

The PC's Amazing Future: 2003 & BEYOND

SPECIAL
20th
ANNIVERSARY ISSUE

PC WORLD



**20 KNOCKOUT
PRODUCTS**

WINNERS YOU'LL LOVE



20 TOP UTILITIES for
No-Hassle Computing

20 YEARS of Tech Hits & Misses

MARCH 2003 • TECHNOLOGY ADVICE YOU CAN TRUST™ • AOL KEYWORD: PCWORLD • WWW.PCWORLD.COM

20 THINGS YOU DIDN'T KNOW YOUR PC COULD DO*

***And How
to Do Them!**

MAKE IT START UP IN A BLINK,
SNAP BACK FROM A CRASH, POWER
A CELL PHONE...AND 17 OTHER TRICKS

The Solution

Technology powered by Gateway

Procured a new Gateway® 980 server featuring dual Intel® Xeon™ processors, with an additional 980 planned for e-mail application migration.

Standardized firm with over 20 Gateway 450 notebooks and over 50 desktops, all with extended 3-year limited warranties.¹

"Gateway notebooks have increased the efficiency of our auditing team, contributing to our goal of delivering exceptional client service."

—W. Keith Haney, CPA

Power and Performance To Go

Gateway's award-winning notebooks and tablet PCs free your employees to collaborate and communicate anytime, anywhere. Robust expandability means future upgrades keep productivity up, while wireless networking capabilities keep you connected away from the office. Select notebooks and tablet PCs feature the Mobile Intel® Pentium® 4-M processor. That's power, performance and portability you can use on the road to success.

Gateway notebooks, starting at \$999.

Gateway 600
Series Notebook



Gateway 450
Series Notebook



ALL NEW
Gateway Tablet PC



AOL Keyword: Gateway

Prices and configurations subject to change without notice or obligation. Prices exclude shipping, handling and taxes. Not responsible for typographical errors. ¹Limited warranties and service agreements apply; visit gateway.com or call 1-800-846-2000 for a free copy. Technician will be dispatched, if deemed necessary by Gateway, following other troubleshooting methods. On-site service not available in all locations; you may be required to take or send your product to an authorized service location. On-site service excludes mice, keyboards, port replicators, external peripherals and monitors. Copyright ©2003 Gateway, Inc. All rights reserved. Gateway, the Spotted G Gateway Logo, the Spotted G Logo, the Black-and-White Spot Design and "A better way." are trademarks or registered trademarks of Gateway, Inc. in the U.S. and other countries. Gateway Terms & Conditions of Sale apply. The Intel Inside Logo, Intel, Pentium and Xeon are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Microsoft and Windows are registered trademarks of Microsoft Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies. Ad: Arnell Group Ad Code: 112179

The Challenge

A singular business vision needs a single technology resource

Find an all-inclusive IT provider to meet growing technology demands without increasing IT staff, maintain a high level of client service and ensure firm's growth potential.

Hantzmon, Wiebel & Company

Professional Accounting Services

"Working with only one vendor that consistently offers quality products and services at a competitive price saves me time. Procurement is easier, and standardization has minimized our day-to-day IT issues and maximized the reliability of our network."

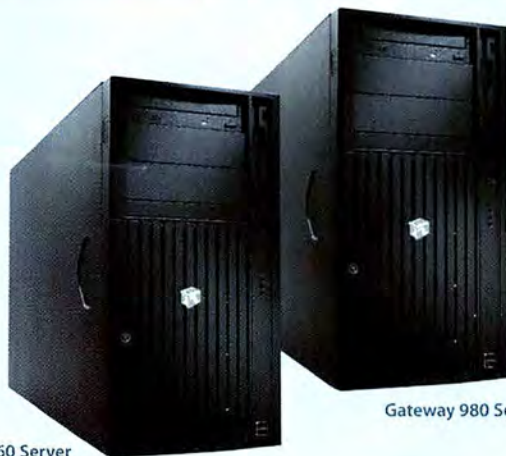
—Mike Davis, Director of Information Technology



Better Business Engines

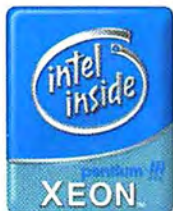
No matter what the demands of your network, Gateway's servers are built to perform, from basic communication to power-intensive web functions. Powerful, reliable and flexible, these servers are ready to expand along with your business. Select servers feature the Intel® Xeon™ processor. And with Gateway's commitment to service and value, that's growth you can count on.

Gateway® servers, starting at \$599.



Gateway 960 Server

Gateway 980 Server



Hantzmon, Wiebel & Co.

75 years of experience

70 employees

11 partners

One IT source



The Result

Success powered by you



Standardization allows Hantzmon, Wiebel & Company's Director of IT to manage a 70-employee firm single-handedly. Reliable notebooks mean auditors in the field stay connected to client-critical data, while powerful desktops boost tax and accounting services even during their most work-intensive periods. Hantzmon, Wiebel & Company needed a server that could grow and expand with their business, so they purchased the Gateway 980 Server, featuring the Intel® Xeon™ processor.

And with Gateway's service and support they're protected from unexpected repair costs, maximizing IT dollars as the firm and its clients look toward the future.

One solution for your business needs. One way to power your business success. Gateway.

Built-to-Order Services = Your Success

Custom Integration and Installation

Gateway provides a wide range of customized configuration and installation solutions delivered directly to you.

- Network configuration
- Asset/information tagging
- Complete hardware setup
- Data transfer to new PCs

Comprehensive Technical Support

Gateway ensures that your network stays connected, secure and productive with 24/7 service and expertise available by phone, online or on-site.

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- Multiple site support
- Free on-site server health check after 30 days
- Annual network consultation

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Less is more.

Presenting the world's most compact full-featured 12" notebook computer. Unlike other compact notebooks, everything is built in. Like a blazing G4 processor, super-crisp 12" display (1024 x 768), slot-load CD-burning/DVD-playing Combo drive and integrated Bluetooth. Plus a battery that lasts up to 5 hours, so you can do more – anywhere. All incredibly engineered into a stunning aluminum enclosure that's just 1.2" thin. The new 12" PowerBook.*





More is more.

Presenting the world's first 17" notebook computer. Featuring a breathtaking 17" widescreen display, blazing 1GHz G4 processor, slot-load CD/DVD-burning SuperDrive™ and the industry's first backlit keyboard. Plus AirPort® Extreme* (802.11g) and integrated Bluetooth make it the most wirelessly connected notebook ever. All miraculously engineered into a 1"-thin enclosure that's ultra-light and ultra-desirable. The new 17" PowerBook.





