the same folder—it would probably be gone for good.

>>TIP The number one rule when you want to retrieve a deleted file is: Don't write anything else to your hard drive. The data that makes up a deleted file is still there—temporarily. The system sees the space the data occupies as available, however. The next time you save something, it may replace the deleted file with new data. Don't save or create a file or install a program until the deleted file is restored or you've given up hope.

When you delete a file, Windows moves it to the Recycle Bin. As long as you have not emptied the bin, it's easy to get the file out again. **>>TIP** Simply double-click the *Recycle Bin* icon on the desktop, find the file, right-click it, and select *Restore*.

What can you do if you've already emptied the Recycle Bin? If you act quickly, you may still be able to retrieve the file.

Both Ontrack's SystemSuite and Symantec's Norton Utilities (sold separately and as part of Norton's SystemWorks suite) have tools designed to retrieve files in these situations. **>>TIP** In SystemSuite, launch the FileUndelete. In Norton

Utilities, use the UnErase Wizard.

>>TIP If you run out and buy one of these packages after deleting a file, don't install the program—it could overwrite the very file you want to restore. Both packages offer a way to run from their CD-ROM to undelete a file.

An important Office file has become corrupted. Can I repair it?

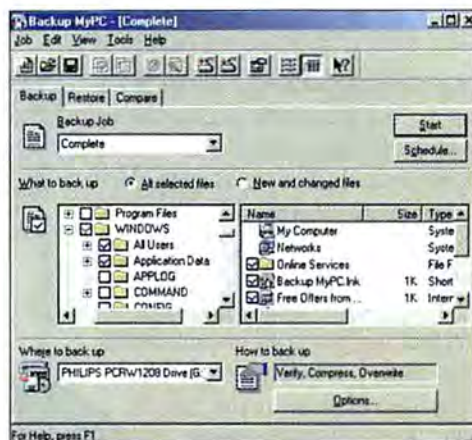
Funny thing about files you use all the time. They sure can get messed up. But even if you don't have the file backed up, all may not be lost.

>>TIP At least two companies sell software for recovering Office data files. Ontrack (www.ontrack.com) offers its Easy-Recovery FileRepair line of programs, and Recoveronix (www.officerecovery.com) sells its OfficeRecovery programs. Both companies provide free demonstrations on their sites. The demos don't recover your data, but they do let you see whether the full programs will be able to.

My hard drive suddenly died. What should I do?

Scream. Curse. Wail. Then, if you've got a backup, smile. If you don't, you'll want to return to screaming, cursing, and wailing.

>>TIP If the situation renders your PC inoperative, you'll need to remove the misbehaving drive and attach it as a slave drive to a working system. **>>TIP** Do not take the preceding step, though, if the drive makes scraping, grinding, or clicking noises. Those alarming sounds indicate physical problems with the hard drive. In that case, shut the drive down immediately and remove it from the system to minimize damage.



YOU MAY NOT WANT to back up your entire system. Backup MyPC makes it easy to pick folders to copy.

>>TIP If you have a recent data backup, the backup program will walk you through the steps of restoring all your data files in one fell swoop. Of course, if you don't have an image of your entire drive, you'll need to reinstall your OS and applications.

>>TIP If you don't have even a data backup, there's still hope. Both Ontrack's EasyRecovery programs and Runtime Software's (www.runtime.org) GetData-Back will attempt to pull files from a bad drive and copy recovered data to another location, such as a second hard drive or a CD-RW disc. Both companies' Web sites offer free demo versions that can show you the likelihood of success in your case.

>>TIP If these emergency programs don't do the job, or if your hard drive is making strange noises, you'll have to decide if it's worth shelling out big bucks for a data retrieval service. A number of companies, including Ontrack, Advanced Data Solutions (www.adv-data.com), and DriveSavers (www.drivesavers.com; see find.pcworld.com/26001 for a full review), offer these services. You can expect to pay anywhere from \$95 to \$5000 to get your files back—if you can get them back at all.

Guess what? Backups are cheaper. ■

Lincoln Spector is a PC World contributing editor. For related downloads, visit find.pcworld.com/26704.



IF YOU'RE LUCKY, the GetDataBack data recovery program will successfully pull your files off of a corrupted hard drive.

... **>>TIP** To restore an older file without losing the current version, restore it to an alternate folder.

HOW TO

Take Back Your Privacy



Keep spammers and online snoops at bay with these **34** steps culled from the advice of privacy pros.



IN APRIL OF THIS YEAR, Visa, JP Morgan, and other top financial firms met with major information brokers and tech companies to discuss a bold new proposal: using consumer databases to identify national security risks. If the idea becomes a reality, background checkers could scrutinize a huge mass of your personal info—your buying patterns, your religious affiliation, your medical history, even your magazine subscriptions—every time you board a plane.

Collecting consumer data for one purpose and then using that information for another is “a fundamental privacy violation,” ►

BY DANIEL TYNAN
ILLUSTRATION BY
PETER AND MARIA HOEY

says Chris Hoofnagle, legislative counsel for the Electronic Privacy Information Center (www.epic.org).

Unfortunately, the trend toward sharing collected data appears to be accelerating. And increasingly, what you do online can affect you offline, and vice versa.

What can you do? We polled privacy experts and came up with 34 steps you can take to lower your public profile and reclaim some, if not all, of your privacy.

We've divided the steps into three parts based on the level of security they provide.

ESSENTIAL GUARDS

THESE TIPS GIVE YOU an excellent start in regaining your privacy, and they require little sacrifice or effort.

>>TIP Opt out early and often. If a Web site offers you the opportunity to receive "special offers" from "valuable sponsors," politely say no thanks. Though most sites are unlikely to abuse contact information, they may share data with third parties, get purchased by a company that has less regard for your privacy, or file for bankrupt-

cy and be forced to sell their customer lists, as Garden.com and Webvan did.

>>TIP Don't get personal at work. If you use your employer's PC or Internet access to send a personal note, your boss has the right to read it. A survey by the American Management Association says nearly half of U.S. corporations monitor employees' e-mail. For personal messages, use a private Net account on your own system.

>>TIP Surf smarter. Your boss may also watch where you go on the Web. So save online games and chat rooms for your

FILTER TIPS

Step-by-Step: How to Filter Out Spam

SUFFOCATING under a landslide of spam? **>>TIP** Use your e-mail package's mail filters—they won't keep every spam out of your in-box, but they can reduce the volume. Here are directions for setting up e-mail filters in Outlook Express 6.x and Netscape Mail 6.1/6.2.

Outlook Express 6.x

1. Select **Tools•Message Rules•Mail**.
2. If you already have one or more rules, click the **New** button.
3. In the New Mail Rule dialog box, select conditions for applying the rule: For example, check the box next to conditions pertaining to 'Subject line'.
4. Select the action that you want the filter to perform: Check the **Move it to the specified folder** box.
5. In the Rule Description box, click the underlined phrase in

'Subject line contains specific words' and fill in text commonly used in spam—such as nude viagra sex money. Click **OK**.

6. Click the underlined word in 'specified folder'. In the Move box, select **New Folder** and type in a name for it (like spam-o-matic). Click **OK** twice.

7. Create a name for your rule, and click **OK** twice.

This rule should filter some of the spam you receive into a folder where you can examine it before deleting; check before deleting to be sure that you really want to trash the filtered e-mail. Periodically tweak the



MOVE FILTERED MAIL to a specified folder to ensure no legit mail is deleted.

filter's keywords to catch more of what's clogging your in-box.

Netscape Mail 6.1/6.2

1. Select **Edit•Message Filters**.
2. Pick your e-mail account from the 'Filters for' drop-down list, and click **New**.

3. In the Filter Rules dialog box, name the filter, select **Any of the following**, and set the drop-down list buttons to **Subject** and **contains**. Click the text box to the right, and type keywords (like sex viagra IRS money).

4. Click the **More** button. Using the second set of drop-down list buttons, select **Body** and **contains**, click their text box, and type more keywords.

5. Under 'Perform this action:' select **Move to folder** and the appropriate e-mail account; then click **New folder**. Type a name, and set 'Create as a sub-



SET YOUR KEYWORDS and search both the subject and body of your messages.

folder of' to the e-mail address. Click **OK** three times.

Check the spam folder daily for legitimate mail that may be trapped there, and delete the rest. Periodically tweak the filter rules to catch more spam.

Want more weapons to fight unwanted e-mail? **>>TIP** Consider an antispam utility such as SpamKiller (\$30, see find.pcworld.com/26423) or Avir-Mail (free at www.avirmail.com). Their more-sophisticated tools include the ability to scan mail and delete spam before it reaches your computer.

>>TIP Update your antivirus software weekly. **>>TIP** Don't give credit info to people who call you.

own time. "My basic advice is, don't do anything on your computer at work that you wouldn't do if you *knew* someone was staring over your shoulder," says Andrew Schulman, a Santa Rosa, California-based researcher for the Privacy Foundation (www.privacyfoundation.org).

>>TIP Learn what's allowed. Ask your boss if your company tracks employee Internet use. Corporations should provide a written policy outlining how and when they monitor employees' online activities, and what they do with this information.

>>TIP Use a front. Establish a second e-mail account with Hotmail or Yahoo Mail, and use this address when registering at Web sites. Spam will go there instead of clogging your primary in-box.

>>TIP Remain unlisted. Don't publish your private e-mail address on your personal Web site or in online discussion forums where spambots can harvest it.

>>TIP Keep it to yourself. Most sweepstakes, surveys, and product warranty cards are merely cheap ways of gathering your data. "Giving personal information is like spending money," says Robert Gellman, a privacy consultant in Washington, D.C. "Make sure you're getting something of real value in exchange."

>>TIP Be antisocial. Guard your Social Security number jealously; few entities beyond the IRS and your employer really require it. "Your SSN makes it all too easy to cross-reference databases that should never come near each other," notes John R. Levine, author of *Internet for Dummies*.

>>TIP Tell off telemarketers. When telemarketers ring at dinnertime, ask to be put on their "do not call" lists. Get a free copy of Enigma Anti-Telemarketing Software (find.pcworld.com/26402) to keep track of who called you.

>>TIP Check your credit history. Order an annual credit report. "If you're a victim of identity theft, you'll have a better chance of catching it early and you'll minimize the hassles in recovering your

SOFTWARE

Net Toolbox

HERE ARE OUR FAVORITE products in four essential categories. Don't go online without them.

Antivirus: Norton AntiVirus 2002. Easy setup and automatic updates make choosing this package a no-brainer. \$50; find.pcworld.com/26426

Cookie Manager: The Limit Software's Cookie Crusher 2.6. This shareware package makes crumbling Web cookies a snap. \$15; find.pcworld.com/26424

Personal Firewall: Zone Labs' ZoneAlarm 3. Simple to use, highly effective, and free—what more could you ask for? Free; www.zonelabs.com

All-in-One Solution: Norton Internet Security 2002. A top antivirus package, an effective firewall, an ad blocker, a cookie manager, and more. \$70; find.pcworld.com/26427



financial health," says Beth Givens, director of the Privacy Rights Clearinghouse (www.privacyrights.org) in San Diego. For about \$9, you can order reports from Equifax (www.equifax.com), Experian (www.experian.com), or Trans Union (www.tuc.com); it's free if a lender has recently turned down your credit request.

HEIGHTENED ALERT

THE FOLLOWING TIPS take more effort, but they can buy you a lot more privacy.

>>TIP Ease your pane. Leaving open the preview pane in your e-mail program could allow malicious spam messages to launch JavaScript apps on your PC. To close it in Outlook Express, select *View>Layout* and then uncheck the *Show Preview Pane* box. In Netscape Mail, highlight a message in your in-box, open the *View* menu, and uncheck *Message*.

>>TIP Engage in counterespionage. Many free applications (especially file-sharing programs) install so-called spyware—software that tracks your movements online and sends ads based on your perceived interests. To detect and delete spyware, use a utility such as Lavasoft's Ad-aware (www.lavasoftusa.com/aaw.html). For further information, see "Stealth Ad Invasion" (November 2001

News and Trends, find.pcworld.com/26403).

>>TIP Install a firewall. Essential gear for broadband users, a firewall such as Zone Labs' ZoneAlarm (www.zonelabs.com) is useful for anyone who logs a lot of Net time. Besides fending off hackers, firewalls can tell you if any program (such as a Trojan horse or spyware) is trying to send data to the Net behind your back.

>>TIP Be wary of attachments. A good antivirus app like Norton's (see "Net Toolbox" above) is essential, but common sense also helps. For example, never open attached files unless they're from someone you know *and* you were expecting them. Friends could unwittingly send you a virus, so check with them first before opening dubious attachments.

>>TIP Lower your profile. Ask to be removed from online directories—that is, unless you *want* everyone to have access to your name, address, and phone number. The site's privacy policy will usually tell you how to do this. For example, look at www.switchboard.com/policies.htm for Switchboard, and visit www.anywho.com/help/privacy_list.html for Anywho.

>>TIP Crumble third-party cookies. Some cookies make it easier for you to log on to your favorite sites or to purchase items; others can track where you surf. Use a manager like Cookie Crusher ▶

>>TIP Limit your e-mail address to friends and colleagues. **>>TIP Read privacy policies carefully; ...**

(find.pcworld.com/26424), or set your browser to block third-party cookies (ones sent from a source other than the site you're visiting). In Internet Explorer, select *Tools•Internet Options•Privacy•Advanced*; then set it to override automatic cookie handling and to block third-party cookies.

>>TIP Unsubscribe with caution. Some unsolicited e-mail is sent by legitimate groups that honor unsubscribe requests. But spammers use such requests to verify e-mail addresses—and send you more spam. How do you tell the difference? If the e-mail tries to drive you to a Web site, look up the site's domain registration on Whois (www.whois.net). Does the record list a valid phone number and street address? (Most spammers use fake addresses or mailboxes.) Is it coming from overseas? (Many spammers operate offshore.) Is the administrator's e-mail address from a free account? (Legitimate businesses typically don't use them.) If you're still unsure, delete and don't unsubscribe.

>>TIP Get delisted. Tell the Direct Marketing Association to take you off its members' lists. You can do this for \$5 online (find.pcworld.com/26404), or free via postal mail. This will reduce (though not eliminate) the junk mail, spam, and unwanted calls you receive, but you may

not see a difference for about six months.

>>TIP Disapprove credit offers. Opt out of getting preapproved credit offers by calling the credit reporting agencies' toll-free automated line at 888/567-8688. You'll need to give your address, phone number, and Social Security number. This cuts down on junk mail and makes identity theft harder for crooks who might steal such offers from your mailbox.

>>TIP Get phone-smart. "List just your phone number, not your address, in the phone book," says Robert Ellis Smith, of Providence, Rhode Island, who publishes the monthly newsletter *Privacy Journal* (www.privacyjournal.net). "It's free, and marketers aren't interested in you if there's no zip code attached."

MAXIMUM SECURITY

IF YOU'VE EVER BEEN the target of a stalker or an identity thief—or worry that one day you will be—you're probably willing to trade convenience for confidentiality. These steps show you how.

>>TIP Scramble your messages. If you must send sensitive mail (such as salary details or trade secrets), encrypt text with free tools from PGP.



TAKE MY ADVICE

YOU DON'T SAY!

>>TIP I DON'T HAVE A SECOND e-mail address just for spam. If I don't want a Web site to have my real e-mail address, I give the site an address that is completely fictitious. It just has to conform to the "aaa@aaa.aaa" format. The sites I've dealt with seem to accept it with no other quality check.

Whenever I shop online, I go as far as I can through the checkout screens using completely bogus information. For some reason, sites don't want to tell you the shipping fees and other costs up front. If a site won't tell me the bottom-line price before it requires that I provide personal information, I shop elsewhere.

—"Oddbit," who values privacy, Anywhere, USA

freeware (find.pcworld.com/26421) or Sigaba (www.sigaba.com). To read such mail, recipients must also use these tools.

>>TIP Lock your files. When you lose your laptop or PDA, someone else is likely to find it; but if you encrypt your files, the finder can't get your data. Centurion-Soft's (www.centurionsoft.com) \$60 Soft-Clan E-Cryptor secures files on your laptop with 128-bit encryption; LinkeSoft's (linkesoft.com) \$19 Secret 2.7 shareware does the same for Palms; and Applian's (www.applian.com) \$20 PocketLock program works with Pocket PCs.

>>TIP Protect your plastic. Call your bank, obtain a credit card with a low limit, and use it only for online purchases. If someone fraudulently misuses it, you can dispute the charges and close the account with minimum hassle. And consider getting "disposable" credit cards—numbers linked to your account that are valid for only a single purchase (see *Home Office*, January 2002, find.pcworld.com/26541).

>>TIP Don't get fresh. Let your data go stale, says Larry Sontag, author of *It's None of Your Business*. If you don't update address, telephone, or other personal data as it changes, he says, "your data will eventually grow old and obsolete."

>>TIP Be circumspect. Tony Soprano never spills the beans on a cell phone, and neither should you. Wireless communications are notoriously insecure, so never transmit sensitive data wirelessly from your PDA or laptop.

>>TIP Use a P.O. box. Rent a post office or private mailbox to help keep your address private and thwart identity thieves. ■

Contributing Editor Daniel Tynan has won numerous awards for his coverage of Internet privacy issues. For security-related utilities, go to PCWorld.com Downloads at find.pcworld.com/26702.

... most require you to opt out. **>>TIP** Don't give Web sites your friends' or family's e-mail addresses.

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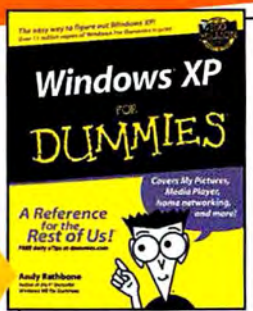
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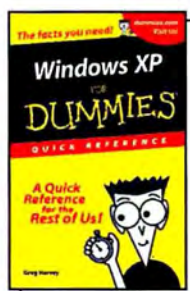
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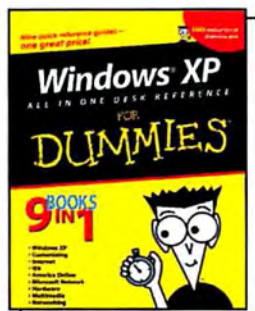
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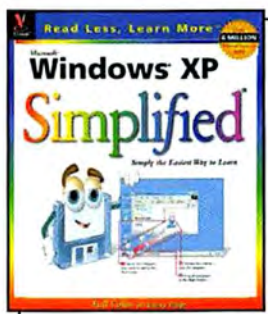
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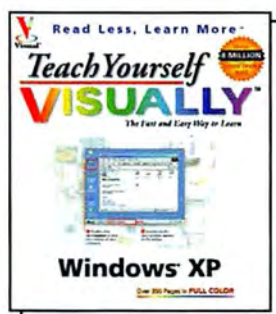
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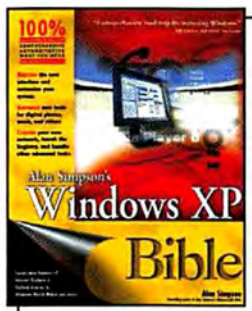
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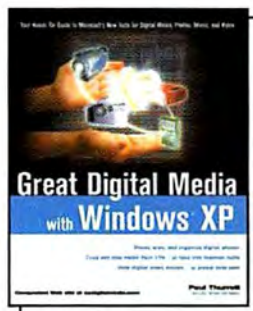
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HOW

Print Perfect Photographs

27 tricks that turn digital snapshots into prints you'll treasure.



YOU CAPTURED SOME priceless moments at your friend's surprise party with your digital camera. You sifted through the images on your hard drive and found the gems you wanted to print. But somehow, the photo prints from your ink jet printer aren't looking as vibrant as you had expected. Well, you've come to the right place. Read on, and we'll tell you how to touch up your digital images so they're primed for printing. We'll also give you some pointers on optimizing your ink jet printer and help you choose the best type of paper for the job. And before you know it, your pictures will look better than the prints from your neighborhood's best photo processing shop. ►

BY DAVE JOHNSON
ILLUSTRATION BY
PETER AND MARIA HOEY

IMPROVE YOUR IMAGES

Take TIFF: Most digital cameras use JPEG format, which sheds some detail to save space when storing images. **>>TIP** If you plan to edit your digital photo and print it later, save the edited image in Tagged Image File Format, which doesn't compromise image quality. Choose *File•Save As* in your image editing program, and select TIFF from the drop-down list.

Sharpen your photo: Many digital shots come out looking "soft" or out of focus after you print them. **>>TIP** Use your image editor's sharpen tool to emphasize the edges of items that appear in your photo. (Though dozens of image editors are out there, we'll offer specific steps for Jasc's Paint Shop Pro.) If you work with Paint Shop Pro, use the oddly named Unsharp Mask tool (click *Effects•Sharpen•Unsharp Mask*). This tool runs automatically each time you select it. The program that you use, however, may not have an Unsharp Mask tool. If it doesn't, use the more basic Sharpen tool instead. If you can't find a tool by that name in your program, use the Help option to search for the term *sharpen*.

>>TIP Take it easy with Unsharp Mask and Sharpen: If you wind up with a grainy or distorted image, undo a few levels or start over.