NATIONAL GEOGRAPHIC

Information Systems

How does *National Geographic* take its readers and viewers to the four corners of the globe? With the help of an expert guide called FileMaker Pro. With its intuitive interface, FileMaker Pro allowed *National Geographic* to create custom databases that help them manage their magazine and television productions. Editors can generate contracts for writers and photographers in an instant. Television producers can track

Carol B. Alim

Director, Applications Support
Information Systems

(and database explorer)

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schedules with a simple browser interface. And international partners can get vital information over the Internet from anywhere in the world. Plus, FileMaker integrates with Microsoft Office and supports XML, JDBC and ODBC. To learn more, take a quick trip to www.filemaker.com or call 800-325-2747. *What's your problem?*





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BenQ FP591

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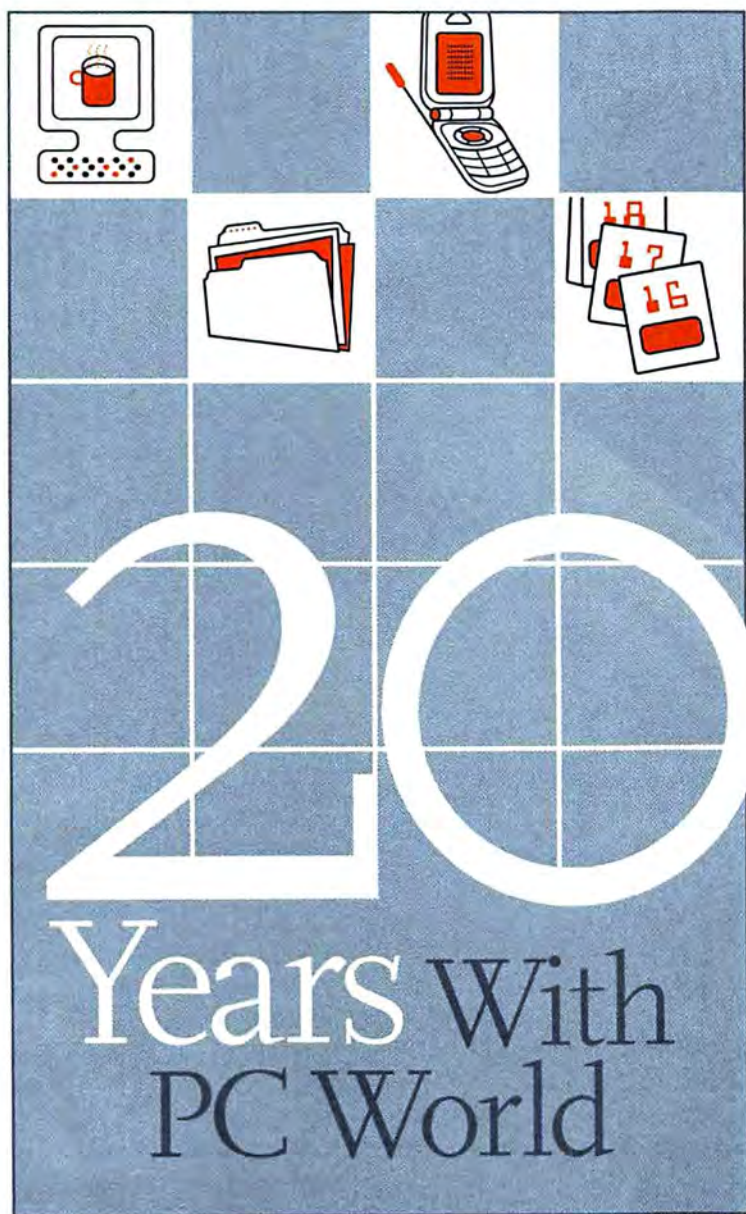
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Enjoyment Matters



COVER STORY

80 20 Things You Didn't Know Your PC Could Do



Even if you're thoroughly familiar with your PC's abilities, the machine you use every day can handle tasks and perform useful tricks that you'd probably never guess it could. Associate Editor Eric Dahl reveals a few of the practical, amusing, and inspired hidden talents of your computer.

Cover photography by Kevin Candland



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PCWORLD

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FEATURES

STUFF WE LOVE

92 20 Products We Love

For the best of the best, check out this score of winners—great hardware, software, and online services that knocked our socks off.

UTILITIES

105 20 Tools for Trouble-Free Computing

These must-have, no-hassle utilities will help make your everyday tasks smoother and safer—and bring back the fun, to boot.

COLD TURKEY

119 20 Days Without a PC

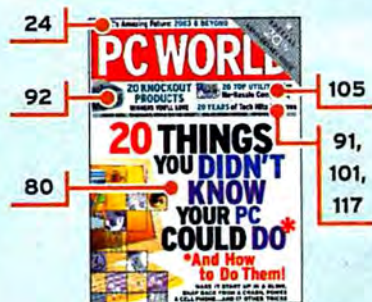
Bravely abandoning his laptop and forgoing the Web, our reporter tries life sans computer—and finds surprising benefits.



FLASHBACKS

- 91 20 Years of Hardware
- 101 20 Years of Software
- 117 20 Years of Online

ON THE COVER



The Stylistic® ST4000 Tablet PC Is Here.



**AFTER 12 YEARS OF DESIGNING, TESTING
AND IMPLEMENTING PEN COMPUTERS,
OUR TABLET PC IS HERE.**

12 YEARS AWAY FROM ORDINARY.

Don't expect our Tablet PC to be like all the rest. It's powered by the latest Intel® processor. Runs any Windows application. Thrives with or without a keyboard and slips effortlessly into our optional Tablet Dock for desktop duty. It's thin, it's light, it's flat. In short, it's everything 12 years of experience said it could be: The most natural, mobile and productive PC anyone has ever seen.



The Stylistic® ST4000 is powered by an Ultra Low Voltage Mobile Intel® Pentium® III Processor 800MHz – M which supports Enhanced Intel® SpeedStep® Technology.

Fujitsu recommends Microsoft® Windows® XP Professional for Mobile Computing.



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Top Video Editing Utilities
Get in touch with your inner Scorsese with these programs.
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REVIEWS

Digital Camcorders
These devices make shooting and editing video a breeze.
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COMING UP IN APRIL

Internet Fixes: Learn how to protect yourself from viruses, security holes, scams, and more.
Insider's Guide to PC Buying: Get a great system at a great price.
Hard Drive Handbook: Every-

thing you need to know about maintaining your current drive or upgrading to a roomy new one.
The Lightest and Brightest: We test 16 digital projectors that offer something for everyone.

NEWS & TRENDS

- 24** 2003 and Beyond
What will the future of personal computing look like? We gathered insights from analysts, researchers, and developers to provide a glimpse of the innovations you'll see in the next 20 months.
- 32** Windows XP's Successor
Microsoft's next operating system, code-named Longhorn, is still a couple of years away, but a leaked pre-beta version reveals some details.
- 34** Sales Taxes Hit the Web
Statutory guidelines set by the Streamlined Sales Tax Project and supported by most states could mean the end of tax-free online buying.
- 36** Bye-Bye CD-RW?
Though the format wars rage on, rewritable DVD drives are poised to supplant CD-RW units thanks to falling prices and a wider array of choices.

NEW PRODUCTS

- 64** Display
ViewSonic Airpanel V110 Smart Display
- 65** Notebooks
Panasonic Toughbook T1, Sharp Actius PC-UM32W
- 68** Digital Camera
Kyocera Finecam S5
- 70** Tablet PC Software
Alias|WaveFront SketchBook Pro, Corel Grafigo, FranklinCovey TabletPlanner
- 74** Web Site Development Software
Macromedia Contribute
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HERE'S HOW

- 140** Windows Tips
Tweak XP's error reporting feature; diagnose memory woes; try Windows Configurator.
- 144** Internet Tips
Steer past 404 errors to find the Web page you want; disable IE's script-debugging messages.
- 146** Step-By-Step
Share a single dial-up or broadband Internet connection with multiple PCs on a network.
- 148** Hardware Tips
Extend your desktop across two monitors; connect six-pin and four-pin FireWire devices.
- 150** Answer Line
Start up your PC when Windows fails to boot; decipher Windows' error messages; link portions of Excel spreadsheets to Word documents.

APC Back-UPS Pro 500

- ▶ Capacity: 500VA, 315 Watts
- ▶ Half-load runtime: 9.6 minutes
- ▶ 3 surge-only AC receptacles
- ▶ 4 combined UPS and surge receptacles
- ▶ \$25,000 Product Protection Policy
- ▶ 2-year limited warranty



APC
Legendary Reliability™

\$119.08

CDW 209767

D-Link DI-624 AirPlus Xtreme G

- ▶ 54Mbps 4-port wireless router
- ▶ High-speed 2.4GHz data transmission range
- ▶ Enhanced security to shield and protect your wireless communication from intruders
- ▶ Robust firewall security features
- ▶ Securely connect to the network using 802.1x for wireless user authentication



D-Link

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CDW 450603

SimpleTech 128MB Bonzai USB Flash Mini-Drive

- ▶ Memory: 128MB
- ▶ Large storage capacity
- ▶ Secure Digital™, MultiMediaCard™ expandable
- ▶ Plug and play, hot-swappable functions
- ▶ USB interface



SimpleTech

\$94.12

CDW 404746

WatchGuard Firebox 700

- ▶ For smaller offices or remote offices requiring a secure, private network
- ▶ Internet Security Appliance for 250 users
- ▶ Firewall packet filtering throughput: 150Mbps
- ▶ VPN (3DES) throughput: 5Mbps
- ▶ Branch office VPN tunnels: 150
- ▶ Mobile user VPN tunnels: 150
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Sony VAIO® GRS100 notebook

SONY

- ▶ 1.8GHz Mobile Intel® Pentium® 4 Processor-M
- ▶ Memory: 256MB
- ▶ 30GB hard drive
- ▶ 16X10X24X CD-RW/8X DVD-ROM drive

- ▶ 56Kbps modem
- ▶ 10/100 Ethernet
- ▶ 15" XGA active-matrix display
- ▶ Windows® XP Professional

\$1676.00

CDW 427190



Compaq Evo D510 Series small form factor desktop computer

COMPAQ
brought to you by hp

- ▶ 2.4GHz Intel Pentium 4 processor
- ▶ Memory: 256MB
- ▶ 40GB hard drive
- ▶ 48X Max CD-ROM drive
- ▶ 10/100 Ethernet
- ▶ Windows XP Professional

\$1025.38

CDW 422958



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shipped right away. Most of the time, th
day. In other words, just the way you w
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This Month We Look at Ultrathin Notebooks, Crisp LCDs, and More

SVELTE LAPTOPS share the limelight with fine flat panels and dreamy digital audio players. A list of all newcomers follows, along with each item's star rating, if any (some models are pre-production units or otherwise ineligible for a rating). Visit find.pcworld.com/10860 for more on PC World's Star Ratings.



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DESKTOP PCs

- 126 Emachines T2200 SE ★★☆☆☆
- 128 Falcon Northwest Mach V 2800+ DV ★★★★★
- 126 FreewayTech Innovation A4800M ★★★★★
- 128 Gateway Media Center PC 500 ★★★★★
- 128 HP Media Center 883n PC ★★★★★
- 126 Micro Express MicroFlex 24A ★★★★★
- 126 Micro Express MicroFlex 27A ★★★★★
- 126 Polywell Poly 880NF2-2700 ★★★★★

NOTEBOOK PCs

- 130 Compaq Evo N1015v ★★☆☆☆
- 130 Dell Latitude C640 ★★☆☆☆
- 130 IBM ThinkPad A31 ★★☆☆☆
- 130 MicronPC TransPort T1000 ★★★★★
- 65 Panasonic Toughbook T1 ★★☆☆☆
- 65 Sharp Actius PC-UM32W ★★☆☆☆
- 130 Toshiba Satellite 1415-S173 ★★☆☆☆
- 130 Toshiba Satellite 5205-S703 ★★☆☆☆

INK JET PRINTERS

- 132 Canon S330 Color Bubble Jet Printer ★★☆☆☆
- 132 Lexmark Z35 Color Jetprinter ★★☆☆☆
- 132 Lexmark Z45se Color Jetprinter ★★☆☆☆

DIGITAL VIDEO RECORDER

- 68 SnapStream Personal Video Station 3

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- 133 AOC LM520 ★★☆☆☆
- 133 Compaq TFT 1520 ★★☆☆☆
- 133 CTX S530 ★★☆☆☆
- 133 Envision EN-5200e ★★☆☆☆
- 133 IBM T541 ★★☆☆☆
- 133 NEC MultiSync L1560M ★★☆☆☆
- 133 Sony SDM-X52 ★★☆☆☆
- 94 Samsung SyncMaster 240T
- 64 ViewSonic Airpanel V110 Smart Display ★★☆☆☆

CD-RW DRIVES

- 134 Asus CRW-5224A ★★☆☆☆
- 134 CenDyne 52X CD-RW ★★☆☆☆
- 134 Lite-On LTR52246 ★★☆☆☆
- 134 Memorex Internal CD-ReWritable 52X E-IDE Drive ★★☆☆☆

DIGITAL AUDIO PLAYERS

- 135 Apple iPod for Windows ★★☆☆☆
- 135 CenDyne Grünstick MP3+3 ★★☆☆☆
- 94 iRiver IFP-180T
- 135 iRiver IFP-190T ★★☆☆☆
- 135 iRiver IMP-400 SlimX ★★☆☆☆
- 135 Panasonic SV-SD50 E-wear SD Audio/MP3 Player ★★☆☆☆
- 135 PoGo Products RipFlash DX ★★☆☆☆
- 135 Sonicblue Rio S50 ★★☆☆☆
- 135 Sony MPD-AP20U ★★☆☆☆
- 135 TDK Mojo 860 CD-MP3 Digital Jukebox ★★☆☆☆

DIGITAL CAMERAS

- 136 Canon PowerShot G3 ★★☆☆☆
- 68 Kyocera Finecam S5 ★★☆☆☆
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- 70 Corel Grafigo ★★☆☆☆
- 70 FranklinCovey TabletPlanner ★★☆☆☆