Bring out the subject: Draw attention to the main element in your photo by softening the background. **>>TIP** First, select the entire subject with your image editor's magic wand (found in Paint Shop Pro's tool palette). If your first click doesn't select the whole subject, hold down the **<Shift>** key and click to add more area. Then, reverse the selection to select the whole background.

After that, run the Soften tool a few times to blur the background to your satisfaction. In Paint Shop Pro, choose *Selections•Invert* and then *Effects•Blur•Soften*.

Pump up the gamma: It's a fact of life—dark images print poorly. **>>TIP** Use your program's gamma correction tool (if it has one), rather than the brightness tool, to add life to your picture. Increasing brightness can turn shadows into mud or make whites look radioactive. Gamma concentrates its brightening power on the middle tones in your image more than on the extreme blacks and whites. In Paint Shop Pro, click *Colors•Adjust•Gamma Correction* and drag the color sliders slightly to the right (no more than three notches). Most pictures won't benefit from a change of more than 30 percent; beyond that, images begin to look bleached out.



>>TIP HANG YOUR framed prints on walls away from direct sunlight. This photo, printed on Epson's Premium Glossy Photo Paper, shows what can happen if you don't. The left side of the photo was exposed to sunlight and the open air for seven days; the right side was sealed under glass. The photo was printed on an Epson Stylus Photo 1270.

Crop with caution: What looks great on your almost-square computer screen isn't always a good fit for an oblong frame or photo album. **>>TIP** Use the crop tool from your tool palette to make your photos more appealing. Instead of positioning your main subject smack dab in the middle of the frame, offset it about a third

of the way to the left or right of center. Don't crop the image too severely, however. As you trim the image's size, you discard valuable pixels. The finished image needs a sharp enough resolution to print without showing the jagged edges that come from having too few pixels.

Match pixels and size: When it's time to print your snapshots, one consideration is key: How many pixels can your printer bring to the table? Most ink jet printers are optimized for images with 200 pixels per inch. **>>TIP** If you're producing an 8-by-10-inch print, use your editing program to verify that your image is no less than 1600 by 2000 pixels (in Paint Shop Pro, choose *Image•Image Information*). If you start with a lower-resolution image (1024 by 768 pixels, for instance), the resulting print may be blurry. In general,

digital images taken with a 2-megapixel camera yield good 5-by-7-inch prints, and images from a 3-megapixel camera are better for 8-by-10-inch prints. Don't worry if your image has an overabundance of pixels—you can still create excellent prints of 3-megapixel images in 5-by-7 format.

PRINTER AND INK

Calibrate your printer: **>>TIP** Make sure that you calibrate your printer's heads each time you add a new ink cartridge. Calibration keeps the print heads aligned and capable of

printing crisp and accurate images. Some printers align their heads automatically, others prompt you to initiate an alignment process the first time you print with a new cartridge, and still others require you to run a bundled utility manually. If you're not sure how to get the calibration process rolling, check the manufacturer's

>>TIP When handling photo paper, don't touch the printing side. **>>TIP** Dry a print for at

CORRECT THE CONTRAST

I TOOK THIS digital photo of a large praying mantis in my backyard, using my new Olympus C-3040. **>>TIP** To give the image the right



amount of contrast and depth, I used the Levels tool in Adobe Photoshop (click *Image•Adjust•Levels*). I used the Input Levels sliders to adjust the contrast so I could capture the highlights and shadows correctly. After you click OK, the image remaps itself. The Levels tool gives good results because it doesn't affect the color balance.

—Stacy A. Niedzwiecki, multimedia designer, Rockford, Michigan



to handle the task. Look for 24-pound (or heavier) stock; most ink jet paper is 20-pound stock.

>>TIP If you plan to print color images on one side and plain text, say, on the other, you'll get sharper text by using a mono-

chrome laser printer. Moreover, it's usually a lot cheaper to print 100 sheets of all-black text with a laser than with an ink jet printer. Just make sure to do the color ink jet printing first. The extreme heat from a laser printer can damage the coating on the ink jet side if you print the laser side first. **>>TIP** Load preprinted pages a sheet at a time to prevent paper jams.

Allow time to dry: Most ink jet paper dries by the time it rolls out of your printer. Photo-quality and glossy paper take longer. **>>TIP** Let prints on special paper dry for no less than 10 minutes before you handle them. **>>TIP** Don't leave prints sitting in the output tray if you're printing multiple copies, and keep them out of direct sunlight as they dry. **>>TIP** When stacking dried prints, place sheets of plain paper between them.

Protect and archive: Some vendors say that their latest ink jet printers deliver prints that will resist fading for decades—as long as you use their recommended paper and inks. Of course, verifying these claims will take time, but you still need to take proper care of the paper. **>>TIP** Prints can fade from exposure to chemicals, such as ozone; to reduce degradation, mount your prints behind glass or plastic. **>>TIP** Keep your original digital images so you can reprint them later. ■

Dave Johnson is a Colorado-based freelance writer. Visit find.pcworld.com/24681 to sign up for "Digital Focus," Johnson's weekly newsletter, and find.pcworld.com/26705 to download shareware image editing tools.

documentation. **>>TIP** Get into the habit of printing a test page at least once every month to verify that your print heads remain in good working order.

Avoid budget ink: Want the best print quality? **>>TIP** Stick with ink that comes straight from your printer manufacturer. Sure, you can save money by using refurbished ink cartridges or by refilling your own—those options cost about half what manufacturer-authorized cartridges do—but in most cases the resulting print quality is inferior. You get what you pay for.

Solve cartridge snafus: Ink cartridges can clog, especially if you don't use your printer for a long time. When that happens, you'll see gaps, inconsistent colors, and perhaps even ink splattered on the prints. **>>TIP** Make your printer program's head-cleaning utility your first stop. This program will clean the print heads while running a few sheets of paper though the printer (get additional details from your printer manual). Be aware that the process does use a fair amount of ink. **>>TIP** If using the head-cleaning utility doesn't work, try removing the cartridge, turning it upside down, and gently cleaning the nozzles with a cotton swab dipped in rubbing alcohol. Then replace the cartridge and run the utility once more.

THE PAPER CHASE

Pick the right paper: Choosing the correct paper for a particular print job is half the battle. You'll typically find store shelves stocked with four different types of paper: plain ink jet, high-resolution ink jet, photo quality (usually nonglossy), and glossy. **>>TIP** To save money, use only ink jet or high-resolution ink jet paper for making test prints. You'll obtain optimum photo-printing results overall from glossy paper, but at about \$1 per page, it's too expensive to use for anything but final prints.

Choose the right side: When you're dealing with glossy paper, you may have trouble telling which side to print on. Depending on the brand of paper, the difference can be subtle. If you print on the wrong side, your ink will smear or run, or your image will look dull and lifeless. **>>TIP** Look closely: The printing side is usually shiny, while the nonprinting side is dull or has a watermark. Other clues: Some brands of paper have a cut corner, and you must load that paper according to the instructions to avoid printing on the back.

Master two-sided printing: **>>TIP** If you use your printer to create greeting cards, and you want to print on both sides of the page, use nonglossy photo-quality paper

least 6 hours before framing. **>>TIP** Store unused photo paper in a resealable plastic bag.

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BY HARRY McCracken

ILLUSTRATION BY
PETER AND MARIA HOEY

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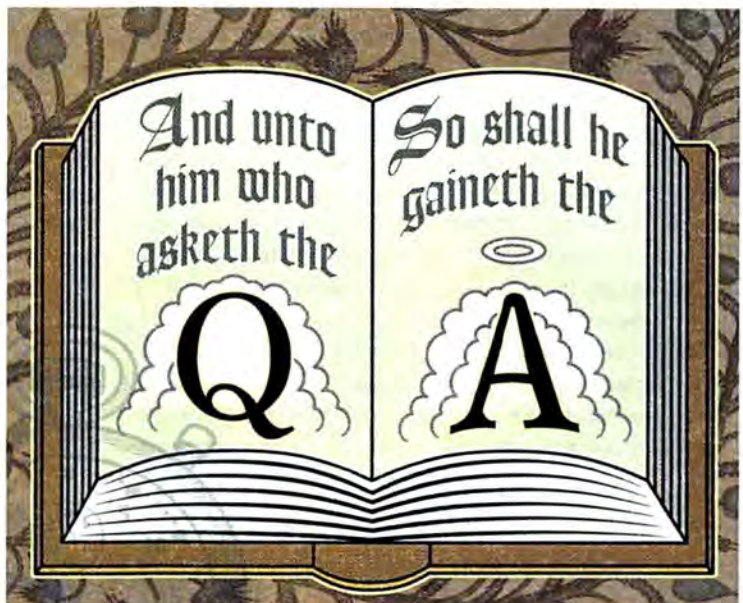
39 ways to make online help systems more helpful—or find better answers elsewhere.



HELP! THAT'S NOT JUST the name of a menu in virtually every Windows application. It's also what most online documentation makes you want to holler for.

The information you need is in there. Somewhere. You hope. But typical help files are so haphazardly organized and tough to traverse that the search for answers can feel like a quest that's destined to end in frustration. You might as well go hunting for a Red Sox fan at the Steinbrenner family reunion.

So help yourself—to our secrets for making online help less of a hindrance to finding what you need. Read on for tricks you can use in Windows, Microsoft Office, and other software products, plus places to go when their built-in assistance fails you. ►



HELP APPS HELP YOU

THE LAST PLACE some people look for software help is the one nearest at hand: the help system in the app itself. Here's how to make built-in help work for you.

Juggle Windows Like a Pro

How can you arrange to keep a help window and the application it's supposed to assist you with on screen at the same time? The simplest method is to tile the two windows so that they share the display. (A few packages, including Microsoft Office 2000 and XP, do this automatically, though not always very well.) >>>TIP

To tile the help and application windows yourself, first close all other open windows; then right-click a blank area of Windows' taskbar, and choose *Tile Windows*

Horizontally or *Tile Windows Vertically*. The two windows will resize so that each occupies half of your display.

Juggle Windows Even Better

Once upon a time, most application help systems provided a slick Stay on Top option that kept the help window in front. Today, few do. >>>TIP Try CloudNine Software's TopIt. With this free utility, you can make any window float on top of all others, either for a single Windows session or permanently. Browse to find.pcworld.com/25461 for a copy.

Go by the Bookmark

A gargantuan document such as a help file needs a straightforward bookmark feature. Some apps have just that, but countless others don't—including a pro-



>>>TIP **MEND BROKEN PICTURES:** If one or more red X's appear on a help page where images should be, right-click the page and select *Refresh*. The missing pics should pop into place.

fusion of Microsoft products. Try the following workarounds:

>>>TIP In programs that use Microsoft's HTML Help—such as Windows 98/Me/2000 and Office 2000/XP—navigate in any help window to the page you'd like to bookmark; then right-click in the page, and choose *Properties*. In the Properties dialog box, select the text in the Address field and press <Ctrl>-C to copy it (be sure to copy any additional lines that scroll into view as you copy). Open Internet Explor-

SO HELP ME

Need an Expert? Check Here

>>>TIPS SOME OF THE BEST PC advice comes from real people: consultants, IT pros, and savvy amateurs who know the products inside and out. For free help from all of the above, cruise to these sites.

Hardware

The PC Guide: You'll find lots of nuts-and-bolts guidance on PC matters here, plus message forums where visitors help each other. The site also features an extensive hyperlinked index. www.pcguide.com

SysOpt.com: This do-it-yourselfer's dream site offers hardware tips on CPU overclocking, graphics-card tweaking, and plenty of other geeky topics. www.sysopt.com

Windows

Windows-Help.net: Don't let this site's clutter of ads faze you—the friendly tutorials it provides are worth the hunt. www.windows-help.net

Annoyances.org: The busy companion site to O'Reilly's Annoyances books (see "Help by the Book" on the next page) has downloads and discussion forums. www.annoyances.org

Bob Cerelli's Windows Page: At this site you'll get no fancy graphics, no ads, no nonsense; just tons of tutorials and tips. www.onecomputerguy.com

Applications

Woody's Office Portal: A true rarity: Microsoft Office help that's consistently funny, opin-

ionated, and invaluable. www.wopr.com

Ask Mr. Excel: This savvy consultant fully justifies his moniker with a variety of free tips, advice, articles, and much more. www.mrexcel.com

The PowerPoint FAQ: The presentation pointers here range from the basic to the arcane. Though it could use more PowerPoint 2002 information, it's still worth a visit. www.rdp-slides.com/pptfaq

WordPerfect Universe: The world is still swarming with happy WordPerfect holdouts. For proof, check out the array of helpful forums maintained here. www.wpuniverse.com

AdamKB@AOL.COM: These nifty links to multiple help



resources for AOL are neatly organized for easy perusal, though they were slightly stale when we last checked them. members.aol.com/adamkb

Dr. M's Quicken Hints & Tips: Ugly graphics and irritating music give way to genuinely worthwhile finance tips, plus a free Quicken newsletter. www.geocities.com/SiliconValley/Network/8814

Photoshop Tips & Tricks: Enjoy expert walk-throughs of multiple features in Adobe's always potent but sometimes puzzling image editor. www.graphic-design.com/Photoshop

>>>TIP For context-sensitive help, try pressing the <F1> key, right-clicking an on-screen

er, click in the Address field, press **<Ctrl>V** to paste the address there, and press **<Enter>**. The help page will display in the browser. Choose **Favorites>Add to Favorites** to file the page in IE just as you would any other bookmark. (Alternatively, you can create a shortcut that launches Help and loads the page in question; see October 2000's *Windows Tips* at find.pcworld.com/25481 for instructions.)

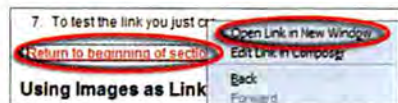


FIGURE 1: OPEN A NETSCAPE 6.2 HELP page in the browser and press **<Ctrl>D** to bookmark it for later reference.

>>TIP If you use Netscape 6.2, right-clicking a Netscape help page reveals a 'Bookmark this Page' option. Great option, if it worked (as it does in version 6.1). There is a way to bookmark help pages in 6.2, though. Almost every help page has one or more 'Return to beginning of section' links. Right-click one and select **Open Link in New Window** (see FIGURE 1). The Netscape browser will load the page. Now press **<Ctrl>D** to bookmark it, or press **<Shift>+<Ctrl>D** to store it in any folder (say, one you create called 'Help').

The above tip doesn't work in Netscape Navigator 4.7, but you can still bookmark pages in its NetHelp help system. **>>TIP** Click the **Index** icon in NetHelp's right pane, and choose the topic you'd like to bookmark from the list that appears below the icon. Click and drag any link in the right pane out of NetHelp and onto the Bookmarks button on the Navigator toolbar, but don't let go of the mouse button just yet. Hover the link over the Bookmarks button until

TEXT SUPPORT

Help by the Book

>>TIPS Stop! Instead of paying for pricey fee-based tech support, buy a book that will help you day in and day out.



1 **Upgrading and Repairing PCs** (Scott Mueller, Que, \$60): A hefty 6 pounds of facts covering everything PC—from Athlon CPUs to Zip drives. Comes with a CD-ROM of how-to videos.

2 **PC Upgrade and Repair Simplified** (Paul Whitehead, Hungry Minds, \$28): Full-color photos and drawings show every topic from choosing an antivirus program to changing a system board.

3 **Windows Me Annoyances** (David A. Karp, O'Reilly, \$30): The subtitle, "Taking Charge of Windows Me," says it all, but where's the XP edition?

4 **Troubleshooting Microsoft Office XP** (Nancy Stevenson and Elaine Marmel, Microsoft Press, \$30): Ironical but appropriate—Microsoft itself sells this guide to overcoming Office hassles.

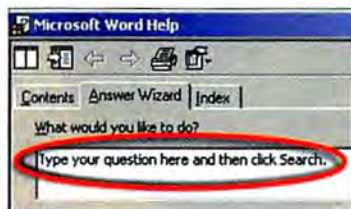
5 **Privacy Defended** (Gary Bahadur et al., Que, \$35): Tips on firewalls, virus blocking, encryption schemes, and other antihacking tools.

6 **The XP Files** (Guy-Hart Davis, McGraw-Hill Osborne, \$25): Get more out of NetMeeting, Phone Dialer, and the other "hidden" communications utilities buried in Windows XP.

a menu pops open, and then drop the link into the folder where you want to keep the help page filed. From that point on, when you click this bookmark, Navigator will open NetHelp to the appropriate spot.

Print Your Own Manual

Remember comprehensive software manuals—the kind made out of good, old-fashioned paper? They seem to be as extinct as the late, lamented Australian Buff-Nosed Rat-Kangaroo. But you can fill the void by printing the help files from the applications that you use most often.



>>TIP DON'T ASK: Some help systems tell you to express your search as a question. Don't do it. It won't help and might hurt. Instead, simply enter keywords related to your problem.

Most programs' help systems display their contents arranged by subject in a nested list. Icons that look like

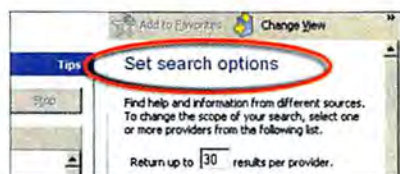
little purple books mark major topics. **>>TIP** To print all the information under one of these topics, right-click the appropriate book icon and select **Print**. In the resulting dialog box, choose **Print the selected heading and all subtopics**; then click **OK** and **Print**. Office XP applications, like several other programs, put everything in one book, so you can print the whole help system in one step. Others require you to print multiple books separately if you want a hard copy of the entire contents.

Regrettably, this print-a-book technique won't work in Windows XP, in Windows Me, and in other programs that lack a conventional Contents listing. You can still print help pages by topic, though.

Give Clippy the Boot (Really)

When Microsoft was launching Office XP, the company trumpeted that it had fired Clippy (aka Clippit), the loathsome talking paper clip that served as an "Office Assistant" in the suite's help system. ▶

item, or hovering the mouse pointer. **>>TIP** Find free assistance at AskMe (www.askme.com). ...



>>TIP CAST A WIDER XP NET: The search feature in Windows XP's online help (choose *Start*Help and Support*) returns just 15 results per category. Click *Set search options* (below the search field) to set a larger maximum.

Um, not quite. The Office Assistant is usually muzzled by default, but it's just one errant click away from pestering you again. Here's how you can clip Clippy's wings once and for all:

>>TIP In Office XP or 2000, open Control Panel and double-click either *Add/Remove Programs* or *Add or Remove Programs*, depending on your version of Windows. In Windows XP, Me, or 2000, select either *Microsoft Office* or a specific Office program in the 'Currently installed programs' list, and click *Change*. In Win 98, select the item for Office or a specific app under the *Install/Uninstall* tab, and click *Add/Remove Program*. Then follow the wizard to remove the Office Assistant (it may be called 'Clippit'); you'll find it listed under Office Shared Features in the 'Features to install' list. Change its setting to *Not Available*. (The wizard may ask for the Office CD-ROM, so keep that disc handy.)

TAKE MY ADVICE

A HOT SPOT FOR HELP

>>TIP WHEN YOU'VE GOT PC WOES, I recommend heading to Tech24 (www.tech24inc.com). Why? Vendor sites are full of information and downloads, but tracking down what you need can be a chore. Tech24 collects hundreds of support links, and it's a breeze to use. You can get help via online chat for \$15 an incident, or try a free service that scans your PC for needed patches and upgrades.

—Linda Belding, support services supervisor, Virginia Beach, Virginia



>>TIP If you're still using Office 97, Clippy and his cohorts are located in the `\Program Files\Microsoft Office\Office\Actors` folder. The simplest way to quash them is to change the name of that folder—to 'NoActors', for example. From then on, you'll get un-Assisted help.

GET HELP ON THE WEB

EVEN SOME PRODUCTS hobbled by bad built-in documentation have high-caliber help available—on the Web. Space isn't an issue; updates are easy, and you can supplement canned content with message boards and other interactive features.

Try Some Bountiful Vendor Sites

>>TIP Windows XP Expert Zone offers relentlessly upbeat but useful tips, tutorials, and other help (see **FIGURE 2**). www.microsoft.com/windowsxp/expertzone

Microsoft Office Assistance Center has plenty of helpful stuff for Office XP and 2000 users, including free downloadable design templates and a resource kit that describes various Office updates. office.microsoft.com/assistance

WordPerfect OfficeCommunity.com covers a different office suite, but it's equally worthwhile. The site has



FIGURE 2: FIND OUT MORE about Windows XP by visiting Microsoft's Expert Zone.

useful help documents and downloads. www.officecommunity.com

Adobe Expert Center provides resources for Acrobat, Photoshop, and other Adobe packages; it offers step-by-step tutorials, a support knowledge base, and links to fee-based training options (registration is required). studio.adobe.com/expertcenter

Google Your Way to Answers

Beyond official vendor sites, the Web holds an amazing array of pointers for every technology product imaginable. A good search engine—we heartily recommend Google (www.google.com)—lets you track them down. **>>TIP** Enter a few keywords to describe the task you want to accomplish, along with the product name and version number—say, "mail merge microsoft publisher 2000"—and you'll likely get results. **>>TIP** Make Internet Explorer's Search panel default to Google. Visit www.google.com/google.reg, download the small file, and double-click it. Thereafter, anytime you click the Search icon in IE, Google will guide your query.

See "Need an Expert? Head Here" on page 114 for the low-down on some of our favorite sites for software and hardware help. And we'd love to hear about your favorite destinations for computing answers. Write us at readertips@pcworld.com. ■

Harry McCracken is editor of PC World.