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- 72 ACCPAC International Simply Accounting 2003 ★★☆☆☆
- 72 Intuit QuickBooks 2003 ★★☆☆☆

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- 98 Info Select
- 74 Macromedia Contribute ★★☆☆☆
- 96 Trillian Pro

ONLINE SERVICES

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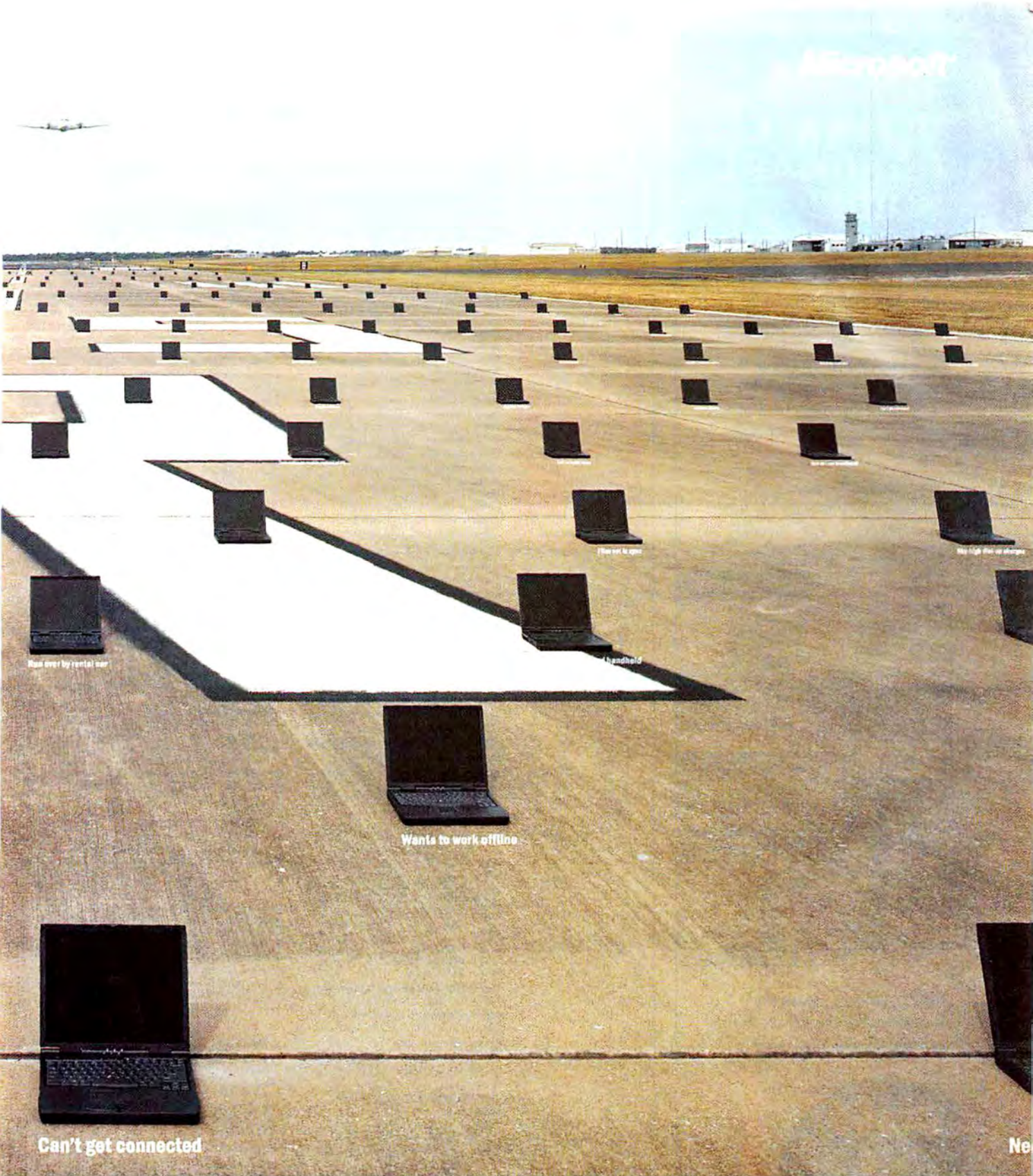


Managing mobility can be challenging.

That's why there's Windows XP and Office XP.

Recognize any of those issues? Or, perhaps, all of them? We thought so. Many of these issues can be related to your legacy desktop software. Fortunately, many of them can be addressed by features in Microsoft® Windows® XP Professional and Office XP Professional.

Microsoft



Run over by rental car

Flashed & open

Too high for wireless

Handheld

Wants to work offline

Can't get connected

Want specific examples? Windows XP Professional offers new Remote Assistance, which enables you to view a user's screen and control the user's computer to solve technical problems from afar. Office XP Professional gives you installation support for HTTP,

HTTPS, and FTP, which means you can install and maintain the suite directly from a Web server or a file share on your network. And finally, several new features make deployment easier than ever. For more ideas about managing your desktops, visit microsoft.com/desktop

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Pioneer DVR-A05

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DVD-R is THE most compatible format. Let's face it, recorded DVDs are most valuable when you can play them back on other DVD players or computer drives. A recent test conducted by *Digital Video Magazine* indicates that DVD-R discs are more likely to play back on other DVD players than any other format of recordable disc tested. And with the price of blank DVD-R media typically being much lower than other formats, recording is also affordable. So if you



Pioneer DVR-7000

want to burn a disc and then be able to share it with friends and family, this is the technology you'll want to use.

DVD-R and DVD-RW are the gold standard. DVD-R and DVD-RW have become the de facto standard for DVD recording with millions of products already in use. DVD-R has been used throughout the professional video and entertainment industries for years and computer manufacturers like Sony® and Compaq® are currently offering DVD-R/RW drives in their latest line of products. Apple® also made the move to install DVD-R drives in many of their new machines.

Why is the DVD Forum important? The DVD Forum was originally formed to create the DVD Video standard. Now, the group that made DVD possible has taken it to the next level, bringing together consumer electronics and computer manufacturers with blank

media companies to set the standard for recordable DVD.