... **>>TIP** A search for help came up empty? Try a synonym—such as 'network' instead of 'LAN'.

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AMD Athlon 1000	\$769
AMD Athlon XP 1600+	\$799
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\$739

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KINGSTON TECHNOLOGY: TAKING THE STRESS OUT OF MEMORY UPGRADES

www.shop.kingston.com

You already know that memory upgrades are the fastest, most reliable way to boost your PC's performance—so what's holding you back?

Many users are afraid that by installing new memory, they might damage their PCs. But the procedure is actually quite painless, and the results—from improved multitasking to eye-popping multimedia—are often substantial.

Now the largest independent memory manufacturer, Kingston Technology Company Inc., is helping users to successfully upgrade their own systems, through demonstrations and system-specific memory guides.

Visitors to www.Shop.Kingston.com can access detailed hardware advice as well as an easy-to-follow animated tutorial. "We wanted to show users how easy it is to install memory," says Jason Jacobi, a Kingston spokesman. "And once they see it for themselves, they can feel comfortable buying the upgrade they need to run today's leading software and operating systems, including Microsoft Windows XP."



KINGSTON MAKES IT EASY FOR YOU

Customers at Shop.Kingston.com already use the site's Memory Configurator to choose memory by system model, memory specification, or Kingston part number. PDA users, and those with digital cameras and MP3 players, can search for their upgrades by device type.

Now Kingston's animated online tutorial, "Memory Installation in 3 Steps," shows users how just how easy it is to install memory. The animated demo reviews a typical system's layout and components and illustrates the correct way to place modules in a PC's memory bays.

Kingston also provides free, detailed Adobe Acrobat PDF-formatted installation guides for PCs from leading manufacturers, as well as guides for installing Flash memory modules and software drivers.



First-time memory buyers will especially benefit by clicking on Kingston's animated installation guide, from the Shop.Kingston.com homepage. "It takes the anxiety out of the installation process for users at any level," says Jacobi. "After watching it, you won't be afraid anymore to take the cover off of your PC."

QUALITY YOU CAN COUNT ON

By installing their own modules, users can experience firsthand the high quality of Kingston's modules. IT professionals rely on Kingston memory to update their systems. And many leading PC manufacturers in the United States build Kingston memory right into their new machines.

Kingston each year builds and tests more than two million customized modules for hardware manufacturers and systems developers. Now consumers, through Shop.Kingston.com, can receive the same memory, and the same warranties, as Kingston's business customers.

"Kingston has a good handle on quality," says Kingston consumer Tim Scovell. "I'm always adding modules to my systems, and the Kingston memory works every time."

Kingston's memory is system-specific, and the company guarantees the compatibility of modules selected through the Kingston Memory Configurator. "It leads you to the exact memory your system requires," Jacobi adds.

In the unlikely event that a customer has trouble with his upgrade, he or she can call Kingston at 800-435-0640 and consult with a memory expert, 24/7.

With its latest support for novice upgraders, and with its 24/7 customer service, Kingston is making its memory products and professional-level support available to every consumer. "At Shop.Kingston.com," Jacobi says, "Web surfing, gaming, and exciting multimedia are going to be possible on more systems than ever before."



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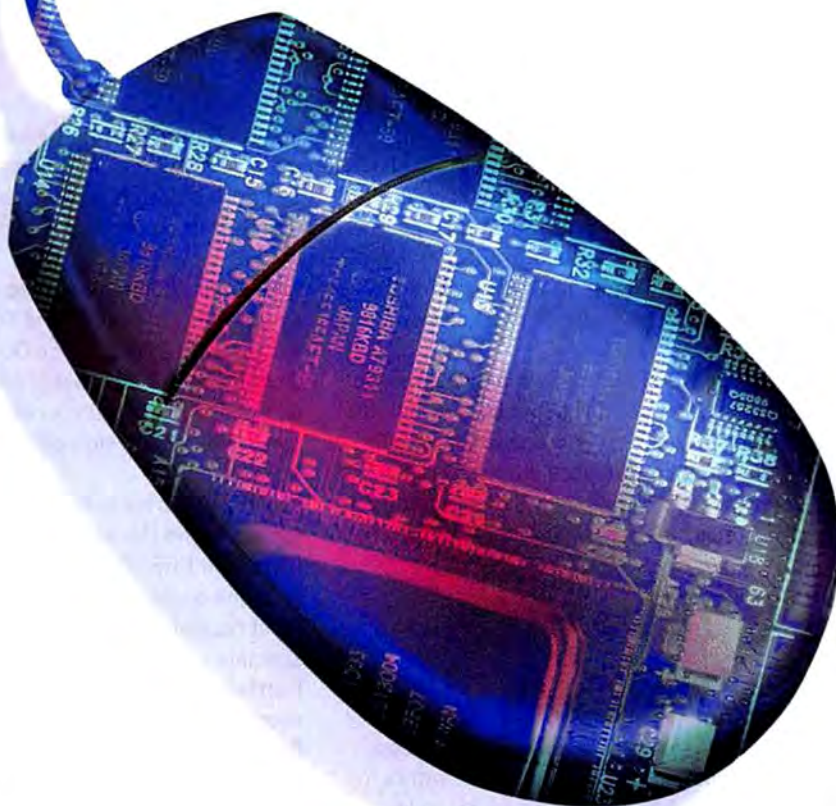
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PC AMERICA: INVENTORY MANAGEMENT AT POINT OF SALE

www.pcamerica.com

While many motorists in Dimondale, Mich. say the family-owned Windmill Truck Stop is a home away from home, its controller, Kevin Edelmann, says it's been more like a house of accounting horrors. Besides monitoring retail fuel sales in the truck stop's "truckers only" area, he also has to keep an eye on commuters' and travelers' purchases in the king-sized complex's convenience store, family restaurant, motel, and auto service center. "Keeping track of all of that inventory has been a nightmare," Edelmann says.

The Point of Sale (POS) system that the Windmill had been using since 1982 did a fine job of ringing up sales, but it couldn't tell store managers anything about what was on the shelf. "The system only broke sales down by department," Edelmann says. "So it couldn't tell the difference between a tube of toothpaste and a bottle of shampoo."

Edelmann found only a few POS solutions that were easy to use, Microsoft Windows-based, and able to support multiple input devices. And none of them could manage the 20,000-plus items in the Windmill's convenience store and restaurant. "We desperately needed a solution that could bring all of these components of our business together," he says.



PC AMERICA

Things finally turned around at the Windmill once Edelmann deployed PC America's Cash Register Express (CRE 2000), a Windows-based POS program that works with ordinary PCs and peripherals, as well as barcode scanners, receipt printers, and pole displays (which show charges at the checkout counter). Now all of the Windmill's cashiers can use touch screens and barcode scanners to enter orders and update inventory. And setting up CRE 2000 could not be easier, says Edelmann. "PC America did



The home page for PC America speeds you to the point-of-sale products you need.

an excellent job pulling all of the hardware together initially. But the great thing about their software is that I can grab any component I want off the shelf and throw it together in no time. This is one slick program."

The Windmill has processed more than half a million transactions with CRE 2000 and PC America's Restaurant Pro Express (RPE 2000) since October 1999. And Edelmann predicts that PC America will continue to develop the software he needs to keep things running smoothly. "PC America is constantly improving upon their products," he says.

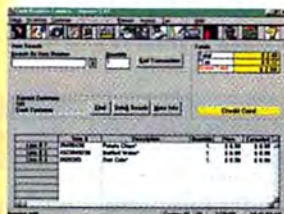
Now PC America is helping retailers like the Windmill to move beyond the sale itself to increase revenues. A new feature in CRE 2000 gives businesses the ability to print coupons on the bottom of sales receipts on an Epson TM-T88II receipt printer. They can use the coupons to advertise specials on slow business days (e.g., "10 Percent Off All Purchases Every Tuesday"), or to give their customers discounts on overstock items (e.g., "Get a Free Six-Pack of Pepsi on Your Next Visit").

CRE 2000's couponing feature promises retailers an excellent route to a crucial dimension in retail sales. "Repeat business is the most important aspect of any business," says PC America's president, Howard Gosman. "With this addition to our POS package, we are giving our customers a quick and easy-to-use method for creating it."



Cash Register Express Software for Windows...\$495

Computerize any type of retail store using Cash Register Express for Windows. Computerization pays for itself, saving you thousands of dollars, giving you peace of mind, and making the best use of your time. Cash Register Express



has more than 250 of the most desired point of sale features to help you leapfrog past your competition by controlling costs, reducing errors and increasing efficiency.

More Software for Your Retail Store

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- ◆ Label Works
- ◆ Inventory Track Express

- ◆ Credit Card Software
- ◆ All Single or Multiuser

All PC America Software requires Microsoft Windows. The software was written in Visual Basic using Microsoft Access Files. The source code is available.

CASH REGISTER EXPRESS™

More Profit!

More Sales!

More Customers!

Save Time, Reduce Theft,
Speed Checkout, Increase Accuracy,
Reduce Costs, Make Better Business
Decisions by computerizing
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Which is more important, the photo of your baby's first smile or the photo of your son's first day of school? Last month's sales totals or next month's sales projections? For handheld PC users and digital photographers, deciding what to keep and what to delete when their storage cards get full can be agonizing. Fortunately, it's easy to escape this desperate ritual by buying "flash" memory cards.

"You can use these cards as 'digital film' in your camera, or to back up phone numbers, addresses, and larger files from your PDA," says Scott Heimgartner, product marketing manager at Crucial Technology, a division of Micron, a leading maker of DRAM.



However, Heimgartner points out, digital devices don't all accept the same card format. Handheld PC users and others can avoid any confusion by using Crucial's Web site, Crucial.com, to find the right type of card for their devices. The site's Memory Selector tool searches Crucial's database of more than 15,000 computers and electronic devices for fully compatible memory upgrades.

"Crucial.com makes choosing the right flash memory card easy," says Heimgartner. "You simply use the Memory Selector to find the right card for your camera, MP3 player, or handheld. Then you can complete your order in a matter of seconds."

Online checkout at Crucial.com is quick and easy. All online buyers receive a 10-percent discount, and two-day shipping is free in the US.

ALWAYS COMPATIBLE

Crucial offers a money-back guarantee that the memory upgrades purchased through the Memory Selector will be 100-percent compatible with its customers' digital devices. The site also backs all of its flash memory cards with a five-year warranty.



As a subsidiary of DRAM maker Micron, Crucial can offer memory upgrades directly to consumers, at factory-direct prices. Micron, the largest memory manufacturer in the United States, tests all of its memory modules under extreme temperatures, voltages, and operating conditions. And it offers extensive warranties and free service and support.

Micron's expertise in flash memory is abundantly evident at the Crucial.com Web site. Crucial.com includes a comprehensive discussion of flash memory, a list of the technology's benefits, and a glossary of memory terms. "We want to make sure that when you're buying a flash memory card, you're getting the right capacity for your storage needs," Heimgartner says.

Users of MP3 players, for example, typically require between 64MB and 128MB of memory in their devices. 32MB is often enough to store a low-res family photo collection on a camera or PDA. But business professionals using their handhelds to store spreadsheets will want to upgrade to 128MB of CompactFlash memory.

GREAT PRICES, GREAT SERVICE

Even though memory prices continue to fluctuate, it's still an excellent time to buy from Crucial.com. The site keeps its prices down by cutting out the middleman. Crucial's customers save money by investing in upgrades that boost their systems' performance and reliability, and add data storage space.

"Crucial," says Heimgartner, "has built a reputation for dealing honestly and directly with its customers. When you order from Crucial, you can expect high-quality products that are backed by our incredible service and support."





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TOP 100

EDITED BY THE REVIEWS STAFF

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Home PCs

MicronPC's Millennia XP+ XTreme, an excellent performer among home desktops, features a DVD-RW drive.



128

Notebooks

A 20GB hard disk and a DVD/CD-RW combination drive help push MicronPC's TransPort XT2 to the top of our value notebook chart.

Hot New Systems—And PDAs, Too

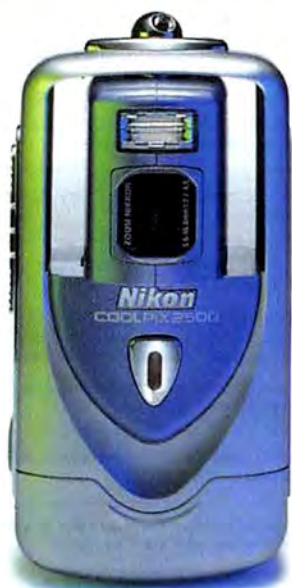
This month, MicronPC ascends to the top of two charts. The company's full-featured value notebook, the TransPort XT2, costs less than \$2000 and includes Microsoft Office XP Small Business Edition. In the power section of the *Top 15 Home PCs* chart, the Millennia XP+ XTreme is number one; thanks to its complement of high-end components, the system turned in the second-fastest PC WorldBench 4 score on the chart.

Also of note: Our new *Top 10 PDAs* chart joins the *Top 100* section. The chart, which ranks both advanced and basic personal digital assistants, can help you identify the model best suited to your on-the-go needs.

Freelance writers Dan Littman, Joel Strauch, and Carla Thornton, and PC World editors Richard Baguley, Tracey Capen, Seán Captain, Lisa Cekan, Rebecca Freed, Heather Morra, Kalpana Narayana-murthi, Melissa J. Perenson, and Alan Stafford contributed to this month's Top 100 section. Ulrike Diehlmann, Robert James, Elliott Kirschling, Jeff Kuta, Tony K. Leung, and Thomas Luong of the PC World Test Center performed testing on the products reviewed here, with support from Julio Giannobile and Julian Weatherby.

Digital Cameras

Nikon's nattily attired Coolpix 2500 has a zoom lens that rotates out when in use; when you're finished shooting, the lens tucks up and away neatly into the camera's body.



LCD Monitors

We examine a fresh field of 15-inch LCD monitors. Sharp's LL-T15V1 (near right) has a slim profile; the larger NEC MultiSync LCD1550X delivers top-notch image quality.



PDA's

The sleekly contoured Palm M130 wins our approval for its attractive combination of a color screen and a reasonable price.



YOUR GUIDE TO THE TOP 100

EACH MONTH WE TEST a large number of PCs, printers, monitors, and other products. Only the best products land on the charts, which are refreshed monthly.


System configurations are shown as tested. The overall rating for each product is calculated on a 100-point scale and reflects results from our hands-on evaluations

and performance tests. A 90-point score is exceptional, while one in the 70s is above average.

The PC WorldBench 4 score is a measure of how fast a PC can run a mix of common business applications as compared with our baseline machine, a Gateway Select 1200 with a 1.2-GHz Athlon processor, 128MB of PC133

SDRAM, and a 20GB hard drive. For example, a PC that scores 120 is 20 percent faster than the baseline system. The policies score is based on vendor support policies (not shown on charts). Please see find.pcworld.com/15720 for additional details on how we compile charts for the Top 100.

TOP 15 OFFICE PCs

	POWER SYSTEM		Overall rating	Street price (3/22/02)	PC WorldBench 4 performance score ¹		Comments
1	Best Buy Gateway 700XL find.pcworld.com/21041		82	Very expensive \$3098	Windows XP Professional Good 118		Pricy USB 2.0-enabled system packs a powerful punch. The DVD-RAM/R drive is good for data backup and video recording. (★★★★☆ Apr 02)
2	Dell Dimension 8200 find.pcworld.com/25061	NEW	82	Very expensive \$2810	Windows XP Professional Good 116		Dell's latest refresh of its 8200 line has the same easy-to-open black-and-gray chassis, but includes a vibrant 17-inch LCD monitor. (★★★★☆)
3	MicronPC Millennia TS Professional find.pcworld.com/21021		81	Average \$2180	Windows XP Professional Good 111		Offering plenty of expansion room, this system lets you easily access the case interior and drive bays. Price drops \$395. (★★★★☆ Apr 02)
4	Micro Express MicroFlex 1900A find.pcworld.com/21022		80	Inexpensive \$1499	Windows XP Home Very good 125		This reasonably priced model is a top-notch performer and comes with a DVD+RW recordable drive. (★★★★☆ Apr 02)
5	Sys Performance 2000+ find.pcworld.com/22222		79	Expensive \$2452	Windows 2000 Very good 124		PC includes a high-quality 18-inch LCD monitor as well as slots for CompactFlash and SmartMedia cards. (★★★★☆ May 02)
6	Tangent Valera DDR 2000+ find.pcworld.com/25281	NEW	77	Average \$1999	Windows XP Professional Good 117		This system offers video capture and editing software and four USB 2.0 ports—but no IEEE 1394 ports. (★★★★☆)
7	Polywell Poly 850GB-2200 find.pcworld.com/25221	NEW	76	Very expensive \$2888	Windows XP Professional Good 118		High-end office system has a pivoting 17-inch LCD monitor, digital video ports, and two 40GB hard drives in a RAID configuration. (★★★★☆)
VALUE SYSTEM		Percent of overall rating ▶	15 percent	20 percent			
1	Best Buy Dell Dimension 4400 find.pcworld.com/25041	NEW	82	Expensive \$1329	Windows 2000 Very good 115		This capable Dell uses the same stylish chassis found on the 8200 line, plus it comes with Microsoft Office XP. (★★★★☆)
2	Gateway 700L find.pcworld.com/25081	NEW	79	Expensive \$1309	Windows XP Professional Good 106		This system features a speedy CD-RW drive and delivers good performance at a reasonable price. (★★★★☆)
3	Gateway 300X find.pcworld.com/22421		79	Average \$1198	Windows 2000 Average 101		PC offers an LCD monitor and impressive performance for a reasonably priced Celeron-based system. (★★★★☆ May 02)
4	Micro Express MicroFlex 1200C find.pcworld.com/15221		79	Inexpensive \$999	Windows 2000 Very good 117		Superior performance, ample expandability, and an affordable price keep this system in the mix. (★★★★☆ Jan 02)
5	ABS Conquest VP find.pcworld.com/16700		78	Average \$1149	Windows XP Professional Very good 115		An included IEEE 1394 interface bolsters this fast system; the monitor could be better, however. (★★★★☆ Jan 02)
6	IBM NetVista A22p find.pcworld.com/19341		78	Average \$1108	Windows XP Home Average 91		Unit has a pop-off front cover for easy drive-bay access; remote management software can be downloaded. (★★★★☆ Mar 02)
7	Dell OptiPlex GX240 find.pcworld.com/18761		75	Expensive \$1541	Windows XP Professional Average 91		This corporate model offers high security and network manageability but little room for expansion. Price increases by \$70. (★★★★☆ Mar 02)
8	Compaq Evo D500 find.pcworld.com/15840		75	Average \$1254	Windows 2000 Average 100		Attractive case permits tool-less access to components, but offers limited room for future expansion. (★★★★☆ Jan 02)
		Percent of overall rating ▶	25 percent	15 percent			

All systems tested or retested under our PC WorldBench 4 test suite. See find.pcworld.com/10860 for details on PC World's Star Ratings.

¹ Performance word scores reflect comparisons of PCs in the same category (power or value) running the same operating system. See "Your Guide to the Top 100" on page 125 for more details.
² In gigabytes.

³ We define vertical cases as towers (taller than 20 inches), midsize towers (15.5 to 20 inches), or minitowers (shorter than 15.5 inches); and horizontal cases as desktops (5 inches or taller) or compacts (shorter than 5 inches).

THIS MONTH, A REFRESHING CHANGE: There are first-time Best Buys atop both the power and value charts. The 2.2-GHz Pentium 4 Gateway 700XL ascends to number one in its third month on the chart. This system continues to impress us, thanks in part to such features as a DVD-RAM/R drive (which is useful for recording DVD videos as well as data DVDs), high-end graphics, and a roomy 120GB hard drive. The Gateway 700XL is also one of only a handful of systems we've tested to offer USB 2.0 ports.

Close behind is the first 2.4-GHz Pentium 4 system we've tested for this chart, a Dell Dimension 8200. Replacing last month's 2-GHz Best Buy of the same name, this model boasts a slightly faster CPU and has a bright 17-inch LCD screen in lieu of a 19-inch CRT monitor—but it's also \$574 more than its predecessor.

Both the Gateway and the Dell carry Intel's latest iteration of the Pentium 4

Visit find.pcworld.com/25581 for reviews of all products tested this month and ranked in this chart.

BASE CONFIGURATION								Extra features	Design/ documentation	Vendor's reliability/ service
CPU	RAM (MB/type)	Hard drive ²	Monitor size (diagonal inches)	Graphics	Case type ¹	Open bays/slots				
2.2-GHz Pentium 4	512/ RDRAM	120	15 (LCD)	64MB ATI Radeon 8500	Tower	3/2	Outstanding: DVD-RAM/R drive,* 24X/10X/40X CD-RW drive, V.90 modem, network adapter, Microsoft Office XP Small Business Ed.	Good/ Good	Good/ Fair	
2.4-GHz Pentium 4	256/ RDRAM	80	17 (LCD)	64MB GeForce3 Ti 200	Midsized tower	3/2	Good: 24X/10X/40X CD-RW drive, network adapter, case lock, Office XP Small Business Edition, Norton AntiVirus 2002	Good/ Good	Outstanding/ Fair	
2.2-GHz Pentium 4	256/ DDR SDRAM	80	19	64MB VisionTek GeForce3 Ti 200	Midsized tower	4/3	Good: 16X DVD-ROM drive, 16X/10X/40X CD-RW drive, V.90 modem, network adapter, Office XP Small Business Edition	Good/ Good	Good/ Fair	
1.6-GHz Athlon XP 1900+	512/ DDR SDRAM	60	17	64MB GeForce3	Midsized tower	4/2	Very good: DVD+RW drive,* V.90 modem, network adapter	Good/ Average	✓/✓	
1.67-GHz Athlon XP 2000+	256/ DDR SDRAM	80	18 (LCD)	64MB Leadtek WinFast A170 DDR T	Midsized tower	4/1	Very good: 16X DVD-ROM drive, 24X/10X/40X CD-RW drive, net- work adapter, Corel WordPerfect Office 2002, Norton AntiVirus	Good/ Average	✓/✓	
1.67-GHz Athlon XP 2000+	256/ DDR SDRAM	80	19	64MB MSI MS-8850	Midsized tower	6/4	Good: 16X DVD-ROM drive, 24X/10X/40X CD-RW drive, network adapter, tool-less drive bay carriers	Very good/ Average	✓/✓	
2.2-GHz Pentium 4	512/ RDRAM	80 *	17 (LCD)	64MB VisionTek GeForce3 Ti 500	Midsized tower	7/3	Good: 16X DVD-ROM drive, 24X/10X/40X CD-RW drive, network adapter, Lotus SmartSuite 9.5	Good/ Average	✓/✓	
10 percent							15 percent	15 percent	25 percent	
1.8-GHz Pentium 4	256/ DDR SDRAM	40	17	64MB GeForce2 MX	Midsized tower	3/3	Very good: 16X/10X/40X CD-RW drive, network adapter, tool-less drive bays, Office XP Small Business Edition	Good/ Good	Outstanding/ Fair	
1.8-GHz Pentium 4	256/ RDRAM	40	17	32MB VisionTek GeForce2 MX200	Midsized tower	4/3	Very good: 16X DVD-ROM drive, 40X/12X/48X CD-RW drive, net- work adapter, Microsoft Works Suite 2002	Good/ Good	Good/ Fair	
1.3-GHz Celeron	256/ SDRAM	40	15 (LCD)	Integrated Intel 815E	Midsized tower	1/2	Very good: 16X DVD-ROM drive, 16X/10X/40X CD-RW drive, V.92 modem, network adapter, Wake-on-LAN, tool-less drive bays	Average/ Good	Good/ Fair	
1.2-GHz Athlon	256/ DDR SDRAM	40	17	64MB Asus AGP-V7700	Midsized tower	3/3	Good: 12X DVD-ROM drive, 12X/8X/32X CD-RW drive, V.90 modem, network adapter	Good/ Good	✓/✓	
1.4-GHz Athlon	256/ DDR SDRAM	40	17	32MB Leadtek GeForce2 Pro	Midsized tower	3/2	Very good: 16X DVD-ROM drive, 16X/10X/40X CD-RW drive, V.90 modem, network adapter	Good/ Average	✓/✓	
1.6-GHz Pentium 4	256/ SDRAM	41	15	32MB VisionTek GeForce2 MX	Midsized tower	2/3	Very good: 16X/10X/40X CD-RW drive, network adapter, Wake-on- LAN, chassis-intrusion detection	Good/ Average	Good/ Fair	
1.8-GHz Pentium 4	256/ SDRAM	20	17	32MB ATI Rage Ultra 32	Desktop	0/2	Good: 8X/4X/32X CD-RW drive, network adapter, Wake-on-LAN, chassis-intrusion detection, client management software	Good/ Average	Outstanding/ Fair	
1.7-GHz Pentium 4	256/ SDRAM	20	15	16MB Vanta	Desktop	0/2	Average: 22X-48X CD-ROM drive, network adapter, Wake-on-LAN, chassis-intrusion detection, client management software	Good/ Average	Good/ Poor	
10 percent							15 percent	10 percent	25 percent	

* DVD-RW and DVD+RW drives can handle CD-RW functions; DVD-RAM/R drives cannot. DVD-RW drives can also write DVD-R, but first-generation DVD+RW drives cannot.

¹ Insufficient data to give a rating.

² Total space on two hard drives.

CPU—with, among other things, double the on-chip Level 2 cache (from 256KB to 512KB) of earlier Pentium 4 processors.

Dell and Gateway—each with a new offering—switch positions for top honors on our value chart. In first place, the impressive \$1329 Dell Dimension 4400 offers much the same aesthetic appeal—as well as the same easy-to-service case design—as the company's more expen-

sive 8200 series. In second place, the similarly priced Gateway 700L lacks Dell's chic charcoal-gray chassis and comes with Microsoft Works Suite 2002.

Meanwhile, high-end models from Tangent and Polywell debut at number six and number seven, respectively, on the power chart. The Polywell model is one of four systems on the power chart that include an LCD monitor.



DELL PAYS ATTENTION to both form and function in its Dimension 4400 value system.

TOP 15 NOTEBOOK PCs

	POWER NOTEBOOK	Overall rating	Street price (3/22/02)	PC WorldBench 4 performance score ¹	Faster	Comments
1	Best Buy IBM ThinkPad A30p find.pcworld.com/18122	89	Expensive \$3099	Windows 2000	Outstanding 113	Desktop replacement has dual modular bays, an ergonomic sloping case, and a huge hard drive. PDA syncing bay device is optional. (★★★★☆ Feb 02)
2	Dell Inspiron 4100 find.pcworld.com/16400	89	Average \$2149	Windows 2000	Very good 107	Accommodates lots of add-ins; has dual pointing devices. Optional color palm rests and screen backs cost \$20. (★★★★☆ Jan 02)
3	Gateway Solo 9550xl find.pcworld.com/25381	88	Average \$2299	Windows 2000	Very good 111	Comes equipped with a large screen and high-end multimedia connections, including an IEEE 1394 port, but it's big and heavy. (★★★★☆)
4	Dell Latitude C810 find.pcworld.com/21182	87	Average \$2625	Windows XP Professional	Very good 101	All-in-one has dual optical drive design but is unavailable with both standard and wireless networking connections built-in. (★★★★☆ Apr 02)
5	HP Omnibook 6100 find.pcworld.com/16402	86	Expensive \$2828	Windows 2000	Very good 106	Corporate speedster has wireless-ready design and a handsome, thin case with a modular bay. (★★★★☆ Jan 02)
6	Compaq Evo N600c find.pcworld.com/25401	84	Average \$2799	Windows XP Professional	Good 97	Dual pointing devices and an optional funky, silver wireless module in lid highlight square black laptop. (★★★★☆)
7	Toshiba Tecra 9000 find.pcworld.com/19481	83	Expensive \$2999	Windows 2000	Good 101	Slim, all-silver unit with sloping front includes both 802.11b and Bluetooth wireless antennas. (★★★★☆ Mar 02)
VALUE NOTEBOOK		Percent of overall rating ▶	15 percent	20 percent		
1	Best Buy MicronPC TransPort XT2 find.pcworld.com/25402	83	Average \$1999	Windows XP Home	Very good 96	Has a reasonably light weight, yet is flush with every feature you could want, including a good keyboard and extra audio controls. (★★★★☆)
2	Dell Latitude C610 find.pcworld.com/21183	82	Expensive \$2286	Windows XP Professional	Very good 99	Revamp of older model allows both wireless and standard networking connections to be built in, eliminating need for PC Cards. Price falls \$100. (★★★★☆ Apr 02)
3	Gateway Solo 5350ls find.pcworld.com/25403	82	Average \$1899	Windows XP Professional	Very good 95	Fairly light two-spindle model has a removable hard drive and handsome black-and-silver case, but no big extras. (★★★★☆)
4	IBM ThinkPad R30 find.pcworld.com/16403	82	Average \$1699	Windows 2000	Good 88	Unit has most standard connections, a light at the top of the screen, and built-in 802.11b support. (★★★★☆ Jan 02)
5	Toshiba Satellite Pro 6000 find.pcworld.com/25404	81	Expensive \$2199	Windows 2000	Very good 99	Conservative all-black box includes built-in wireless capability; modular bay accommodates optical drive or second battery. (★★★★☆)
6	Compaq Presario 1720 find.pcworld.com/19482	80	Average \$1599	Windows XP Home	Very good 95	Lightweight, well-equipped consumer laptop comes with DVD-ROM/CD-RW combination drive and IEEE 1394 port. (★★★★☆ Mar 02)
7	Toshiba Satellite 5005-S504 find.pcworld.com/19484	80	Average \$1799	Windows XP Home	Very good 95	Fantastic sound and dedicated audio controls will delight music lovers; also includes SD and SmartMedia slots. (★★★★☆ Mar 02)
8	Fujitsu LifeBook C Series find.pcworld.com/16404	80	Inexpensive \$1399	Windows 2000	Good 88	Offers four USB ports; DVD-ROM/CD-RW combination drive is a pleasant find in a low-cost notebook. (★★★★☆ Jan 02)
		Percent of overall rating ▶	20 percent	15 percent		

See find.pcworld.com/10860 for details on PC World's Star Ratings.

¹ Performance word scores reflect comparisons of PCs in the same category (power or value) running the same operating system. See "Your Guide to the Top 100" on page 125 for more details.

² Except where noted, all CPUs are SpeedStep chips, which run at a slower speed when on battery power.

³ In gigabytes.

IT'S BEEN ALMOST TWO YEARS since a notebook from MicronPC garnered a Best Buy award on a *PC World* notebooks chart. The company returns to the heights this month with the TransPort XT2, our new value Best Buy. At \$1999, the 6-pound (without add-ons) XT2 includes a 14.1-inch screen, a removable DVD-ROM/CD-RW combination drive, and a 20GB hard drive. With its enticing price, solid performance, and wealth of features, the XT2 should satisfy both corporate types and home users.

The laptop's blue-and-gray case balances formality and fun. One notable concession to frivolity: A silver panel in the lower-right corner of the keyboard supplies audio controls for using the XT2 as a stand-alone CD player. Legacy connections, including parallel and serial ports, hide under a protective cover on the back; S/PDIF, composite-out, and IEEE 1394 ports should appeal to the digitally hip.

Visit find.pcworld.com/25405 for reviews of all products tested this month and ranked in this chart.

BASE CONFIGURATION						Extra features ¹	Overall design	Battery life (hours:min) ²	Average weight (pounds) ³	Vendor's reliability/service
CPU ²	Screen (inches)	RAM (MB)	Hard drive ³	Pointing device	Multi-purpose bays					
1.2-GHz Pentium III-M	15	256	48	Eraserhead	2	Very good: 6X DVD-ROM and 4X/4X/24X CD-RW combination drive, built-in modem and network adapter, Lotus SmartSuite	Outstanding	Average/ 2:19	Heavy/ 8.5	Good/Fair
1.2-GHz Pentium III-M	14.1	256	20	Touchpad, eraserhead	2	Very good: 8X DVD-ROM and 8X/8X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Office XP SBE 2002	Very good	Average/ 2:58	Heavy/ 8.1	Good/Fair
1.2-GHz Pentium III-M	15.7	512	40	Touchpad	1	Very good: 6X DVD-ROM and 4X/4X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works Suite 2002	Very good	Good/ 3:29	Heavy/ 9.3	Fair/Fair
1.13-GHz Pentium III-M	15	256	30	Touchpad, eraserhead	1	Good: 8X DVD-ROM and 8X/8X/24X CD-RW combination drive, built-in modem and network adapter	Very good	Good/ 3:00	Heavy/ 9.1	Good/Fair
1.13-GHz Pentium III-M	15	256	30	Touchpad, eraserhead	1	Good: 8X DVD-ROM drive, built-in modem and network adapter	Outstanding	Very good/ 3:58	Average/ 7.8	Good/Fair
1.2-GHz Pentium III-M	14.1	256	30	Touchpad, eraserhead	1	Good: 8X DVD-ROM and 8X/8X/24X CD-RW combination drive, built-in modem and network adapter	Very good	Good/ 3:05	Light/ 6.7	Fair/Poor
1.13-GHz Pentium III-M	14.1	256	30	Eraserhead	1	Very good: 8X DVD-ROM and 8X/4X/24X CD-RW combination drive, built-in modem and network adapter	Very good	Good/ 3:04	Average/ 7.1	Good/Fair
5 percent						10 percent	10 percent	5 percent	10 percent	25 percent
1-GHz Pentium III-M	14.1	256	20	Touchpad	1	Very good: 8X DVD-ROM and 8X/4X/24X CD-RW combo drive, built-in modem and network adapter, Office XP SBE 2002	Outstanding	Good/ 3:05	Average/ 7.4	Fair/ ¹
1-GHz Pentium III-M	14.1	256	20	Touchpad, eraserhead	1	Good: 8X DVD-ROM and 8X/8X/24X CD-RW combination drive, built-in modem and network adapter	Very good	Very good/ 3:56	Average/ 7.8	Good/Fair
1.13-GHz Pentium III-M	14	256	30	Touchpad	1	Good: 8X DVD-ROM and 8X/8X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works Suite 2002	Very good	Very good/ 4:01	Average/ 7.4	Fair/Fair
1-GHz Pentium III	14.1	256	30	Eraserhead	1	Good: 8X/4X/24X CD-RW drive, built-in modem and network adapter, Lotus SmartSuite	Outstanding	Average/ 2:22	Light/ 6.7	Good/Fair
1.2-GHz Pentium III-M	15	256	40	Eraserhead	1	Good: 8X DVD-ROM and 8X/4X/24X CD-RW combination drive, built-in modem and network adapter	Very good	Good/ 3:04	Average/ 7.7	Good/Fair
1-GHz Pentium III-M	14.1	256	20	Touchpad	1	Good: 6X DVD-ROM and 4X/4X/24X CD-RW combination drive, built-in modem and network adapter	Average	Good/ 3:13	Average/ 6.8	Fair/Poor
1.1-GHz Pentium III ⁴	15	512	30	Touchpad	0	Good: 8X DVD-ROM and 8X/4X/24X CD-RW combination drive, built-in modem and network adapter, Lotus SmartSuite	Very good	Poor/ 1:47	Heavy/ 8.7	Good/Fair
1-GHz Pentium III	14.1	128	30	Touchpad	0	Good: 8X DVD-ROM and 8X/8X/24X CD-RW combination drive, built-in modem and network adapter	Average	Good/ 3:18	Average/ 7.7	Good/ ¹
5 percent						10 percent	10 percent	5 percent	10 percent	25 percent

¹ Word score reflects both listed and unlisted features.

² Unless otherwise noted, all notebooks come with a lithium ion battery.

³ Includes computer, AC adapter, power cord, floppy drive, and optical drive.

⁴ Insufficient data to give a rating.

⁵ Single-speed desktop CPU.

Elsewhere on the value list, the 1.13-GHz Pentium III-M version of the Gateway Solo 5350ls, a modest business machine, lands in third place. If you prefer eraserhead pointing devices to touchpads, you might consider the \$2199 Toshiba Satellite Pro 6000, in fifth place.

On the power chart, where the IBM ThinkPad A30p maintains its iron grip on the top spot, a 1.2-GHz Pentium III-M

version of Gateway's huge, well-equipped desktop replacement, the Solo 9550xl, captures third place.

Compaq's 5.2-pound (minus add-ons) Evo N600c grabs sixth place. At \$2799, the N600c is somewhat pricey, but its dual pointing devices and optional wireless module (a silver, lid-mounted USB unit) might endear it to companies looking for a laptop with extra flexibility. ▶



COMPAQ'S EVO N600C has a USB port on its lid for attaching a wireless module.

TOP 15 HOME PCs

	POWER SYSTEM	Overall rating	Street price (3/15/02)	PC WorldBench 4 performance score ¹	Comments
1	Best Buy MicronPC Millennia XP+ Xtreme find.pcworld.com/25103 NEW	96	Average \$2589	Windows XP Home Outstanding 123	One of the fastest systems we've seen includes the latest graphics card. Comes with an extensive system manual. (★★★★★)
2	Dell Dimension 8200 find.pcworld.com/19883	96	Average \$2498	Windows XP Home Good 113	Top-notch entertainment PC has powerful sound. Its monitor is stunning on movies and games, but text is fuzzy. Drops \$359. (★★★★★ Apr 02)
3	Gateway 700XL find.pcworld.com/20681	95	Expensive \$2999	Windows XP Home Very good 118	Model comes well stocked for video or image editing. The sound system is powerful, and the LCD monitor is sharp. (★★★★★ Apr 02)
4	Compaq Presario 8000Z find.pcworld.com/19221	87	Average \$2351	Windows XP Home Good 116	Well-equipped system comes with everything you need to edit and burn home movies on DVD. (★★★★★ Mar 02)
5	HP Pavilion 950 Athlon find.pcworld.com/23062	86	Average \$2773	Windows XP Home Good 116	Impressive model sports four front ports, including IEEE 1394, and an interior packed full of high-end components. (★★★★★ May 02)
6	Sony VAIO PCV-RX690G find.pcworld.com/25104 NEW	85	Average \$2849	Windows XP Home Good 114	Sony's decked-out multimedia system is set up for music, movies, and TV. Doesn't have a top-of-the-line graphics card, however. (★★★★★)
7	Alienware Aurora DDR AMD XP 2000 find.pcworld.com/23061	83	Expensive \$3137	Windows XP Home Outstanding 124	This PC has blazing speed, a large display, and rich sound. It includes loads of storage space, but it's pricey. (★★★★★ May 02)
VALUE SYSTEM		Percent of overall rating ▶	10 percent	25 percent	
1	Best Buy Gateway 500XL find.pcworld.com/19884	95	Average \$1219	Windows XP Home Very good 100	This Gateway comes nicely packaged with an easy-access case and an LCD monitor. Price drops \$180. (★★★★★ Apr 02)
2	Dell Dimension 4400 find.pcworld.com/19882	92	Average \$1488	Windows XP Home Good 97	Dell's midrange PC is fairly fast and includes two optical drives. Images on its 17-inch monitor looked faded. (★★★★★ Apr 02)
3	Dell Dimension 2200 find.pcworld.com/25101 NEW	92	Very inexpensive \$829	Windows XP Home Good 92	Dell's new entry-level system is reasonably powerful and contains a fast CD-RW drive. (★★★★★)
4	Polywell Poly 880NF find.pcworld.com/19901	87	Average \$1350	Windows XP Home Outstanding 115	Fastest value system even rivals some power contenders. Comes with an LCD monitor, as well. (★★★★★ Apr 02)
5	NuTrend Intrepid SE find.pcworld.com/17301	84	Inexpensive \$1099	Windows XP Home Very good 103	A low-cost but high-performance value PC with nice extra features. Monitor quality is unimpressive, however. (★★★★★ Feb 02)
6	Sony VAIO PCV-RX640 find.pcworld.com/25102 NEW	80	Inexpensive \$999	Windows XP Home Good 91	A bargain-priced multimedia machine, this model includes tons of software for editing images and video. (★★★★★)
7	Gateway 300C find.pcworld.com/23043	76	Very inexpensive \$689	Windows XP Home Average 87	Two front USB 1.1 ports and adequate Celeron performance for a bargain price, but 15-inch CRT monitor's images are poor. (★★★★★ May 02)
8	Polywell Poly 1000DU find.pcworld.com/15114	72	Average \$1250	Windows XP Home Good 93	System squeezes impressive performance from a low-cost processor and includes a variety of extras. (★★★★★ Dec 01)
		Percent of overall rating ▶	20 percent	20 percent	

Go to find.pcworld.com/10860 for details on PC World's Star Ratings.

¹ Performance word scores reflect comparisons of PCs in the same category (power or value) running the same operating system. For more details, see "Your Guide to the Top 100" on page 125.

² In gigabytes.

³ Vertical cases are towers (over 20 inches), midsize towers (15.5 to 20 inches), or minitowers (under 15.5 inches). Horizontal cases are desktops (5 inches or taller) or compacts (under 5 inches). All-in-one PCs integrate a system and a monitor.

MICRONPC EARNS THE POWER Best Buy this month with its new Millennia XP+ Xtreme, which zoomed to a PC WorldBench 4 score of 123—second-fastest on the chart. The system includes high-end components, such as a 120GB hard drive, a DVD-RW drive, and a GeForce4 graphics card with 128MB of RAM. The Millennia XP+ Xtreme also has terrific documentation: Unlike some other home PCs, it ships with a thick system manual with illustrations and troubleshooting information.

The Dell Dimension 2200 debuts at number three on our value chart. Designed for home offices, the system comes with a 1.3-GHz Celeron processor and 256MB of RAM, and it includes Microsoft Works Suite 2002. Even though it has an affordable \$829 price, it still comes with a speedy 24X/10X/40X CD-RW drive, and its Dell E771P 17-inch monitor displays text and images well.

Visit find.pcworld.com/25121 for reviews of all products tested this month and ranked in this chart.