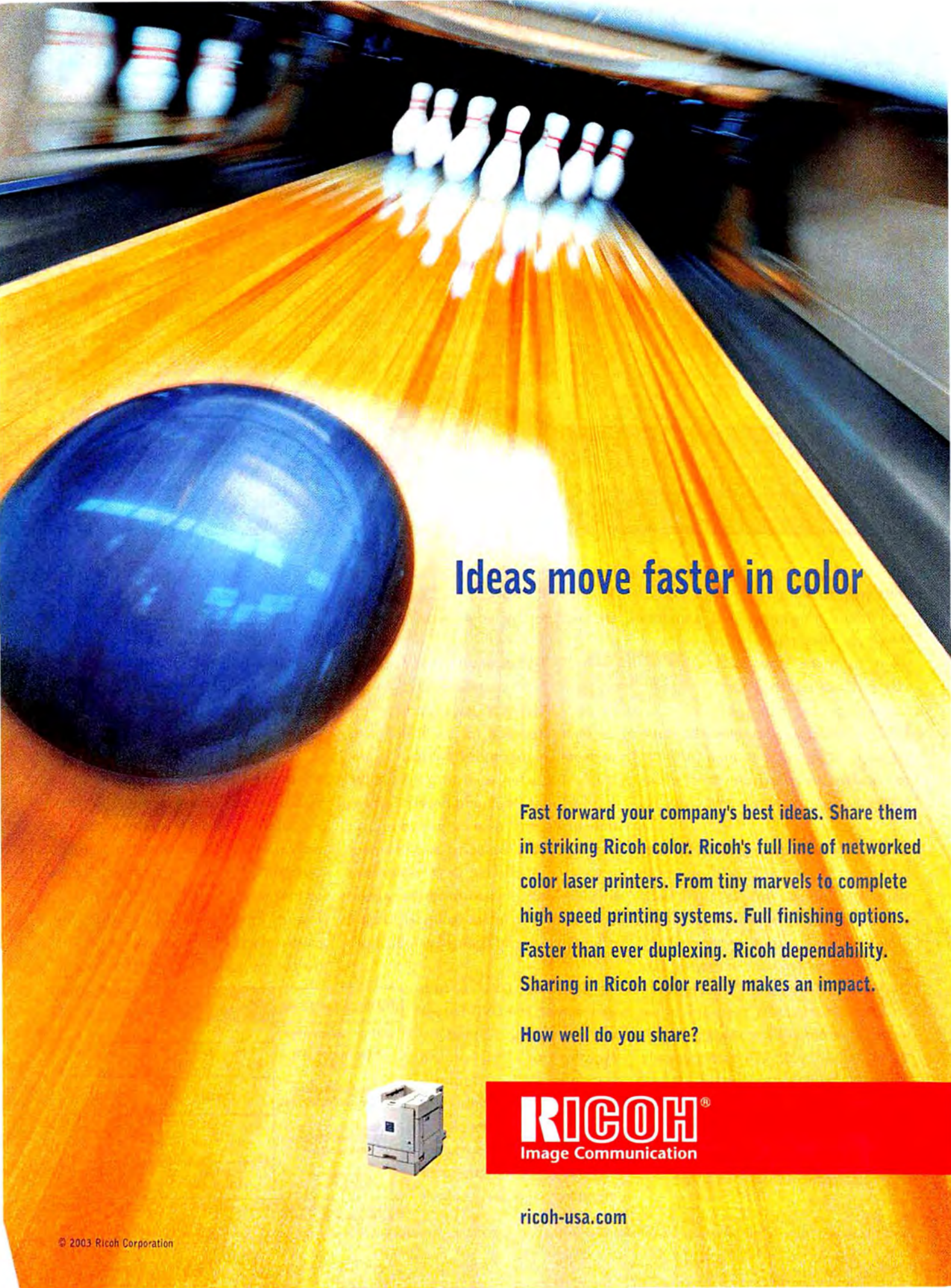
The DVD Forum approved DVD-R and DVD-RW as official DVD recording standards. Don't settle for imitations. If you want genuine DVD recording, look for the official DVD-R/RW logo.

What are you waiting for? Whether you want to create a DVD of your wedding, a recent family vacation or your child's first piano recital, DVD-R/RWs offer just what you need to burn a disc that can be shared with friends and family. Now is the time to get started. For more information, go to www.pioneerelectronics.com.

DVD Format Comparison	DVD-R/RW	+R/+RW
DVD Forum-approved Format	YES	NO
Original Equipment Drive Manufacturers	Pioneer Hitachi LG Panasonic Toshiba	RICOH
Drives shipped to Market (projected Q4 2002) ¹	3,284,000	1,490,000
Formally supported by DVD Player and ROM Drive Manufacturers ²	68%	<5%
Compatibility with Existing Players ³	DVD-R 88% DVD-RW 65%	+R - NA +RW -59%

1. Source: Techno Systems Research
2. Source: Pioneer Electronics Inc.

3. Source: *Digital Video Magazine*, July 2002



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UP FRONT

KEVIN MCKEAN

The First 20 Years of PC World

Much has changed since this magazine's founding, but not its mission or soul.

WHEN THE EDITORS first sat down to plan this 20th-anniversary edition, we agreed it should not be too self-congratulatory. Anniversary or not, we felt you would still want the latest information on great technology, not chest-thumping essays on the PC's history or foggy guesses concerning its future.

So, we're celebrating with an issue that delivers the same great value you expect from *PC World*, though we couldn't quite resist the "20" theme of several major stories (see, for example, "20 Things You Didn't Know Your PC Could Do" on page 80).

Before you get started, though, please forgive me for recounting a few of the facts about how *PC World* came to be.

The story begins with a boyish entrepreneur named David Bunnell, who had written manuals for the Altair 8080—the first truly personal computer—and had edited books for Adam Osborne, creator of the first "transportable" computer. "The revelation at Osborne," recalls Bunnell, "was that you could sell more books if they applied to a specific machine—not just 'How to Program in Basic,' but 'Basic for the Apple II.'" When IBM brought out its PC in 1981, Bunnell saw an opportunity for a single-machine magazine. He raised the money, hired a youthful staff, and published the first issue in 1982.

RIGHT IDEA, WRONG TITLE

HOWEVER, THAT magazine was not *PC World*. It was *PC Magazine*, which would later become our archcompetitor. When

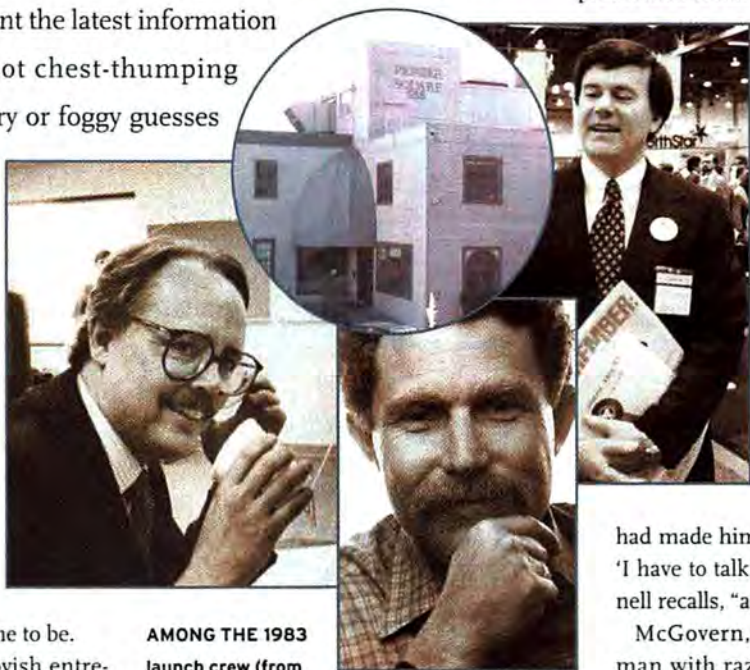
flew out to meet us, and we liked him," Bunnell says, whereas the Ziff-Davis people seemed to him aloof by comparison.