BASE CONFIGURATION						Extra features	Graphics/ sound quality	Setup and ease of use	Vendor's reliability/ service
CPU	RAM (MB/type)	Hard drive ²	Monitor (inches)	Graphics	Case type ³				
1.67-GHz Athlon XP 2000+	512/ DDR SDRAM	120	19	128MB GeForce4 Ti 4600 AGP	Midsize tower	Good: DVD-RW drive,* V.90 modem, network adapter, Pinnacle Studio 7	Very good/ Very good	Very good	Fair/ Fair
2.2-GHz Pentium 4	256/ RDRAM	80	19	64MB GeForce3 Ti 500	Midsize tower	Good: 16X DVD-ROM drive, 24X/10X/40X CD-RW drive, V.90 modem, network adapter, Microsoft Works Suite 2002	Very good/ Outstanding	Very good	Outstanding/ Good
2.2-GHz Pentium 4	512/ RDRAM	120	15 (LCD)	64MB ATI Radeon 8500	Midsize tower	Outstanding: DVD-RAM/R drive,* 24X/10X/40X CD-RW drive, V.92 modem, network adapter, two USB 2.0 ports, Microsoft Office XP Small Business Ed.	Very good/ Good	Very good	Fair/ Fair
1.53-GHz Athlon XP 1800+	512/ DDR SDRAM	120	19	64MB GeForce3 Ti 500	Midsize tower	Good: DVD-RW drive,* 24X-48X CD-ROM drive, V.90 modem, network adapter, Microsoft Works 6 and Money 2000 Standard	Very good/ Outstanding	Very good	Fair/ Poor
1.67-GHz Athlon XP 2000+	1024/ DDR SDRAM	80	15 (LCD)	64MB GeForce3 Ti 500	Midsize tower	Very good: DVD-RW drive,* 16X DVD-ROM drive, V.92 modem, network adapter; Microsoft Works, Encarta, and Money; Pinnacle Studio 7	Good/ Very good	Good	Fair/ Poor
2.2-GHz Pentium 4	512/ RDRAM	120	19	64MB GeForce2 Ti	Minitor	Very good: DVD-RW drive,* 16X DVD-ROM drive, V.90 modem, network adapter, Sony Memory Stick media slot, Giga Pocket Personal Video Recorder	Very good/ Average	Good	Good/ ⁵
1.67-GHz Athlon XP 2000+	512/ DDR SDRAM	100	19	64MB GeForce3 Ti 500	Tower	Good: 16X DVD-ROM drive, 24X/10X/40X CD-RW drive, V.90 modem, network adapter, Plantronics LS-1 headphones, game pad, joystick, Works Suite 2002	Very good/ Outstanding	Good	*/ ⁵
10 percent						10 percent	15 percent	5 percent	25 percent
1.8-GHz Pentium 4	256/ DDR SDRAM	40	15 (LCD)	64MB GeForce2 MX400	Minitor	Very good: 16X DVD-ROM drive, 16X/10X/40X CD-RW drive, V.92 modem, network adapter, Microsoft Works Suite 2002	Very good/ Average	Very good	Fair/ Fair
1.7-GHz Pentium 4	256/ DDR SDRAM	40	17	64MB GeForce3 Ti 200	Midsize tower	Very good: 16X DVD-ROM drive, 24X/10X/40X CD-RW drive, V.90 modem, network adapter, Microsoft Works Suite 2002	Good/ Average	Very good	Outstanding/ Good
1.3-GHz Celeron	256/ SDRAM	20	17	Integrated Intel 810 *	Minitor	Good: 24X/10X/40X CD-RW drive, V.92 modem, network adapter, Microsoft Works Suite 2002	Poor/ Average	Good	Outstanding/ Good
1.4-GHz Athlon XP 1600+	256/ DDR SDRAM	80	15 (LCD)	32MB integrated GeForce2 MX	Midsize tower	Very good: 16X DVD-ROM drive, 16X/10X/40X CD-RW drive, V.90 modem, network adapter, Lotus SmartSuite Millennium Edition	Good/ Poor	Good	*/ ⁵
1.7-GHz Pentium 4	256/ DDR SDRAM	40	17	32MB VisionTek Xtasy 5332	Midsize tower	Very good: 16X DVD-ROM drive, 24X/10X/40X CD-RW drive, V.92 modem, network adapter, Corel WordPerfect Office 2002	Good/ Very good	Good	*/ ⁵
1.3-GHz Celeron	256/ SDRAM	60	17	Integrated Intel 815E *	Minitor	Good: 16X DVD-ROM drive, 16X/10X/40X CD-RW drive, V.90 modem, network adapter, multimedia software	Poor/ Average	Good	Good/ ⁵
1.3-GHz Celeron	128/ SDRAM	20	15	Integrated Intel 815EP *	Minitor	Good: 16X/10X/40X CD-RW drive, V.92 modem, network adapter, Microsoft Works Suite 2002	Poor/ Average	Very good	Fair/ Fair
1-GHz Duron	128/ DDR SDRAM	40	19	32MB Matrox Millennium G450	Midsize tower	Very good: 16X DVD-ROM drive, 16X/10X/40X CD-RW drive, V.90 modem, network adapter, Lexmark 253 Color Jetprinter, Logitech Webcam	Good/ Very good	Average	*/ ⁵
10 percent						10 percent	10 percent	5 percent	25 percent

* DVD-RW and DVD+RW drives can handle CD-RW functions; DVD-RAM/R drives cannot. DVD+RW drives cannot record DVD-R discs.

² Insufficient data to give a rating.
³ Uses main memory.

Sony has two new multimedia systems on our chart, one on each side. At \$2849, the VAIO PCV-RX690G lands in sixth on our power list; it packs the latest 2.2-GHz Pentium 4 processor, a DVD-RW drive, and a 19-inch Trinitron monitor. Sony also throws in a Memory Stick media slot, for those who use its flash-storage cards, and a Giga Pocket Personal Video Recorder, which lets you record TV shows as

you watch, save them to the PC's huge hard drive, or burn them to DVDs. Sony's low-priced model, the PCV-RX640, hits number six on the value side. It trades in the DVD-RW drive for a 16X/10X/40X CD-RW drive, and it lacks the Memory Stick slot and the TV recorder. But its 1.3-GHz Celeron processor helped it earn an adequate PC WorldBench 4 score of 91, and at \$999, the price is great. ▶



SONY'S VAIO PCV-RX690G has a multitude of multimedia options in a modern design.

TOP 10 PRINTERS

Visit find.pcworld.com/23981 for reviews of all products tested this month and ranked in this chart.

THIS MONTH, SAMSUNG's new ML-1450 grabs the number two spot on the SOHO monochrome laser chart; the easy-to-install unit earned points for its paper handling capability and output quality. Two other new models failed to place: The \$500 Brother HL-1470N costs more than the average SOHO

unit, though it is network ready with built-in ethernet. IBM's new Infoprint 1116 is a breeze to set up, but it too is a bit expensive at \$426. On the corporate side, Brother discontinued the HL-1670N, enabling the new Minolta-QMS PagePro 9100 N to hop onto the chart at number five. ▶

	SMALL-OFFICE LASER	Street price (3/25/02)	Overall rating	Speed for plain text/full-page graphics (ppm)	Print quality for text/graphics	Comments
1	Best Buy Brother HL-1440 find.pcworld.com/11581	\$299	81	11.2/5.3	Very good/ Very good	FEATURES: Rated 15 ppm. Standard 2MB of RAM, 1200-by-600-dpi maximum resolution, 250 sheets input, 150 output. SUMMARY: Brother's HL-1440 delivered quick performance and smooth gray-scale output. Its RAM is expandable to 34MB, and an ethernet card (available for another \$299) makes the unit suitable for a small workgroup. (★★★★☆ Oct 01)
2	Samsung ML-1450 find.pcworld.com/24241 NEW	\$299	81	10.4/4.8	Very good/ Good	FEATURES: Rated 15 ppm. Standard 4MB of RAM, 1200-by-600-dpi maximum resolution, 650 sheets input, 350 output. SUMMARY: This nicely designed printer provides a greater paper capacity than any other model competing for the SOHO chart. The unit excelled at printing text and lines, and it can magnify documents into 6-page-by-6-page poster format. (★★★★☆)
3	Lexmark E320 find.pcworld.com/17421	\$299	80	12.8/6.0	Very good/ Adequate	FEATURES: Rated 16 ppm. Standard 4MB of RAM, 1200-by-600-dpi maximum resolution, 150 sheets input, 100 output. SUMMARY: The E320 printed both text and graphics faster than any other SOHO printer on our chart, and its price is competitive. But while text looked crisp and even, gray-scale images were too dark and lost detail. (★★★★☆ Feb 02)
4	HP LaserJet 1000 find.pcworld.com/17404	\$249	78	9.0/5.5	Very good/ Good	FEATURES: Rated 10 ppm. Standard 1MB of RAM, 1200-by-600-dpi maximum resolution, 250 sheets input, 125 output. SUMMARY: Though its price ties for lowest on the SOHO chart, this model posted midpack speed scores. The USB connector is a kludgy adapter that plugs into the parallel port, but prints looked clean and showed good detail and contrast. (★★★★☆ Feb 02)
5	Samsung ML-1250 find.pcworld.com/17401	\$249	78	9.8/4.0	Very good/ Good	FEATURES: Rated 12 ppm. Standard 4MB of RAM, 1200-by-600-dpi maximum resolution, 150 sheets input, 100 output. SUMMARY: In addition to having an attractive price, this Samsung offers easy-to-use controls; clear, thorough documentation; and support for Linux. But it printed our test graphic rather sluggishly, and narrow lines showed some banding. (★★★★☆ Feb 02)
CORPORATE LASER						
1	Best Buy Xerox DocuPrint N2125 find.pcworld.com/11600	\$1299	84	11.7/3.7	Very good/ Very good	FEATURES: Rated 21 ppm. Standard 32MB of RAM, 1200-by-1200-dpi maximum resolution, 650 sheets input, 500 output. SUMMARY: Detailed prints, lots of paper-handling features, and a standard ethernet interface make the N2125 ideal for larger workgroups. You can add two optional trays (each priced at \$298) to increase the capacity of this workhorse laser to 1750 sheets.
2	Samsung ML-1651N find.pcworld.com/17402	\$499	81	10.8/4.3	Very good/ Adequate	FEATURES: Rated 17 ppm. Standard 16MB of RAM, 1200-by-1200-dpi maximum resolution, 650 sheets input, 250 output. SUMMARY: The least-expensive networked printer on the chart—and \$151 cheaper this month—the ML-1651N is fast enough for small workgroups but not for larger offices. Anyone at the printer can reprint the previous job—a security risk in workgroups. (★★★★☆ Feb 02)
3	HP LaserJet 4100N find.pcworld.com/11661	\$1550	80	13.6/4.5	Excellent/ Good	FEATURES: Rated 25 ppm. Standard 32MB of RAM, 1200-by-1200-dpi maximum resolution, 600 sheets input, 300 output. SUMMARY: An optional infrared port, supplementing the 4100N's standard ethernet, allows notebook users to print directly from their laptops. This unit blazed through our speed tests, and it reproduced text superbly. The price is steep, though.
4	Lexmark T522dn find.pcworld.com/18342	\$1549	80	15.0/6.0	Very good/ Good	FEATURES: Rated 25 ppm. Standard 32MB of RAM, 1200-by-1200-dpi maximum resolution, 600 sheets input, 250 output. SUMMARY: One of the fastest printers on the chart, the T522dn flies when printing graphics. You can add a 2000-sheet tray and an envelope feeder. A version without the built-in duplex-er costs \$250 less. (★★★★☆ Oct 2001)
5	Minolta-QMS PagePro 9100 N find.pcworld.com/25861 NEW	\$1499	79	16.7/2.9	Very good/ Very good	FEATURES: Rated 35 ppm. Standard 64MB of RAM, 1200-by-1200-dpi maximum resolution, 700 sheets input, 500 output. SUMMARY: The 9100 N has a generous amount of standard memory and produced very good text, line, and gray-scale output in our tests. Its five-paper-tray capacity and standard ethernet interface suit the unit for large workgroups. (★★★★☆)

HOW WE TEST: The overall rating for monochrome laser printers is based on print quality (25 percent), price (25 percent), features (15 percent), ease of use (15 percent), speed (10 percent), and service and support (10 percent). For all ratings, higher is better. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. See find.pcworld.com/10860 for details on PC World's Star Ratings.

TOP 10 MONITORS

TOP 100

TEST
Center

Visit find.pcworld.com/25421 for reviews of all products tested this month and ranked in this chart.

HIGH DEMAND HAS PUSHED THE cost of LCD flat-panel monitors up from their record lows of last year, but the prices of the new models here are lower on the whole than those we saw in August 2001 (our last comparison of 15-inch LCD monitors). NEC Mitsubishi takes the number one spot with

its MultiSync LCD1550X, whose outstanding scores on our graphics and text display tests elevated it to the top of the list. The other Best Buy award goes to Sharp's LL-T15V1, an attractively priced monitor that earned high scores for both text and graphics, although it lacks a digital input. ▶

	15-INCH LCD MONITOR	Street price (3/25/02)	Overall rating	Quality of text/graphics	Comments
1	Best Buy NEC MultiSync LCD1550X find.pcworld.com/24881	\$515	94	Outstanding/ Outstanding	FEATURES: 15-inch viewable area, 13.6 by 7.9 by 14.9 inches, ¹ 13.2 pounds, dual video input, ² three-year warranty, 24-hour daily toll-free tech support; LiquidView software. SUMMARY: Image quality for both text and graphics was extremely good, but it comes at a price: This is the second-most-expensive monitor on the chart. The panel pivots to portrait mode. (★★★★★)
2	Best Buy Sharp LL-T15V1 find.pcworld.com/24921	\$399	88	Very good/ Very good	FEATURES: 15-inch viewable area, 13.3 by 7.4 by 12.7 inches, ¹ 7.5 pounds, analog video input, three-year warranty, 24-hour daily toll-free tech support; Sharp setup utility software. SUMMARY: This unit doesn't come with a digital input, but it does provide very strong image quality and a stylish design. The price is also attractive: This is one of the less-expensive monitors on the chart. (★★★★☆)
3	CTX PV520A find.pcworld.com/24841	\$425	87	Very good/ Good	FEATURES: 15-inch viewable area, 15.1 by 6.7 by 14.8 inches, ¹ 12.5 pounds, analog video input, three-year warranty, 12-hour weekday toll-free tech support; PivotPro software. SUMMARY: The monitor lacks a digital interface, and its image quality was not as impressive as that of the Sharp or the NEC. It has removable speakers that deliver rather weak sound. Pivoting the monitor to portrait mode is easy. (★★★★☆)
4	Iiyama Pro Lite 3835UT find.pcworld.com/24801	\$549	87	Outstanding/ Very good	FEATURES: 15-inch viewable area, 13.5 by 8.5 by 13.5 inches, ¹ 13.2 pounds, dual video input, ² three-year warranty, 10-hour weekday toll-free tech support; PivotPro software. SUMMARY: This model scores higher for text than the top-ranked NEC, and ranks a close second on graphics, but it is the most expensive monitor on the chart. The panel pivots to portrait mode and includes a four-port USB 1.1 hub. (★★★★★)
5	Hewlett-Packard L1520 find.pcworld.com/24783	\$465	85	Very good/ Very good	FEATURES: 15-inch viewable area, 13.9 by 8.2 by 14.9 inches, ¹ 10.3 pounds, dual video input, ² three-year warranty, 24-hour daily toll-free tech support; PivotPro software. SUMMARY: Well-organized on-screen menu permits easy adjustments. The monitor comes with both analog and digital video inputs, and it is the only model here to come with cables for both types of video connection. (★★★★☆)
6	Eizo Nanao FlexScan L365 find.pcworld.com/24901	\$510	85	Very good/ Very good	FEATURES: 14.9-inch viewable area, 13.4 by 6.2 by 14.5 inches, ¹ 9 pounds, dual video input, ² three-year warranty, 8-hour weekday toll-free tech support; Eizo LCD utility software. SUMMARY: The black-on-black button labels on the bezel give the monitor a clean, stylish look, but they are difficult to read. However, the excellent on-screen menu makes setup easy. (★★★★★)
7	ADI A600 find.pcworld.com/24941	\$369	83	Very good/ Good	FEATURES: 15-inch viewable area, 15.2 by 7 by 15.6 inches, ¹ 10.7 pounds, analog video input, three-year warranty, 12-hour weekday toll-free tech support. SUMMARY: The monitor case is larger than those of other 15-inch LCDs but is the only one not to require an external power block. This is also the cheapest monitor on the chart. It provides above-average image quality, but no digital input. (★★★★☆)
8	Samsung SyncMaster 570vTFT find.pcworld.com/24961	\$390	80	Good/ Good	FEATURES: 15-inch viewable area, 15.2 by 6.6 by 14.4 inches, ¹ 12.6 pounds, analog video input, three-year warranty, 24-hour daily toll-free tech support. SUMMARY: Elegant design, reasonable image quality, and an attractive price, but monitor has no digital interface or software. A useful option is a USB hub that adds four USB 1.1 ports and that fits in the base. (★★★★☆)
9	Benq FP581 find.pcworld.com/24981	\$394	77	Good/ Average	FEATURES: 15-inch viewable area, 14.5 by 13.1 by 7.9 inches, ¹ 12 pounds, analog video input, three-year warranty, 24-hour daily toll-free tech support; i-key calibration software. SUMMARY: This monitor includes a built-in folding base that doubles as a carrying handle, as well as speakers that produce tinny sound. There is no digital interface, and the panel cannot be rotated or raised. (★★★☆☆)
10	ViewSonic VE155 find.pcworld.com/24861	\$399	76	Good/ Average	FEATURES: 15-inch viewable area, 14 by 7.9 by 13.5 inches, ¹ 8.1 pounds, analog video input, three-year warranty, 24-hour daily toll-free tech support; ColorMatch software. SUMMARY: The unit has no digital interface and showed lackluster image quality, but it offers stylish looks, an excellent on-screen menu, a pleasing price, and software for matching on-screen colors to printouts. (★★★★☆)

HOW WE TEST: Twelve judges rate a monitor's text and graphics quality at the native resolution of 1024 by 768. We evaluate each unit on how well it displays typical business letters, spreadsheets, Web pages, and scanned photos. The overall rating is based on text and graphics quality (25 percent each), price (20 percent), features and ease of use (20 percent), and service and support (10 percent). The best possible overall rating is 100. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. See find.pcworld.com/10860 for details on PC World's Star Ratings. All monitors are TCO '99-compliant unless otherwise indicated. ¹ Includes base. ² Includes both digital (DVI) and analog inputs. The digital input must be used with a graphics card that has a digital output.

TOP 10 PDAs

Visit find.pcworld.com/26041 for reviews of all products tested this month and ranked in this chart.

FOLLOWING UP OUR APRIL comparison of PDAs, here is our first Top 10 PDAs chart; look for regular updates in the future. We tested four new models this month, and all joined the Top 10. Casio's Cassiopeia E-200 takes first place in the advanced PDAs section, while the HandEra 330 retains top

honors among basic PDAs, thanks to its superior screen and expansion options. Palm's M515 and Sony's Clie PEG-T615C join the advanced ranks at numbers two and four, respectively, and the Clie PEG-S360 and Palm M130 capture spots in the basic chart, finishing in second and fifth place. ▶

	ADVANCED PDAs	Street price (4/1/02)	Overall rating	Features/Ease of use	Comments
1	Best BUY Casio Cassiopeia E-200 find.pcworld.com/21585	\$545	98	Outstanding/Outstanding	FEATURES: Pocket PC 2002 operating system, 64MB internal memory, 2.7-by-2.2-inch active screen area, 240-by-320-pixel resolution, Secure Digital card and CompactFlash expansion slots, removable lithium ion battery, 6.7 ounces. SUMMARY: Reigning Best Buy boasts a backup battery; bright, clear screen; and plenty of memory. (★★★★☆ Apr 02)
2	Palm M515 find.pcworld.com/26021	NEW \$340	95	Limited/Good	FEATURES: Palm OS 4.1, 16MB internal memory, 2.3-by-2.3-inch active screen area, 160-by-160-pixel resolution, Secure Digital card expansion slot, lithium ion battery, 4.9 ounces. SUMMARY: Has a top-flight color screen that's easy to read in all lighting conditions, including direct sunlight. It also has an SD card slot for adding more memory or other devices. (★★★★☆)
3	Compaq iPaq Pocket PC H3850 find.pcworld.com/21586	\$555	94	Good/Very good	FEATURES: Pocket PC 2002 OS, 64MB internal memory, 3-by-2.3-inch active screen area, 240-by-320-pixel resolution, Secure Digital card expansion slot, lithium polymer battery, 6.7 ounces. SUMMARY: The biggest screen we've seen; but unlike on many other Pocket PC PDAs, there is no CompactFlash expansion slot. (★★★★☆ Apr 02)
4	Sony Clie PEG-T615C find.pcworld.com/25981	NEW \$370	93	Limited/Average	FEATURES: Palm OS 4.1, 16MB internal memory, 2.2-by-2.2-inch active screen area, 320-by-320-pixel resolution, Memory Stick expansion slot, lithium ion battery, 4.9 ounces. SUMMARY: Very thin and light and with a good screen, but relatively few Memory Stick expansion devices are available. Can be used as a digital audio player with the \$130 audio adapter kit. (★★★★☆)
5	HP Jornada 565 find.pcworld.com/21583	\$529	92	Good/Average	FEATURES: Pocket PC 2002 OS, 32MB internal memory, 2.7-by-2.3-inch active screen area, 240-by-320-pixel resolution, CompactFlash expansion slot, removable lithium ion battery, 6.1 ounces. SUMMARY: Good battery life and stylish design, plus a built-in cover and backup battery, but not as much memory as the Compaq or the Casio. (★★★★☆ Apr 02)
BASIC PDAs					
1	Best BUY HandEra 330 find.pcworld.com/21564	\$275	96	Outstanding/Very good	FEATURES: Palm OS 3.5.2, 8MB internal memory, 2.9-by-2.2-inch active screen area, 240-by-320-pixel resolution, Secure Digital card and CompactFlash expansion slots, four AAA batteries, 5.9 ounces. SUMMARY: Larger than most PDAs, but includes plenty of expansion options and an easy-to-read, high-resolution screen. (★★★★☆ Apr 02)
2	Handspring Visor Neo find.pcworld.com/21563	\$160	95	Average/Average	FEATURES: Palm OS 3.5.2, 8MB internal memory, 2.2-by-2.2-inch active screen area, 160-by-160-pixel resolution, Springboard expansion slot, two AAA batteries, 5.4 ounces. SUMMARY: Very reasonable cost, but expansion options for the Springboard expansion slot are more expensive than comparable CompactFlash cards. Price drops by \$39 this month. (★★★★☆ Apr 02)
3	Sony Clie PEG-S360 find.pcworld.com/25961	NEW \$185	93	Average/Limited	FEATURES: Palm OS 4.0, 16MB internal memory, 2-by-2-inch active screen area, 160-by-160-pixel resolution, Memory Stick expansion slot, lithium ion battery, 4.3 ounces. SUMMARY: A very small and thin PDA with a simple, elegant design, but it comes with a syncing cable; the cradle costs an extra \$60. A limited range of Memory Stick devices are available. (★★★★☆)
4	Handspring Visor Pro find.pcworld.com/21562	\$220	90	Average/Average	FEATURES: Palm OS 3.5.2, 16MB internal memory, 2.2-by-2.2-inch active screen area, 160-by-160-pixel resolution, Springboard expansion slot, lithium ion battery, 5.7 ounces. SUMMARY: An enhanced version of the number two Neo with double the memory and a rechargeable battery. Includes a snap-on cover and a USB syncing cradle. (★★★★☆ Apr 02)
5	Palm M130 find.pcworld.com/26002	NEW \$275	88	Average/Good	FEATURES: Palm OS 4.1, 8MB internal memory, 1.7-by-1.7-inch active screen area, 160-by-160-pixel resolution, Secure Digital card expansion slot, lithium ion battery, 5.4 ounces. SUMMARY: Reasonably priced and comes with a bright color screen, but the screen is not easy to read in daylight. Also includes rechargeable batteries. (★★★★☆)

HOW WE TEST: Overall ratings for PDAs are based on price (40 percent for advanced PDAs; 45 percent for basic PDAs), ease of use and documentation (20 percent), features (35 percent for advanced; 30 percent for basic), and warranty and support (5 percent). See find.pcworld.com/10860 for details on PC World's star ratings. * The area where information can be displayed, excluding any fixed area for inputting.

TOP 10 CD-RW DRIVES

TOP 100

TEST
Center

Visit find.pcworld.com/26581 for reviews of all products tested this month and ranked in this chart.

ONLY THREE MONTHS AGO, CD-RW DRIVES were topping out at 24X for CD-R writes. Now we're beginning to see the first 40X/12X/48X units; two that we reviewed, Lite-On's 40x12x48 CD-RW and Buslink's RW4048, both make the chart. We also evaluated a new 32X/10X/40X model from LG

Electronics and a 32X/12X/40X drive from Buslink, which grab the number three and number four spots, respectively.

Increases in CD-RW drive speeds will continue apace, as models that write to CD-R at 48X are on the way. Look for those to be reviewed by *PC World* in the near future. ▶

	CD-RW DRIVE	Street price (3/28/02)	Overall rating	Performance/support policies	CD-R write speed for 650MB/ CD-RW write speed for 100MB (min:sec)	Comments
1	Best Buy TDK VeloCD 32/10/40 find.pcworld.com/24041	\$145	89	Very good/ Outstanding	3:36/1:18	FEATURES: 32X/10X/40X, IDE, internal, 4MB buffer, Ahead Nero Burning ROM 5.5 and InCD 3.14, one-year warranty, 10.5-hour daily toll-free support. SUMMARY: Fast CD-R write speeds and sixth overall in performance. Excellent documentation and toll-free technical support keep this drive at number one. (★★★★☆ May 02)
2	Best Buy Lite-On CD-ReWriter 32x12x40x find.pcworld.com/21802	\$100	85	Very good/ Average	3:43/1:06	FEATURES: 32X/12X/40X, IDE, internal, 2MB buffer, Ahead Nero Burning ROM 5.5 and InCD 3.12, one-year warranty, 9-hour weekday support (calls are not toll-free). SUMMARY: Inexpensive, and ties with the CenDyne model for fastest CD-RW write speed; however, the drive has lackluster documentation and meager tech support. (★★★★☆ Apr 02)
3	LG Electronics GCE-8320B find.pcworld.com/25444 NEW	\$125	84	Very good/ Very good	3:39/1:21	FEATURES: 32X/10X/40X, IDE, internal, 8MB buffer, Roxio Easy CD Creator 5.1 and DirectCD 5.1, one-year warranty, 13-hour weekday and 8-hour Saturday toll-free support. SUMMARY: Fast CD-R write speed, but the second slowest CD-RW packet writing among 10X-rated drives. Excellent manuals provided for both drive and software. (★★★★☆)
4	Buslink RW3240 find.pcworld.com/25443 NEW	\$130	81	Outstanding/ Poor	3:38/1:07	FEATURES: 32X/12X/40X, IDE, internal, 2MB buffer, Ahead Nero Burning ROM 5.5 and InCD 3.2, one-year warranty, 8.5-hour weekday support (calls are not toll-free). SUMMARY: This model offers fast digital audio extraction and CD-RW write speeds, but it has skimpy documentation and tech support hours. (★★★★☆)
5	Lite-On 40x12x48 CD-RW find.pcworld.com/25442 NEW	\$130	80	Outstanding/ Average	3:25/1:09	FEATURES: 40X/12X/48X, IDE, internal, 2MB buffer, Ahead Nero Burning ROM 5.5 and InCD 3.2, one-year warranty, 9-hour weekday support (calls are not toll-free). SUMMARY: Though this drive produced the best digital audio extraction time we've seen, it has a slim software bundle and skinny documentation. (★★★★☆)
6	CenDyne Lightning II CD-RW 32x12x40 find.pcworld.com/24062	\$165	79	Very good/ Average	3:41/1:06	FEATURES: 32X/12X/40X, IDE, internal, 2MB buffer, Ahead Nero Burning ROM 5.5 and InCD 3.12, one-year warranty, 9-hour weekday and 4-hour Saturday support (calls are not toll-free). SUMMARY: You pay substantially more than for the similar number two Lite-On for marginally better technical support and documentation. (★★★★☆ May 02)
7	Yamaha CRW3200 LightSpeed3 find.pcworld.com/19461	\$175	78	Good/ Average	4:09/1:16	FEATURES: 24X/10X/40X, IDE, internal, 8MB buffer, Ahead Nero Burning ROM 5.5 and InCD 2.31 one-year warranty, 9-hour weekday toll-free support. SUMMARY: Solid performance and an excellent software bundle (including Adobe Photo Deluxe 4) help keep this drive competitive on the chart, despite its high price. (★★★★☆ Mar 02)
8	QPS Que Internal 32x10x40x CD-RW find.pcworld.com/24063	\$150	77	Very good/ Average	3:37/1:19	FEATURES: 32X/10X/40X, IDE, internal, 2MB buffer, Ahead Nero Burning ROM 5.5 and InCD 3.21, one-year warranty, 9-hour weekday support (calls are not toll-free). SUMMARY: Offers speedy digital audio extraction and overall performance comparable to that of TDK's VeloCD 32/10/40. Support has decreased to 9 hours on weekdays. (★★★★☆ May 02)
9	Buslink RW4048 find.pcworld.com/26141 NEW	\$150	77	Outstanding/ Poor	3:25/1:08	FEATURES: 40X/12X/48X, IDE, internal, 2MB buffer, Ahead Nero Burning ROM 5.5 and InCD 3.2, one-year warranty, 8.5-hour weekday support (calls are not toll-free). SUMMARY: Ties Lite-On's 40X drive for the fastest performance, but this one costs \$20 more. Documentation is thin, and so is technical support. (★★★★☆)
10	Teac CD-W524E find.pcworld.com/18182	\$125	73	Good/ Average	4:30/1:33	FEATURES: 24X/10X/40X, IDE, internal, 2MB buffer, Roxio Easy CD Creator 5.1 and DirectCD 5.1, one-year warranty, 9-hour weekday support (calls are not toll-free). SUMMARY: Though this drive is a little sluggish compared with other 24X offerings, Teac includes an above-average software bundle. (★★★★☆ Feb 02)

HOW WE TEST: To gauge CD-ROM read performance, we time how long the drive takes to install Microsoft Office 2000 SBE (disc one). To determine CD-R write performance, we burn data to CD-R discs from an image file and on the fly. We evaluate digital audio extraction speed by extracting 320MB of musical tracks from an audio CD to our hard drive. We measure CD-RW performance by copying 100MB of files to a CD-RW disc, and then rewriting the same data to the same disc. Overall ratings are based on performance (35 percent), price (25 percent), features (20 percent), tech support policies (10 percent), and ease of installation (10 percent). See find.pcworld.com/10860 for details on *PC World's* Star Ratings. ¹ Vendor's speed ratings, listed in order: CD-R write/CD-RW write/CD-ROM read. ² Except where noted, all drives use buffer underrun protection.

TOP 10 DIGITAL CAMERAS

Visit find.pcworld.com/26081 for reviews of all products tested this month and ranked in this chart.

NIKON'S NEW COOLPIX 2500, a Best Buy this month, is easily the most eye-catching of June's three newcomers. A departure for the usually staid Nikon, the 2500 has a jazzy blue-and-silver case, and a rotating zoom lens that folds away neatly into the camera's slim body. The Nikon is not without

compromises, however: Its only viewfinder is the color LCD. More conservative looking but far more flexible, Olympus's Camedia C-3020 Zoom straddles the line between point-and-shoot and hobbyist cameras. Sony's Cyber-shot DSC-P71 is a fairly small, easy-to-use model for Sony fanciers. ▶

	CAMERA: UNDER \$500	Street price (4/1/02)	Overall rating	Image quality	Ease of use	Battery life/shots	Comments ¹
1	Best Buy Toshiba PDR-M71 find.pcworld.com/17961	\$399	79	Good	Good	Very good/ 329	FEATURES: 3.1-megapixel resolution, 8MB SmartMedia card, 35mm-98mm focal range; USB and video output; 12.1 ounces. SUMMARY: The PDR-M71 offers long battery life and more versatility than most sub-\$500 cameras, but it underexposed some of our test shots. (★★★★☆ Feb 02)
2	Best Buy Nikon Coolpix 2500 NEW find.pcworld.com/25761	\$379	78	Good	Good	Good/ 284	FEATURES: 2-megapixel resolution, 16MB CompactFlash media, 37mm-111mm focal range; USB output; 7.5 ounces. SUMMARY: Great-looking compact point-and-shoot has a novel design that protects the lens during storage; it captures video but not sound, and has no optical viewfinder. (★★★★☆)
3	Olympus Camedia C-3020 Zoom NEW find.pcworld.com/25702	\$499	77	Very good	Good	Good/ 270	FEATURES: 3.2-megapixel resolution, 16MB SmartMedia card, 32mm-96mm focal range; USB output; 14.2 ounces. SUMMARY: Bulky camera has a fast lens and most of the controls that casual photo hobbyists desire, but you'll have to be content with making silent movies. (★★★★☆)
4	Toshiba PDR-M25 find.pcworld.com/20862	\$249	77	Good	Good	Adequate/ 220	FEATURES: 2.2-megapixel resolution, 8MB SmartMedia card, 38mm-114mm focal range; USB and video output; 12 ounces. SUMMARY: This inexpensive model has a sturdy body and is very simple to use, but it provides only the most basic controls. It takes sharp photographs with accurate colors. (★★★★☆ Apr 02)
5	Sony Cyber-shot DSC-P71 NEW find.pcworld.com/25701	\$399	76	Good	Good	Very good/ 334	FEATURES: 3.2-megapixel resolution, 16MB Memory Stick media, 39mm-117mm focal range; USB and video output; 10 ounces. SUMMARY: A relatively compact and easy-to-use point-and-shoot camera, the Cyber-shot DSC-P71 includes rechargeable AA batteries for flexible power options. (★★★★☆)
6	Fujifilm FinePix 2600 Zoom find.pcworld.com/17965	\$299	76	Adequate	Adequate	Good/ 286	FEATURES: 2-megapixel resolution, 16MB SmartMedia card, 38mm-114mm focal range; USB and video output; 9 ounces. SUMMARY: This simple point-and-shoot model comes with a relatively large storage card, but its controls are rudimentary and its photos looked unimpressive in our tests. (★★★★☆ Feb 02)
7	Nikon Coolpix 885 find.pcworld.com/19142	\$499	76	Adequate	Adequate	Very good/ 373	FEATURES: 3.2-megapixel resolution, 16MB CompactFlash media, 38mm-114mm focal range; USB and video output; 9 ounces. SUMMARY: A \$100 price drop lands the 885 in the sub-\$500 category. You get a wealth of controls, but image quality is a mixed bag, and the menus are daunting at first. (★★★★☆ Mar 02)
8	HP Photosmart 318 find.pcworld.com/14806	\$199	75	Adequate	Very good	Good/ 294	FEATURES: 2.31-megapixel resolution, 8MB internal media, 38mm focal length; USB output; 10.4 ounces. SUMMARY: The 318 offers only the barest point-and-shoot capabilities, and it takes somewhat blurry photographs, but it's the least-expensive camera on the chart. (★★★★☆ Dec 01)
9	Kodak DX3900 Zoom find.pcworld.com/17962	\$349	74	Good	Good	Very good/ 389	FEATURES: 3.1-megapixel resolution, 8MB CompactFlash media, 35mm-70mm focal range; USB and video output; 9.6 ounces. SUMMARY: The DX3900 Zoom has the longest battery life in the Top 10 and can connect to an optional docking station for easy photo uploading. (★★★★☆ Feb 02)
10	Konica KD-300Z find.pcworld.com/22761	\$399	72	Good	Adequate	Limited/ 90	FEATURES: 3.34-megapixel resolution, 16MB MultiMediaCard media, 38mm-76mm focal range; USB and video output; 6.8 ounces. SUMMARY: A 2X optical zoom, aperture-priority exposure control, and the ability to take silent, QuickTime movies, packed into one of the smallest cameras we've seen. (★★★★☆ Apr 02)

HOW WE TEST: Overall rating is based on price (30 percent), picture quality (20 percent), ease of use (15 percent), features (15 percent), battery life (10 percent), and support (10 percent). For all ratings, higher is better. To gauge picture quality, we take a series of shots, with and without flash, at 640 by 480 resolution and at the camera's highest resolution. 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, which we average. Camera weights include batteries. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. See find.pcworld.com/10860 for details on PC World's Star Ratings. ¹ Resolutions are expressed in effective pixels; focal range is identified as 35mm equivalent. ² Camera includes a media card slot.

MORE REVIEWS

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 charts, go online and type in the *PC World* Find-It URL at the

top of each chart (for example, find.pcworld.com/23361 for products listed on the *Top 10 Graphics Boards* chart). Next month's *Top 100* section will include coverage of ink jet printers and digital cameras priced at \$500 or more. ■



CANON'S S750 color ink jet printer had the fastest text speed of the printers on the chart; it also produced beautiful color photos in our tests.

THE 19-INCH NEC MultiSync FE950+ provided above-average image quality for both text and graphics.



PRINTERS

find.pcworld.com/23981

INK JET PRINTERS From the May 2002 issue	
1	Best BUY Canon S750 Color Bubble Jet Printer find.pcworld.com/22841
2	Best BUY Epson Stylus C80 find.pcworld.com/16660
3	Lexmark Z43 Color Jetprinter find.pcworld.com/10561
4	HP Deskjet 940c Color Inkjet Printer find.pcworld.com/16681
5	Lexmark Z53 Color Jetprinter find.pcworld.com/10560
6	HP Deskjet 920c Color Inkjet Printer find.pcworld.com/19264
7	HP Deskjet 845c Color Inkjet Printer find.pcworld.com/16680
8	Canon S300 Color Bubble Jet Printer find.pcworld.com/16641
9	Epson Stylus C60 find.pcworld.com/16647
10	Compaq 1400P Color InkJet Printer find.pcworld.com/19262

MONITORS

find.pcworld.com/23521

19-INCH MONITORS From the May 2002 issue	
1	Best BUY ViewSonic GS790 find.pcworld.com/10573
2	Best BUY Optiquest Q95 find.pcworld.com/10800
3	Compaq S920 find.pcworld.com/18802
4	NEC MultiSync FE950+ find.pcworld.com/23302
5	Sony CPD-G420S find.pcworld.com/10577
6	Samsung SyncMaster 950b find.pcworld.com/23301
7	Hewlett-Packard P920 find.pcworld.com/10578
8	Sony CPD-G410R find.pcworld.com/23303
9	IBM P97 find.pcworld.com/18803
10	Dell P992 find.pcworld.com/23341

GRAPHICS BOARDS

find.pcworld.com/23361

GRAPHICS BOARDS From the May 2002 issue	
1	Best BUY Gainward GeForce3 PowerPack Ti/450 find.pcworld.com/22822
2	ATI Radeon 8500 find.pcworld.com/17122
3	VisionTek Xtasy 6964 find.pcworld.com/21261
4	ATI All-In-Wonder Radeon 8500DV find.pcworld.com/22801
5	Asus AGP-V8200T2 Deluxe find.pcworld.com/22901
1	Best BUY Gainward GeForce2 Ti/500 XP Vivo Golden Sample find.pcworld.com/17721
2	MSI G2Ti Pro-VT find.pcworld.com/23003
3	Asus AGP-V7100 Pro Pure 32MB find.pcworld.com/13101
4	VisionTek Xtasy 5864 find.pcworld.com/17701
5	ATI Radeon 7500 find.pcworld.com/22981

DIGITAL CAMERAS

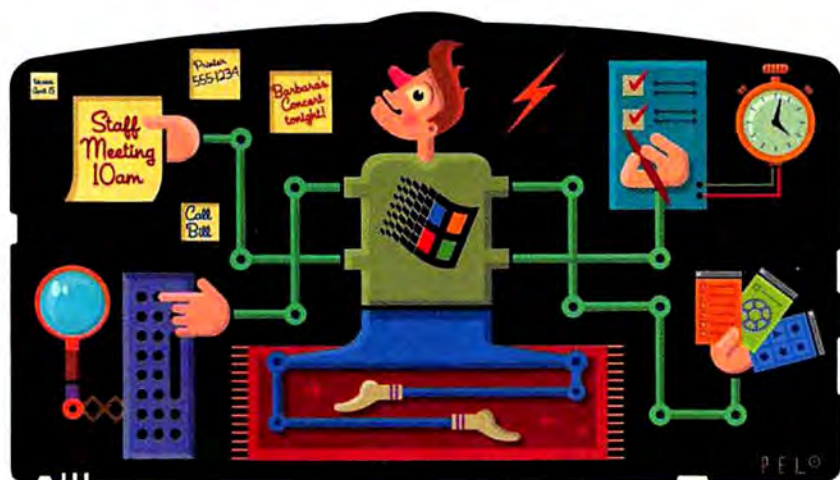
find.pcworld.com/24001

DIGITAL CAMERAS \$500 AND OVER From the May 2002 issue	
1	Best BUY Casio QV-4000 find.pcworld.com/16261
2	Best BUY Nikon Coolpix 995 find.pcworld.com/14801
3	Canon PowerShot G2 find.pcworld.com/14800
4	Sony Cyber-shot DSC-F707 find.pcworld.com/23902
5	Epson PhotoPC 3100Z find.pcworld.com/14804
6	Nikon Coolpix 5000 find.pcworld.com/23881
7	Olympus E-20N find.pcworld.com/23901
8	Olympus D-40 Zoom find.pcworld.com/19143
9	Sony Cyber-shot DSC-S85 find.pcworld.com/14803
10	Canon PowerShot S40 find.pcworld.com/19141

HERE'S HOW

ULTIMATE HOW-TO GUIDE

EDITED BY STAFF



WINDOWS TIPS

SCOTT DUNN

Six Windows Tweaks I Couldn't Live Without

**ALL
Versions**

EVERY TIME I install or re-install Windows, I find myself stopped, stymied, and stupefied by the operating system's default settings. Here are six tricks I rely on to make Windows easier to live with.

CREATE YOUR OWN STICKIES

MANY SHAREWARE utilities let you put virtual sticky notes (designed to behave like the digital equivalent of paper Post-It Notes) on your screen; but a simpler way

to add these notes takes advantage of Windows' support for long file names.