On Friday, November 19, 1982, McGovern and the owner both called to say the deal was done and that IDG was the buyer. But when he arrived for work the following Monday, Bunnell found two Ziff executives waiting for him. Apparently they had gone to see the owner late Friday night and

had made him a better offer. "I said, 'I have to talk to my attorney,'" Bunnell recalls, "and walked out."

McGovern, an amiable bear of a man with razor-sharp competitive instincts, showed up in San Francisco the next day. "We met him at his hotel room," says Cheryl Woodard, Bunnell's business partner. "He wanted to put out a magazine called 'PC World' to compete with *PC Magazine*. We drew up a contract, created a budget, and wrote the business plan over the next few days."

The following Monday, Bunnell, Woodard, McGovern, and a handful of others were prowling the vast Comdex trade show in Las Vegas wearing homemade "PC World" buttons and passing out



AMONG THE 1983 launch crew (from left): Bunnell, Fluegelman, and McGovern. Above: the renovated soap factory that was our first office, shown as it appears today.

its print run swelled to over 150,000 by the fourth issue, Bunnell and crew realized they needed more funding. The majority owner, software executive Tony Gold, shopped the magazine to potential buyers—including two big names in publishing, Ziff-Davis and IDG. Bunnell and his crew openly preferred the latter. "Pat McGovern [IDG's founder and chairman]

Tell Us What You Think: Visit www.pcworld.com/pcwinput and rate this issue—you could win \$500. You'll need your subscriber number from the mailing label to take this survey online. The Web site explains the official rules and also how to participate in the drawing if you're not a subscriber. You can enter from February 5 through March 5, 2003.

business cards fresh from the printer. "We came back with orders for over 100 pages of advertising, so it was a good start," Bunnell says.

They were soon joined by all but 4 of the original 52 *PC Magazine* staffers. Bunnell moved this crew into a former soap factory, where they worked out of two giant rendering vats that had been turned into offices, rushing to publish an issue before Ziff-Davis could obtain a court injunction to forbid its appearance.

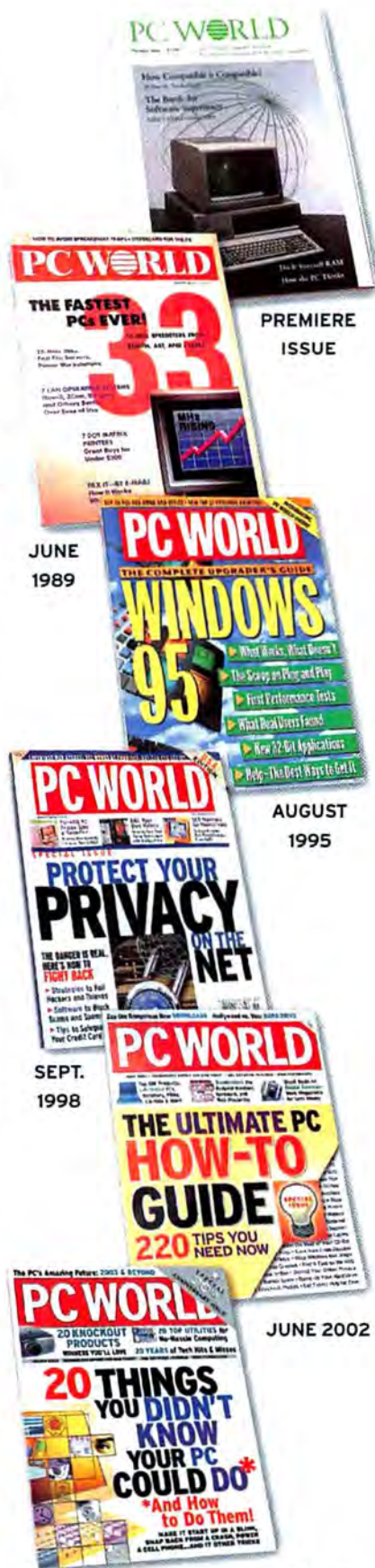
That 324-page inaugural issue, with its odd green logo and cover story written by Karl Koessel (still one of our senior technical editors), has many features that seem quaint today—such as a list of modem-based PC bulletin boards that could accommodate only one user at a time. But it set the tone for all the issues that followed.

Under the leadership of editor Andrew Fluegelman, *PC World* went beyond simple technology to cover how people were using PCs for everything from financial management to games. It battled for less repressive software copy protection, among other causes. And it launched a companion publication, *Macworld*, to bring the same uncompromising journalism to the realm of Apple machines.

THE EARLY YEARS

THOSE FIRST ISSUES included a few elements that didn't quite hit the mark—like the cover showing a fellow sipping a drink while working on a huge portable computer by a swimming pool. Or the time we sent an editor to the tropics to learn if his laptop could survive in the jungle.

And as time went by, the magazine weathered many storms. It survived the tech collapse of 1985, which drove a number of PC companies out of business. It endured the tragic loss of Fluegelman, who apparently took his own life by jumping off the Golden Gate Bridge. And it grew up along with its readers: "They were buying computers based on business decisions, not their love of PCs," remembers Richard Landry, editor in chief from 1987 to 1991. So the magazine concentrated on serving tech-savvy business people, a focus that survives today.



In 1991, then-CEO Pat Kenealy (now CEO of parent company IDG) and editor in chief Philip Lemmons set out to close the gap between *PC World* and its old rival *PC Magazine*. "The research showed that readers wanted hands-on reviews, and lots of them," Lemmons says. So the team created the PC World Test Center and used it to produce monthly rankings of the most important products—launching the forerunner of today's *Top 100* (page 124). It also introduced the ongoing Reliability and Service reader survey.

FAST FORWARD

TODAY, *PC World* reaches more U.S. readers than any other technology magazine, according to syndicated studies. We've also won more awards since the mid-1990s than all our competitors combined. And *PC World* appears in more than 60 versions that span the world from Germany to Kenya to China to Iran.

Still, the magazine is evolving. With the help of editor Harry McCracken, creative director Robert Kanen, and a supremely talented staff, *PC World* now devotes much more coverage to Web sites, wireless, and networks. We have reshaped the *Top 100* to add cameras and optical drives, among many other products. We beefed up PCWorld.com so that you can easily compare prices on everything we cover. And we continue to tackle controversial issues, ranging from Internet privacy and security (see our regular *Privacy Watch* column on page 55) to hard-hitting investigative stories like February's "Camera Confidential" (find.pcworld.com/33596), which exposed the dubious practices of some online retailers.