➤➤**TIP** To use this home-grown annotation technique, open Explorer (or any folder window) and choose *View•Folder Options* or *Tools•Folder Options*, depending on your version of Windows. Click the *File Types* tab, and then select *New* or *New Type*. In Windows 2000, Me, or XP, type **stky** for File Extension, and click **OK**. With the 'stky' extension selected in the 'Registered file types' list, click *Advanced*.

Type **Sticky Note** in the box next to the *Change Icon* button. In Windows 98, type **stky** in the 'Associated extension' text box, and **Sticky Note** in the 'Description of type' box. In all versions, click the *New* button, type **open** in the Action text box, and enter **notepad.exe** in the 'Application used to perform action' box. Click **OK**, select the *Change Icon* button, and choose an icon to represent your new sticky notes.

I use a blank (invisible) icon I created myself using IconEdit Pro icon-editing shareware (available at find.pcworld.com/23241). But Windows provides icons that almost match the subtlety of IconEdit Pro's. To locate them, make sure that **shell32.dll** is listed in the 'File name' box ('Look for icons in this file' in Windows XP). In most versions of Windows, scroll through the icon list until you reach the icon in the third row of the eighth column (see **FIGURE 1**). Windows XP's invisible icons are in the second, third, and fourth rows of the thirteenth column (and the first row of the fourteenth column). Select one and click **OK** or **Close** as many times as needed to close all dialog boxes.



FIGURE 1: GET AN (ALMOST) invisible icon for sticky notes from the shell32.dll file.

138 WINDOWS TIPS

Add your own sticky notes; three ways to launch apps in an instant; create Search shortcuts on the Start menu.

141 INTERNET TIPS

Spot viruses lurking in your e-mail in-box; Windows XP's AOL update; restore OE mailboxes in XP.

142 STEP-BY-STEP

You've lived with that tangle of cords behind your PC long enough. Orderly cables will ease your PC maintenance.

144 HARDWARE TIPS

HARDWARE TIPS
All the hardware and software tools you'll need to keep your PC in tip-top shape; plus, a \$10 power-supply tester.

146 ANSWER LINE

Nobody asked, but Lincoln Spector has the answers anyway. Everything you need to know about Windows automation, My Documents management, establishing a swap file size, wallpaper options, and more.




FIGURE 2: INSTANT STICKY NOTES are two clicks away with a simple Registry tweak.

To add your new Sticky Note file type to your right-click New menu, choose *Start+Run*, type **regedit**, and press **<Enter>**. Click the plus sign next to 'HKEY_CLASSES_ROOT', right-click the key (folder icon) named *.sky*, and choose *New+Key*. Type **ShellNew** and press **<Enter>**. Select the *ShellNew* icon in the left pane, right-click inside the right pane, and choose *New+String Value*. Type **NullFile**, press **<Enter>**, and exit the Registry Editor.

Make sure that your system is set to hide file extensions of known types: In the Folder Options dialog box, click the *View* tab and confirm that 'Hide file extensions for known file types' is checked. (In XP, this option appears as 'Hide extensions for known file types'.)

To add a sticky note to the desktop or to any folder window, right-click it, choose *New>Sticky Note*, type the text of your note, and press **<Enter>** (see **FIGURE 2**). You can't use colons, question marks, or other characters that are forbidden in file names. If your notes aren't wide enough, right-click the desktop, choose *Properties*, and click

Remember to pick up
supper on the way home.

 the *Appearance* tab. In Windows XP, click *Advanced*. In all versions, choose *Icon Spacing (Horizontal)* from the *Item* drop-down list. Increase the *Size* value and click *OK*. Note text that exceeds two lines will be truncated—an ellipsis symbol (...) will indicate this—but you can see the whole note by selecting it. To make a note longer than 255 characters, double-click the note and add supplementary information in Notepad. To move a sticky note, simply drag the icon area above the text.

LIGHTNING LAUNCHES

>>TIP The fastest way for me to launch folders and applications is to set up a priority system for Windows' many launch pads. I do this by dividing applications—and other shortcuts—into three priority levels based on how often I use them: keyboard, Quick Launch, and custom menu.

Keyboard launches: I assign a keyboard shortcut for the files and applications that I launch many times a day, such as the volume control. Simply right-click an application shortcut in the Start menu or on the desktop and choose *Properties*. Make sure the Shortcut tab is in front. Click in the 'Shortcut key' box and press your desired shortcut keys. Windows requires that your shortcut use at least two modifier keys (<Ctrl>, <Shift>, or <Alt>), unless you press a function key or a key on the numeric keypad. Click OK, and your new keyboard shortcut is finished. If you change your mind later on, just return to this dialog box, click in the 'Shortcut key' box, and press <Backspace>. Then click OK and restart Windows.



FIGURE 3: TO MANAGE JUST THE WINDOWS you want, <Ctrl>-click their buttons to select them and then use context menus.

Quick Launch openings: Second-priority items I access via the Quick Launch bar. (If you don't see it, right-click the taskbar, choose *Toolbars*, and make sure *Quick Launch* is checked.) Drag any application, folder, or document icon to the toolbar to create a tiny icon that launches that item. I prefer to limit the Quick Launch toolbar to between six and eight icons to keep it from becoming cluttered and to make spotting individual icons easier. Keeping Quick Launch small also allows more room on the taskbar for other items.

Custom menus: To handle third-priority items, I make custom submenus off the Start menu. Begin by creating subfolders inside the Start Menu folder. Right-click *Start*, choose *Open* or *Explore*, and select *File•New•Folder*. Then add a sensible num-

ber of shortcuts to each subfolder you create. Those shortcuts will appear on a menu when your new Start menu subfolder is highlighted. If a menu gets longer than 20 or so icons, it may be time to break that folder into two separate folders.

SEARCH-MENU SHORTCUTS

MOST OF THE FILES I search for are in one of two folders, but I still have to type the folder path in the Search dialog box each time, or open the folder and start searching. **>>TIP** In the past, I could use the FindX utility in Microsoft's free PowerToys package to add shortcuts to my ▶

Search menu, and to set Search to open with the parameters I specified. Unfortunately, FindX isn't in the latest versions of PowerToys, though it still works with every version of Windows.

You can download PowerToys at find.pcworld.com/23401 to get FindX. Double-click the .exe file to place its contents into the current folder. Right-click the FindX.inf file and choose *Install*. In your Start Menu folder, FindX creates a hidden folder called Find. To open the Start Menu folder, right-click the *Start* button and choose *Open*. If you don't see the Find folder, choose *View*•*Folder Options* or *Tools*•*Folder Options*, click the *View* tab, and check the option to display hidden files.

Conduct a search using the parameters you specify most often, and then choose *File*•*Save Search*. Depending on your version of Windows, you may be able to save the file directly in the Start Menu's Find folder. If not, save it to the desktop; then open Explorer and drag the file with the search parameters you just specified from the Desktop folder to your Start Menu/Find folder. You may need to restart Windows before seeing the change to your Find or Search menu. Thereafter, you can choose your saved search from your *Start*•*Find* or *Start*•*Search* menu, permitting you to run a similar search pronto.

MULTIWINDOW MANAGEMENT

AT TIMES YOU may have several windows open but want to see only two of them side by side. In other situations you may want to close some but not all of your open apps. **>>TIP** The quickest way to accomplish these and other multiwindow tasks is to **<Ctrl>**-click the taskbar buttons corresponding to the windows you want

to tile, minimize, or close, and then right-click one of the depressed buttons and select the option you want (see **FIGURE 3**).

EASY ACCESS TO THE DESKTOP

>>TIP There are a million and one ways to get to your desktop icons quickly. My two favorite routes to desktop icons use the keyboard and the mouse, respectively.

The keyboard approach: Press **<Windows>-D** to minimize all open windows (including some that don't normally minimize, such as the Control Panel properties dialog boxes). If you change your mind, press **<Windows>-D** again to undo the effect, as long as you haven't restored or launched any other windows in the interim.

The menu method: In Windows XP, you may need to unlock the taskbar. Right-click it and make sure *Lock the taskbar* is unchecked. In all versions of Windows, right-click the taskbar and choose *Toolbars*•*Desktop*. To make the Desktop toolbar a space-saving menu, right-click the word *Desktop* and choose *View*•*Small* or *View*•*Small Icons*. Right-click it again and uncheck *Show Text* to hide its icon labels.

Now drag the word *Desktop* until the toolbar is positioned where you want it on the taskbar relative to other taskbar icons and toolbars (such as to the left of the Quick Launch toolbar). Drag the dividers until no icons are visible and only 'Desktop >>' shows. Anytime you need a desktop item, just click the double-greater-than symbol (>>) to see a menu showing what's on your desktop (see **FIGURE 4**).

You can put shortcuts to any folder you often use on a menu that pops up from the taskbar. Just right-click the taskbar and choose *Toolbars*•*New Toolbar*, then select the folder and click *OK*. (See below for an alternative folder-shortcut location.)

FOLDERS ON START MENU

YOU MIGHT GET lucky and find the file you want to open on your *Start*•*Documents* menu. But the limited number of shortcuts on this menu means you'll probably be disappointed. **>>TIP** I prefer to place a shortcut to the folder containing my work on the Start menu. Press **<Windows>-E** to launch Explorer, navigate to the folder of your choice, and drag and

WINDOWS TOOLBOX

Track Hidden Changes to Your System

EVERY TIME YOU try out new shareware or change some setting in Windows, your Windows Registry changes, too. **>>TIP** Tianwei's RegShot utility provides a simple way to get a report on any changes to your computer. Click *1st shot* to have the program take a "before" snapshot of your Registry. Then, after installing a new application or performing another task,



click *2nd shot* to take an "after" snapshot. Click *Compare* to have RegShot show you the differences and present a thorough report in text or HTML format. RegShot can also track the changes to one or more folders of your choice (such as the Windows and System folders). RegShot is fast, small, and—best of all—free. Point your browser to find.pcworld.com/23421 to download your copy.

drop it onto the Start menu button. Voilà! The next time you click Start, you'll see your folder on the menu. Click it to display the folder's contents.

If you want to put a folder shortcut on your Start menu without seeing it as a cascading menu, simply open the *Start Menu* folder from which you will launch your folder shortcut, right-click inside the folder, and choose *New*•*Shortcut*. Type *explorer.exe*, followed by a space and the path to the folder. Click *Next*, name the shortcut, and click *Finish*.

Send your Windows-related questions and tips to scott_dunn@pcworld.com. Windows Tips pays \$50 for published items. Scott Dunn is a contributing editor for PC World.

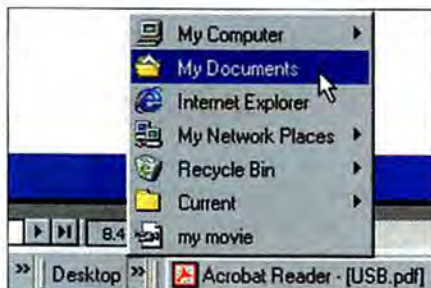


FIGURE 4: CLICK THE double-greater-than symbol to see your desktop items on a menu.

INTERNET TIPS

SCOTT SPANBAUER

Stop Those Sneaky E-Mail Viruses in Their Tracks

WHETHER YOU use antivirus software or take your chances without it, you can save yourself grief by knowing how to spot viruses attached to incoming e-mail and how to prevent them from infecting your system. **>>TIP** Unless you were notified in advance about an e-mail attachment, assume that it's a virus if it ends with .vbs, .scr, or .exe. Delete the e-mail message without opening it or its attachment.

Unfortunately, by default, most versions of Windows hide file name extensions, allowing a potentially lethal script file named 'picture.jpg.vbs', for example, to appear in your e-mail program as 'picture.jpg'. To display the full file name,

abling your e-mail program's preview pane. In Outlook Express, choose *View•Layout* and uncheck *Show preview pane*. In Outlook, click *View* and deselect *Preview Pane*. To close the preview pane in Eudora, select *Tools•Options*, choose *Viewing Mail* in the Category list, and uncheck *Show message preview pane*.

RUN AOL UNDER WINDOWS XP

PLANNING TO upgrade to Windows XP? If you still use America Online 6, you'll have to move to version 7. AOL allows Windows XP users to log in just three times with version 6, and it prompts you to upgrade to AOL 7 each time. **>>TIP** To avoid this 34MB download, look for one of the ubiquitous free AOL 7 discs offered in stores and magazines. For more on AOL/XP compatibility, open AOL and enter the keyword XP.

OE IS MIA IN XP

YOU MAY HAVE upgraded your machine to Windows XP only to find that both your Outlook Express mailbox and your

address book were missing. Don't worry, they're still on your hard drive.

>>TIP Though Microsoft doesn't say why it chose not to migrate the old files to the new operating system's user folders during the upgrade, it does explain in perfect detail how to correct this shortcoming. Visit find.pcworld.com/24301 to read a Microsoft Knowledge Base article that describes the steps required.

PREVENT MESSENGER FROM LAUNCHING

BOTH MSN MESSENGER and Windows XP's Windows Messenger (which is enabled by default) set themselves up to launch automatically whenever you open Outlook or Outlook Express. **>>TIP** If that's too automatic for you, turn these instant messaging programs off. In Outlook 2002, choose *Tools•Options•Other* and then uncheck *Enable Instant Messaging in Microsoft Outlook*. Click OK. In Outlook Express for Windows 98 and Me, select *Tools•Options•General* and uncheck *Automatically log on to MSN Messenger Service*. In Outlook Express for Windows XP, click *Tools•Options•General* and uncheck *Automatically log on to Windows Messenger*. Windows 2000 lacks MSN Messenger.

PUT AOL'S PARENTAL CONTROLS TO WORK

PEOPLE KNOCK America Online for being a pseudo-Internet service, but it's a great way for users of all ages to get online gradually. **>>TIP** The key to shielding kids from the brutal realities of the adult online world is AOL's Parental Controls area (keyword: controls). You can create screen names for your children; limit the times of day and duration of their surfing; and determine whether they can download files, venture beyond AOL's kids-only area, and use instant messaging, e-mail, and other Web services (see **FIGURE 1**).

FREE TIME IS BEST

LAST DECEMBER, I recommended Dillobits Software's \$16 YATS32 for synchronizing your PC with Internet time servers. **>>TIP** Dozens of alert readers wrote to tell me about several programs that do the same thing for less money, or even for free. Candidates include the \$10 AtomTime98 (www.atomtime.com), the free Automachron 4.00d (www.oneguycoding.com/automachron), and the no-cost Dimension 4 (www.thinkman.com). ■

Send your questions and tips to nettips@spanbauer.com. We pay \$50 for published items. Scott Spanbauer is a contributing editor for PC World.



FIGURE 1: LET YOUR KIDS VENTURE online safely with the help of America Online's comprehensive Parental Controls.

open Windows Explorer, select *Tools•Folder Options•View*, uncheck *Hide file extensions for known file types* (the exact wording varies, depending on your version of Windows), and click OK.

It's possible but uncommon for viruses embedded in HTML-format messages to launch automatically when they're displayed in a message window or a preview pane. You can minimize the risk by dis-

STEP BY STEP

STAN MIASTKOWSKI

Eight Tips to Tame Cables

DON'T LOOK NOW, but it's a jungle back there. We're talking about the back of your PC, where the cables that tie together the parts, pieces, and peripherals of your computer tend to end up in a messy jumble of interlacing wires. It's unsightly, inconvenient, and even dangerous—if you have small children or pets. And cable overload has another drawback, too: The

more wires you add, the harder it is to trace connections when changing hardware or troubleshooting problems.

Luckily, you don't have to be Martha Stewart to make this mess more presentable. Various products are designed to tame cable clutter, ranging in price from a few bucks to \$100. Pick and choose what's right for your installation—but any

THE TOP DOWN

Benefits: Keep cables organized for safety and convenience.

Cost: \$5 to \$100 and up

Expertise level: Beginner

Time required: 30 to 60 minutes

Tools required: Cutter pliers, screwdriver

Vendors: Belkin (www.belkin.com), Fellowes (www.fellowes.com), Office Depot (www.officedepot.com), RadioShack (www.radioshack.com), Stacks and Stacks (www.stacksandstacks.com), Staples (www.staples.com)

of these products can help make your PC setup a bit more convenient to work with and a lot more pleasant to look at. ■

Stan Miastkowski is a contributing editor for PC World.

HEADS UP

IMPORTANT



>>TIP No matter which method of cable clutter control you use, it's a good idea to keep AC power cables separate from other cables. To eliminate AC hum in your speakers, try to keep AC and speaker cables at right angles.

>>TIP Use short cables. Peripherals (like printers, modems, and scanners) usually come with cables, but they're often much longer than they need to be. You can eliminate lots of clutter by purchasing correct-length cables instead of leaving long cables dangling or coiled on the floor. You'll find a wide range of cable lengths at most computer and office-supply dealers.

>>TIP Use cable ties and clips. Cable ties (A) and cable clips (B) are the cheapest way to bundle groups of cables. Ties are inexpensive, and come in many colors and lengths.



>>TIP Use split tubing. Split tubing, as the name implies, is flexible tubing that's split along one side, so you can easily tuck cables inside.



>>TIP Use a cable organizer. Sometimes called a "cable tunnel," this is a box or set of slotted guides that mounts on a wall or your desk and lets you wrap and tuck cables inside it.

>>TIP Use a power center for AC cables. Having one place to plug in all your AC cables can eliminate lots of clutter. Some power centers sit on the floor or mount on a wall; some sit underneath a monitor. They also provide surge protection and let you switch peripherals on and off conveniently.



>>TIP Use USB peripherals. USB keyboards, mice, printers, scanners, and other peripherals (A) can plug into each other, eliminating long runs of multiple cables. Alternatively, you can use USB hubs to organize multiple connections. IEEE 1394 (FireWire) hubs (B) offer the same advantages for high-performance peripherals.

>>TIP Go wireless. The ultimate way to eliminate cables is to avoid using them. Though you can't get rid of cables altogether, wireless keyboards and mice are available, as are Wi-Fi and Wi-Fi5 wireless networks. And though Bluetooth wireless peripherals are still rare, that technology holds promise.

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HARDWARE TIPS

KIRK STEERS

A PC TOOLBOX
PRIMER

TROUBLESHOOTING
TOOLS IN WINDOWS

PC MAINTENANCE
FREEBIES

A 20-Piece Tool Kit for the Practical (and Frugal) PC

LET'S FACE IT: When it comes to upkeep, a PC is no toaster. Making sure your PC stays happy and healthy requires work: periodic maintenance, timely upgrades, and the occasional bout of troubleshooting. Unless you're lucky enough to have an army of highly trained IT professionals (or maybe just an engineer brother-in-law) at your disposal, you'll be the person performing at least some of these tasks.

Fortunately, with a little effort and the right tools, PC maintenance and repair are easy for most people. And getting the right tools doesn't have to cost an arm and a leg; some you already have, and others are inexpensive. Here are the tools I recommend you keep on hand.

TOOLS YOU CAN TOUCH

UNLESS YOU MAINTAIN many PCs, you don't need one of those fancy PC tool kits that cost over \$50 (although Belkin's \$15

Standard Computer Tool Kit is a good low-price alternative). In fact, the list of hardware you really must have isn't long.

>>TIP Screwdrivers: You only need two small screwdrivers: one with a standard slotted head, and one with a Phillips head. They should be less than 6 inches long—and make sure they're not magnetized.

>>TIP Tweezers: A small pair of tweezers with a good grip is invaluable for placing and removing jumpers and for retrieving lost screws. Tweezers with flat tips are more useful than those with pointed tips.

>>TIP Flashlight: Even in a well-lit room, it can be tough to see small cables and connectors inside your PC's case.

>>TIP Parts container: A small container—preferably with a lid—is essential for holding screws and jumpers. A plastic cup or old prescription bottle works well.

>>TIP Needle-nose pliers: A small pair of needle-nose pliers is useful for grasping parts and bending wire and bits of metal.

>>TIP A can of compressed air: Keep your PC's interior and ventilation ducts free of dust to prevent overheating. A quick blast of air is by far the easiest way to do this. Canned air is available at most computer and electronics stores for less than \$10.

>>TIP Antistatic wrist band: One jolt of static electricity moving between your body and your PC can fry the machine's circuitry. When you add or remove hardware, or perform any work inside your PC's case, wear an antistatic wrist band. One end attaches to your wrist, and the other attaches to a ground. They, too, are available at computer and electronics

stores for less than \$10. See find.pcworld.com/24081 for an antistatic guide.

>>TIP Nut drivers and other special tools: Many computer tool kits include nut drivers, chip removers, and other specialized tools. I consider these to be overkill for the average user because screwdrivers and pliers should suffice for most jobs.

TOOLS YOU ALREADY HAVE

WINDOWS PROVIDES many useful wizards and utilities for troubleshooting and maintaining your PC. Most of these can be accessed from the System Tools menu: Click *Start•Programs•Accessories•System Tools* (the exact wording and path vary depending on your version of Windows).

>>TIP ScanDisk: As its name implies, ScanDisk examines your hard disk for misplaced file fragments and areas of physical damage. Check your hard drives

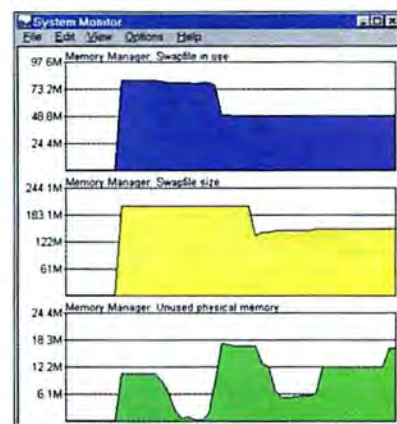


FIGURE 1: SYSTEM MONITOR shows changes in your memory usage as they happen.

regularly with ScanDisk. A sudden increase in the number of errors the program finds may mean a failing hard disk.