However much *PC World* changes, though, I doubt that it will stray far from its founders' vision. "The PC was a great equalizer, just like the pistol in the Old West," observes Bunnell. True to its subject, this magazine was born in a spirit of rebellion—and it will continue to cover disruptive new technologies, those that reshape our professional and private lives, for many anniversaries to come. ■

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

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NEWS & TRENDS

EDITED BY RAMON G. McLEOD

2003 AND BEYOND

WHAT'S NEXT? SMALLER HARDWARE, WIRELESS EVERYWHERE, AND (AT LONG LAST) TRUE CONVERGENCE. **BY SEÁN CAPTAIN**



FOR THE past 20 years, *PC World* has kept readers up-to-date on key in-

novations in personal computing—at work, at home, and on the road. So what better way to start off our third decade than by previewing the technologies and trends we'll be covering next?

We asked dozens of product researchers, developers, and analysts to share their predictions about the next couple of years. And even though our crystal ball hasn't always been right on the money in issues

past (see "Flashback," pages 25, 26, and 30), this time a few common themes emerged.

THE BIG TRENDS

CONSUMER electronics devices such as TVs and stereos should start to communicate wirelessly and automatically—no configuration will be required with computers and peripherals. Indeed, one of the major developments of the next year or two may be seamless, fast, and invisible connectivity everywhere.

You'll also see technology offered in much smaller packages. PCs will shrink; many



more of them will be laptops.

Processing and graphics performance of personal digital assistants and cell phones will rival those of desktop PCs from only a few years ago. Handhelds will become prescient, as well—able to determine where you are and to anticipate what information you'll want, such as the prices of plasma TVs when you walk past an electronics store (think *Minority Report*). The Internet will be everywhere: Even your wristwatch will be connected. But the connections will happen behind the scenes and automatically.

Although many of these developments won't be widespread at the end of 2004, products will be available for early adopters. And they will grow commonplace toward the end of the decade, changing the way you interact with technology in your office, on the road, and back at home.



PETITE PC: Vulcan's prototype Windows XP PC is smaller than many paperback books.

maker Princeton Graphics. By 2004, Wang expects, prices on 15-inch LCDs will drop below \$200, and prices on 17-inch models will fall below \$300. By then, LCDs will be outselling CRTs, predicts Christian Brantley of rival vendor Eizo Nanao Technologies.

Today's CRTs still offer a fuller, more accurate color palette than LCDs for high-end graphics work. But even that may change by year's end as the first few high-end LCDs acquire hardware calibration and backlight technologies that could enable them to match or surpass the color reproduction of CRTs.

DIMINUTIVE DESKTOPS

LIKE BULKY monitors, big and boxy systems are due to fall out of fashion, especially at the office. More and more companies will ditch desktops in favor of notebooks. And since most businesses never upgrade or expand their desktop PCs, IT departments that go the desktop route will opt for space-saving models over large boxes full of empty PCI slots and drive bays. Should

expansion become necessary, soon-to-be-ubiquitous USB 2.0 ports will let users add components without cracking the case. "You will see 'smalls' from everybody," says IDC analyst Roger Kay, "and they're getting to be a higher proportion [of overall sales]." Most office and home computers will probably continue to run a Windows operating system—either Windows XP or a later version (see "Windows XP's Successor," page 32).

Safest prediction of the year: Processors will continue to get faster. Intel may rev up the Pentium 4 as high as 4 GHz by year's end. Meanwhile, rival AMD's new PC processor, code-named ClawHammer, should narrow the gigahertz gap when it premieres later this spring. ClawHammer will mark the transition from 32-bit to 64-bit desktop CPUs. If that processor catches on, according to Dean McCarron, principal analyst for Mercury Research, Intel may bring out its own 64-bit desktop chip which, rumor has it, is currently being developed under the code name Yamhill. Apple may jump aboard the 64-bit wagon, too: Many industry watchers expect the company to adopt IBM's new 64-bit PowerPC 970 processor, which is scheduled to debut in the second half of this year.

New drive technologies such as Serial ATA, with its thin, 0.25-inch-wide cables (see find.pcworld.com/33416), will help computers slim down further. IDC hard-drive analyst Dave Reinsel expects that adoption of Serial ATA will accelerate in 2003; by the ►

FLASHBACK

Our Best (and Worst) Guesses

SINCE ITS inception, *PC World* has run predictions on the future of technology, whether our own opinions or those of experts. Here is a sampling.

1984

WOW, THE INITIAL VERSION

OF WINDOWS: We admire Microsoft's Windows 1.0, confidently predicting that it "should have a lasting effect on the entire personal computer industry." (Windows doesn't really catch on until 1990's version 3.0.)

1986

GOOD THINGS COME TO THOSE WHO WAIT: *PC World* founder David Bunnell tips his

12 YEARS

hat to Apple, saying, "Steve Jobs will introduce a super-high-end, low-cost machine that will... who cares? It will be wonderful." And he was right—12 years later—with the debut of the iMac.

1987

WHAT ABOUT THAT PESKY WEB? We sagely tell readers about PC communications in 2000: "At the office, you'll be in command of a 32-bit, bit-mapped PC connected to other computers by a fiber optic LAN.... At home, your PC will be connected to the outside world by one or a combination of the following media: ISDN, cable TV, and existing analog phone lines; and possibly by satellite, FM sideband, or cellular modem."

IN THE OFFICE

AFTER YEARS of being confined to executive suites, LCDs are coming to the cube farm. "Price, price, price. That's the main thing in the industry these days," says William Wang, president of monitor

end of 2004, it should be the dominant technology. By then, it may also start appearing on optical drives. Many more desktop PCs will jettison 3.5-inch hard drives in favor of 2.5-inch notebook-style models; their performance will improve as the drives move from today's typical 4200-rpm rotational speed to 5400 rpm and even 7200 rpm.

By 2004, 3.5-inch hard drives that have rotational speeds of 10,000 rpm and capacities up to 500GB may emerge. These faster drives will be able to take advantage of the greater data throughput that Serial ATA provides, enabling them to challenge pricey SCSI hard drives in high-end workstations and low-end servers. On the optical storage front, blue-laser DVDs—with capacities of up to 30GB per disc—won't quite be ready by the end of 2004; 9.4GB, dual-layer DVD+RW discs and drives, on the other hand, should be.



ON THE GO

OF COURSE, smaller desktop systems will never match the portability of notebooks. And while notebooks are less powerful, they do have multigigahertz processors, 3D graphics boards, and high-resolution screens, all of which provide enough performance and fea-

tures to replace most desktops. "When people are reaching the end of their desktop's useful life, they are considering notebooks," says IDC's Kay. Stephen Baker, director of IT research at NPD Techworld, expects notebook retail sales to outpace desktop retail sales by 2004 or 2005.

Even gigahertz-crazy Intel recognizes that customers

In the home, new hard drive-based products will distribute digital entertainment wirelessly to TVs and stereos.

have a growing preference for portability over raw power. Though its desktop Pentium 4 processors may hit 4 GHz by the end of 2003, by March of this year the company plans to introduce a new mobile processor and motherboard architecture called Centrino Mobile Technology that emphasizes power conservation over clock speed. Even so, Centrino systems won't be poky: Intel has not specified CPU speeds, but spokesperson Shannon Johnson says the new chip "will deliver better performance than what exists today."