Windows XP lacks the ScanDisk utility. To check a drive in XP, right-click it in Explorer, select *Properties*, choose the *Tools* tab, and click *Check Now* under 'Error-checking.' You may be told that the utility needs exclusive rights to some Windows files on the disk. When Windows asks if you want to perform the check when it next restarts, click *Yes* and then *OK*.

>>TIP Disk Defragmenter: Defragment your hard drive regularly to keep it running faster and to increase your chances of recovering data if the drive crashes.

BAD BOARD?

YOU SIT DOWN and turn on your PC, and nothing happens: no lights, no sound, no action. Do you need to spend hundreds of dollars on a new motherboard, or much less on a new power supply? The ATX Power Supply Tester from PC Power and Cooling may provide you with a quick, accurate answer. This handy \$10 tool attaches to the motherboard cable of any ATX 2.x-compatible power supply and will light up if the power supply is working properly. You can check it out at www.pcpowerandcooling.com.



FIGURE 2: THE DEMO VERSION OF DISPLAYMATE has several test patterns for evaluating your monitor's image.

>>TIP System Monitor: This excellent little program helps you keep your finger on the pulse of your PC by tracking many different performance parameters. You can watch real-time graphs showing your available RAM, virtual memory, CPU usage, and other statistics (see FIGURE 1). System Monitor is especially good at tracking down the source of a memory problem and identifying which programs put the most stress on your system. (In Windows XP, you can find System Monitor by choosing *Start • Control Panel • Administrative Tools • Performance • System Monitor*.)

>>TIP System Information: This utility is the gateway to some of the most powerful troubleshooting tools in Windows. In Windows 9x, you'll find the System File Checker, Registry Checker, and System Configuration Utility on System Information's Tools menu. In XP, System Information's tools include Network

#1-TuffTest

\$10; #1-PC Diagnostics
www.tufftest.com

Drive Image 5

\$70; PowerQuest
www.powerquest.com

Norton SystemWorks 2002

\$70; Symantec
www.symantec.com

PartitionMagic 7

\$70; PowerQuest
www.powerquest.com

Standard Computer Tool Kit

\$15; Belkin
www.belkin.com

Diagnostics and System Restore.
>>TIP Manuals, drivers, and software: Save everything! You may be able to solve your PC's problem by knowing one key setting or model number, or by reinstalling a program. Printed manuals may be your only source of tech-support phone numbers. Don't think you can just download any files you might need anytime from the Internet: A file in the hand is worth two on the Web.

>>TIP Windows Resource Kit: You don't need to spend \$50 or more for a phonebook-size Windows reference book. You just need to consult your Windows 9x CD. In the tools\reskit\setup folder, you'll find an online copy of Microsoft's Windows Resource Kit (the printed version costs \$70). Go to find.pcworld.com/23441 for the Windows XP Professional Resource Kit.

TOOLS YOU CAN USE FOR FREE

HERE ARE A few of my favorite diagnostic and maintenance freebies. Jump to find.pcworld.com/12285 to download them.

>>TIP #1-TuffTest-Lite: This program confirms that all of your PC's hardware components are functioning properly. Since it boots and runs from its own floppy, it bypasses the testing limitations of diagnostic programs that run from within a complex operating system such as Windows. The free version of the program has fewer functions than the \$10 #1-TuffTest (it tests only 8MB of RAM, for example).

>>TIP DisplayMate: Fine-tune your monitor's image with the demo version of this utility. The full version costs \$79, but the demo has six test patterns and instructions on how to use them (see FIGURE 2).

>>TIP Useful Web sites: Drivers Headquarters at www.drivershq.com is a good place to track down lost or updated device drivers. And visit www.utilitygeek.com to locate other free and shareware utilities for maintaining and diagnosing your PC.

TOOLS WORTH BUYING

>>TIP Norton SystemWorks 2002: At \$70, this utility bundle isn't cheap, but it's loaded with good stuff. The most impor-

tant component is Norton Utilities, the classic collection of hard-disk and Windows programs (see FIGURE 3). While many of Norton Utilities' functions can be replicated with free or low-cost utilities such as those listed above, the convenience of an all-in-one package and such extras as automatic scheduling make Norton SystemWorks well worth the price.

>>TIP PartitionMagic 7: There are many easy and difficult ways to create, delete, and resize hard-drive partitions. PowerQuest's \$70 program is the easiest. Windows' FDISK is one of several viable partitioning alternatives if you have lots of time and little money. But if you need to get the job completed quickly and simply, PartitionMagic's smooth interface and fast operation make it a wise purchase.

>>TIP Drive Image 5: This PowerQuest tool will rescue you from the mistakes you make while using other PC diagnostic tools. Drive Image 5 copies and compresses whole drives—or more accurately, whole partitions—into a single file that you can restore easily. Park its backup file on another partition, on another hard

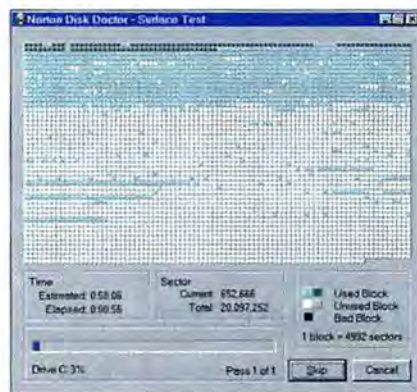


FIGURE 3: NORTON DISK DOCTOR scans your hard disk for logical and physical errors.

disk, or (in this latest version) to CD-R/RW discs. Drive Image copies regular files, hidden files, system files, and the boot sector so you can restore a working copy of an entire partition, including a bootable OS, applications, and data. ■

Kirk Steers is a PC World contributing editor. You can reach him at kirk_steers@pcworld.com. Hardware Tips welcomes your tips and questions and pays \$50 for published items.

ANSWER LINE

LINCOLN SPECTOR

A Trio of Questions I Wish You Had Asked Me

I GET A BIG KICK out of answering your PC questions every month, and I often marvel at how talented *PC World* readers are at finding glitches in their "thoroughly tested" hardware and software. But for this special tips issue, I'm doing something a little different. Here are answers to three questions I've been waiting for.

SIMPLE WINDOWS AUTOMATION

? CAN I SELECT an item on the Start menu and launch not one program, but two or three or four? Better yet, can I double-click one icon and have one program scan my hard drive, another defragment the drive when the scan is done, and a third start a backup after the defrag?

YOU CAN ACCOMPLISH all of this and more with DOS batch files—even in DOS-free Windows XP. As DOS fades from memory, however, fewer and fewer

people are comfortable writing batch files.

>>TIP If you're batch-averse, I recommend Outer Technologies' free Batchrun program, which makes automating multi-program tasks easy. This nifty utility lets you create batches by dragging, dropping, and clicking. You can add commands for such common file manipulations as copying and deleting, and you can instruct the program to wait a preset number of milliseconds (I know, whole seconds would have made more sense) or until the last program is finished (see **FIGURE 1**). Go to find.pcworld.com/12285 to get your copy.

ORGANIZE MY DOCUMENTS

? I HAVE ALL kinds of files in my My Documents folder—from last week's budget report to three-year-old letters to my mom. How do I find a specific file?

RATHER THAN treating My Documents as your catchall folder, think of it as the root of a system of folders. **>>TIP** Create other folders inside it, and possibly other folders inside those; then save files to the appropriate My Documents subfolders.

You may want to separate personal files and work files, for example. Or you might create separate folders for each work project. Perhaps you prefer to organize your work files by month or quarter. A time-based system makes archiving or deleting old files simpler.

Want a concrete example? Inside my PC's My Documents folder is a subfolder called Answer Line, and inside that are subfold-

ers for the column in each recent issue of *PC World* (I've archived older issues to a CD-R disc). Other articles I've written get their own subfolders in My Documents; I keep separate subfolders for personal files and for financial documents as well.

KEEP A STABLE SWAP FILE

? THE SWAP FILE Windows places on my hard drive to run programs that can't fit in RAM grows and shrinks as needed. Can I improve my PC's performance by keeping the swap file one size?

YES. IF YOU SET the minimum and maximum sizes the same, your system won't slow down to resize this file. **>>TIP** Set both to 384MB, because—with the size of today's hard drives—you're unlikely to run out of storage at that setting.

In Windows 9x and Me, right-click My Computer and select *Properties*. Click the *Performance* tab and then the *Virtual Memory* button. Select *Let me specify my own virtual memory settings*, and enter **384** for both the minimum size and the maximum size. Click *OK*, then *Yes*, and finally *Close*. Reboot now or later.

In Windows XP, click *Start*, right-click My Computer, and select *Properties*. Click the *Advanced* tab. In the *Performance* box, click *Settings*. Choose the *Performance Options* box's *Advanced* tab, and in the 'Virtual memory' box, click *Change*. Select *Custom size* and enter **384** for both the initial size and the maximum size. Choose *Set*, and then click *OK* three times. ■

Send questions to answer@pcworld.com. We pay \$50 for published items. You'll find Contributing Editor Lincoln Spector's humorous writing at www.thelinkspector.com.

A WALLPAPER A DAY

TIRED OF SEEING the same boring wallpaper every day? **>>TIP** Several free programs automatically and randomly change your desktop's background. I use an ancient one called Randomizer created by Greg Heier. It's small and simple, and since it's a DOS program, it won't conflict with any other programs. It just changes the wallpaper and disappears.

Unfortunately, Randomizer can be a bit complicated to set up, so you may prefer to use ClipperSoft's Clip On Boots. This application not only changes wallpaper, but it can also play a random MP3 at boot-up. Visit find.pcworld.com/12285 to download both programs.

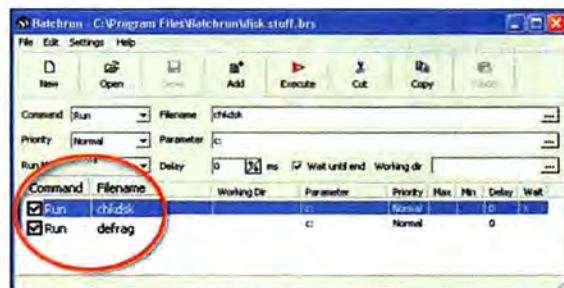


FIGURE 1: RUN MULTIPLE PROGRAMS simultaneously or sequentially with Outer Technologies' Batchrun freeware.

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Your monthly net profit reselling hosting	N/A	\$488.85	\$1,396.65	\$5,068.05
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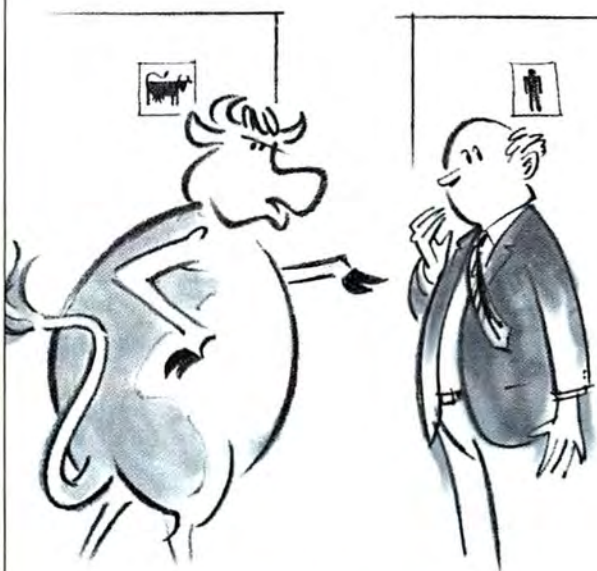
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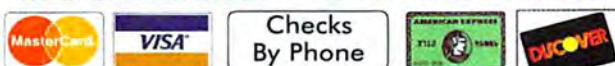
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Are you losing your hair?

The biological effects of combined herbal oral and topical formulations on androgenetic alopecia

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These studies (condensed version) were made possible by a collective effort of The Hair and Skin Treatment Center in combination with The New York Hair Clinic

ABSTRACT

This data represents the results of a 24 week controlled study which shows the positive biological effects, efficacy and safety of a combined, unique herbal oral therapy and topical solution on hair regrowth. Two hundred subjects (100 males and 100 females) were enrolled in our study. A combination of herbal oral therapy and a special complex of herbal based topical formulation was evaluated. The topical formulation has special enhancers that significantly increase the rate of penetration into the scalp. On the average, active hair regrowth was noted with the combined therapy in over 80% of the patients as early as two to four months. No further hair loss was reported as early as one to two months. Long term follow up has shown no side effects and/or unwanted reactions. The results presented here provide evidence of the effectiveness, safety and the high degree of success achieved with this revolutionary modality. This therapeutic approach represents the latest and most advanced treatment in the management of androgenetic alopecia (hair loss) in both men and women.

HERBAL ORAL MEDICATION

Testosterone is a naturally occurring sex hormone (androgen), normally produced, mainly by the male testis with a small contribution from the adrenal glands in both men and women. For this reason it is found in higher concentrations in men as compared to women. It is the compound solely responsible for the male sex characteristics in man as opposed to estrogen and progesterone, the androgenic hormones determining the female sex. Through very complex biochemical pathways in the body some of Testosterone undergoes a series of transformations resulting in various compounds each with a different physiologic function in the body than the original hormone. One of the main compounds produced is dihydrotestosterone also known as DHT.

Accumulation of DHT within the hair follicle is considered to be the hormonal mediator of hair loss through its direct action on the androgenic receptors in human scalp tissue. Through an unknown mechanism, DHT appears to interrupt the normal physiologic environment and function of the hair follicles in the scalp resulting in the alteration of the general metabolism (normal hair growth). The final outcome of this interaction ranges from the partial destruction to the complete obliteration of hair follicles resulting in an increase dropout in the number of functional hair cells.

The organic extract of the herbal formulations tested acts at the level of the cytosolic androgenic receptor of the scalp in a direct competitive manner with DHT. It works

as a natural androgenic blocker, by inhibiting the active binding of DHT to the hair follicle receptor thereby modulating its effects and decreasing the amount of follicle damage and hair loss.

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MATERIALS AND METHOD

Two hundred volunteer patients consisting of one hundred men and one hundred women exhibiting pattern baldness were enrolled in the study. The severity of hair loss ranged from stage I to the most advance stage IV on the

Hamilton scale. Each participant was subjected to a thorough physical examination and a complete medical history was taken. All patients were in apparent good health and none have been previously involved in any studies or treatment as this type. The age range was 18-65 years. The mean age for men in years with their standard deviation was 32.1 ± 9.1 and 37.7 ± 12.9 in women. The total duration of the study was six months.

RESULTS

The overall outcome of this therapeutic modality has proved to be an extremely beneficial treatment approach in the management of androgenic alopecia (hair loss). There was a significant difference in the rate of hair loss and regrowth noted between males and females. A dramatic decrease in the rate of excessive hair loss and fallout was noted in most patients after the first 1-2 months of treatment. In women exclusively, this was evident as early as 2-4 weeks. Actual regrowth of hair was usually seen on the average within 2-4 months in > 86% males and within 2-3 months in > 94% females (figure 1). Thickening and lengthening of hair throughout the scalp occurred in all patients over the course of the study.

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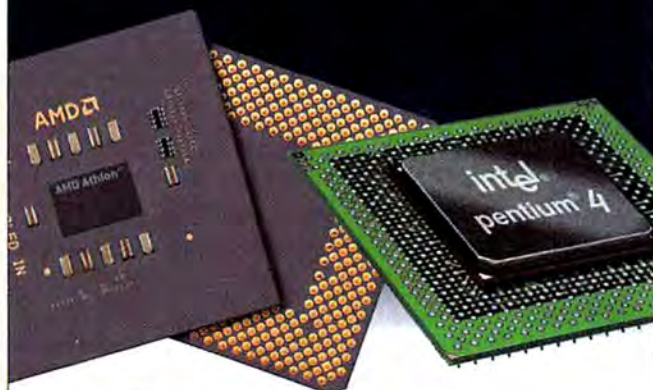
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How to Get Work Done: Beware of Tips!

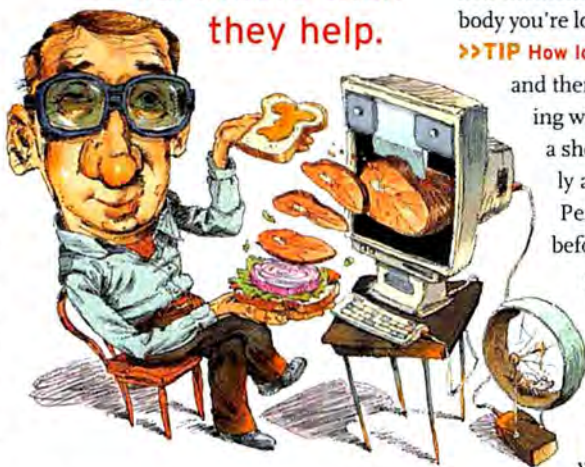
HERE'S A TIP: Handle tips with care. True, this special issue is chock-full of 'em. Like you, I particularly enjoyed learning how anyone can eke 20 minutes' extra life out of a notebook battery by employing a handkerchief, a ping-pong ball, and any dairy goat that happens to be around—

but you do have to be sure to observe the safety caveats on page 74. I am also wildly fond of the tip that lets you harness the blazing laser power of your CD-ROM drive to slice prosciutto di Parma thinner and more accurately than you ever imagined—but you must remember eye protection, as noted on page 102.

Tips can not only slice your ham, they can save your bacon. The best ones rescue you from disaster or floundering; unfortunately, you never see those until it's too late. A couple of days ago, I would have killed for a tip on why two networked Windows XP machines refused to see each other. But finding that kind of tip requires either a photographic memory (you read everything and never forget it), a lucky Google session, or—as happened in my case—a friend who's been through the same situation.

And in two decades of computer frustration, I've learned the hard way that you can develop a feckless addiction for tips that hurt more than they help. In my youth, I was a fool for macro programs that would type my name and address when I pressed <Alt>-S, and for clever DOS tweaks that let me copy files between two machines with a single serial cable. But buying, installing, and tinkering with the macro programs took hours more than I ever saved in key presses, and moving files was easier and faster with a sneakernet and floppies.

**The best tips save
your bacon; the worst
hurt more than
they help.**



So here are three questions to ask when deciding whether taking a tip will be worthwhile for you:

>>TIP How much will it help? Remember that tips have thresholds of usefulness that differ with each user. If you send lots of mass mailings, mail-merge tricks are likely to be of great interest. If you send little more than an annual Christmas newsletter about the family, you're better off scrawling a greeting at the top of each note. I can't begin to count the number of hours I've wasted carefully refining computer processes that would have taken far less time if I'd used simple brute force.

>>TIP How long will it take? Always consider the reward/time ratio before proceeding. I've seen all sorts of suggestions about the very best ways to scan business cards into your online address book. My solution: Don't bother unless you're a salesperson, and maybe not even then. With any card-scanning technique, you put in a ton of tedious up-front effort to make things easier for the one-in-a-million moment when you can't find somebody you're looking for via Web searches.

>>TIP How long will it last? Think twice and then think again before bothering with tips that are likely to have a short life span. True, amazingly arcane WordStar and WordPerfect tips lived on for years before they finally got put out to pasture. But many once-cool Windows 3.1 tips are now consigned to the dustbin of history. Things such as the extremely useful msconfig command in Windows 98 vanished in Windows 2000, then mysteriously reappeared in Windows XP. And if you spent much time exploring the ins and outs of Microsoft's once highly touted Active Desktop, your efforts will never, ever be rewarded in this lifetime or any other.

If a tip still looks good after you ponder these three questions, it just might be worth pursuing. But learn from my mistakes, and first cast a skeptical eye toward any tip that isn't proffered in cash. ■

Contributing Editor Stephen Manes, a cohort of the public television series Digital Duo, has written about PCs for nearly two decades.



Volume 20, number 6. PC World* (ISSN 0737-8939) is published monthly at \$24.95 for one year (12 issues), \$49.90 for two years (24 issues), \$74.85 for three years (36 issues) by PC World Communications, Inc., 501 Second Street #600, San Francisco, CA 94107. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$12 per year for Canada; add \$30 per year for airmail for all other countries. Canadian GST Registration #R124669680. Periodicals Postage Paid at San Francisco, California, and at additional mailing offices. Canada Post International Publications Mail Product, (Canadian Distribution) Sales Agreement No. 663549. POSTMASTER: Send address changes to PC World, Subscription Dept., P.O. Box 37571, Boone, IA 50037-0571. Editorial and business offices: 501 Second St. #600, San Francisco, CA 94107, 415/243-0500. Copyright © 2002, PC World Communications, Inc. All rights reserved. The trademark PC World is owned by International Data Group and used under license by PC World Communications, Inc. PC World Top 10*, Top 10*, PC World Top 100*, Top 100*, and Consumer Watch* are trademarks of International Data Group, Inc., and used under license by PC World Communications, Inc. Printed in the United States.

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