These and other developments will help increase the battery life of notebook PCs. Howard Locker of IBM says that his company hopes, within the next 20 months, to produce Centrino-based systems capable of 8 hours of battery life—versus the 4 to 5 hours that IBM's current notebooks provide. Also this year, Transmeta will launch a new low-power processor, code-named Astro, that promises to com-

plete twice as many operations per clock cycle as the company's current, relatively sluggish Crusoe processor.

WIRELESS, WIRELESS EVERYWHERE

ANOTHER KEY element of Centrino is integrated 802.11-based wireless (or Wi-Fi) technology. Analysts expect it to be in virtually all portables by

2004. Aside from its continued growth in office and home settings, Wi-Fi is becoming an important component of wireless access for all the locations in between, filling the void caused by the delayed roll-out of third-generation (3G) cellular phone-based networks capable of offering speeds of up to 2 mbps. Several companies are piecing together overlapping Wi-Fi "hot spots" in order to achieve blanket coverage in major cities. "Our goal for the fall of 2005 is to be in the top 50 metropolitan areas," says Steve Harris of Cometa Networks, an enterprise put together by Apax Capital, AT&T, IBM, and Intel.

John Ankcorn, principal research scientist at HP Labs, predicts that future handhelds and notebook PCs will connect seamlessly to whatever wireless service is available, hopping from one Wi-Fi network to the next and even jumping between Wi-Fi, cellular, and Bluetooth wireless networks. To support devices

FLASHBACK

1990

HOW MIGHTY IS THE PEN?

In our August issue, we are gung ho about pen-based computing. In our story, "Will the Pen Replace the Keyboard in Your Next PC?" we predict the market for these PCs will take off in 1992 and very soon reach millions in sales. That didn't happen. Will it happen for Tablet PCs?

1993

BOY, WERE WE RIGHT! In a feature called "The World Class Winners of Tomorrow," we proclaim that the age of the PDA has finally dawned with the arrival of the new Tandy/Casio Zoomer handheld, which barely beats the Apple Newton to market. We laud the \$900 Casio Zoomer for its use of character-recognition and pen input capabilities. Although the Newton and the Zoomer did not last into the 21st century, millions of PDAs have been sold since 1993.

1995

QUICK PLUS SMALL:



We confidently announce: "Within five years, CPUs performing up to ten times faster than a 66-MHz 486-DX2 will be available." Zoom! We also predict that you'll be able to store 500MB of data on a device that is half the size of a PCMCIA card. Five years later, IBM comes out with its 1GB Microdrive, which fits into a CompactFlash card slot and occupies less than half the space of a PCMCIA card.



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that are connected constantly or frequently, Ankcorn anticipates, location-based information services will emerge.

"Imagine walking down the street and getting a consumer rating of a restaurant or a record store before you set foot inside," says Hank Nothhaft, CEO of Danger, the company that designed and provides Internet services for the T-Mobile Sidekick handheld. Nothhaft expects that wireless service fees will drop steadily

Band network, which uses ordinary FM radio frequencies to beam customized information to a multitude of everyday devices—watches, pens, wallets, key chains, and the like. The network and transmission protocols, combined with tiny receivers built by National Semiconductor, make up a new platform called Smart Personal Object Technology (SPOT). Watchmakers Citizen, Fossil, and Suunto have already announced plans to

services that provide centralized information accessible anywhere from any device. The company envisions such scenarios as an injured person using a wireless-enabled PDA to authorize the transfer of medical records to a hospital. Of course, given Microsoft's inability to build a secure Web browser, the prospect of entrusting your personal information to the company may not be entirely appealing.

Even without Web services, you can access all of your computer's data if you carry it with you. Last year, OQO previewed its eponymous handheld PC, a Windows box that isn't much larger than an iPod; another company, Vulcan, is developing its similar Mini-PC.

But while some computers will start to look like handhelds, many handhelds will acquire PC functionality. Later this year, Intel will introduce a mobile phone chip, code-named Manitoba, that integrates the company's XScale PDA processor with flash memory and even some analog circuitry. Intel spokesperson Manny Vara expects that Manitoba-based "gamer's cell phones" will appear next year. Integrated chips will permit phones to become smaller and more power efficient—critical improvements in the hardware, since battery technology isn't expected to make great strides in the near future.

Intel's XScale chip, together with a new Microsoft platform called Media2Go, will appear in handheld personal video players (from Samsung, Sonicblue, ViewSonic, and possibly other companies) that should debut by the end of this year. "Think of it as snackable video for a bus ride, or 2 or 3 hours

on a plane, or for a road trip with the kids," explains Intel spokesperson Bryan Peebler. Non-Intel chips will power similar video players produced by companies such as RCA.



AT HOME

SOME OF THE most exciting technology changes, however, will be in the home, where new hard drive-based products and PCs will distribute digital entertainment wirelessly to TVs and stereos anywhere in the dwelling.

Discrete recorders such as ReplayTV and its rival TiVo should continue to sell well in the next few years, but they will face new challenges from media-savvy PCs equipped with TV tuner cards and Microsoft's Windows XP Media Center Edition or Sony's Giga-Pocket software. These systems enable you to perform such tasks as changing channels, recording programs, playing music, and clicking through digital photos via a TV-style remote control.

HOME BROADCASTING

MOST PEOPLE don't want to watch television and listen to music on a PC—or lug their PC into the living room. But high-speed home networks can obviate these issues, combining the storage and ▶



INSIDE INTEL'S Portland, Oregon, lab, Ylian St. Hilaire shows a Linksys digital media adapter and (inset) a prototype video player.

to about \$15 per month (from around \$40 per month today) for 10MB of data.

It won't be necessary to have a PDA and high-speed data services in order to pick up information, however. By the end of this year, Microsoft plans to activate its Direct-

market SPOT-enabled models capable of displaying location-specific weather forecasts, for example, or traffic conditions on the road ahead.

Microsoft is betting that increased mobility will heighten demand for its .Net initiative, one of several forays into Web

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BIG FOOTAGE

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processing power of a PC with the convenience and simplicity of consumer electronics.

This was evident at the Consumer Electronics Show in early January, where CD3O, HP, Linksys, Motorola, Pioneer, Prismiq, Rockford Fosgate, Sony, Yamaha, and other companies launched products that bring digital music or images to a stereo or TV.

In the living room, technology companies increasingly will deal with customers who have no wish to spend hours configuring a home network. Fortunately, Universal Plug and Play technology, introduced in the first generation of media receivers, allows all devices on a wired (ethernet) or wireless network to detect each other and set up relationships automatically.

Eventually, UPnP should appear in a wide range of de-

that cost-conscious consumers can use to connect existing PC and CE devices through standard jacks and inputs. Linksys recently became the first company to announce a product based on the Intel design.

The first waves of wireless

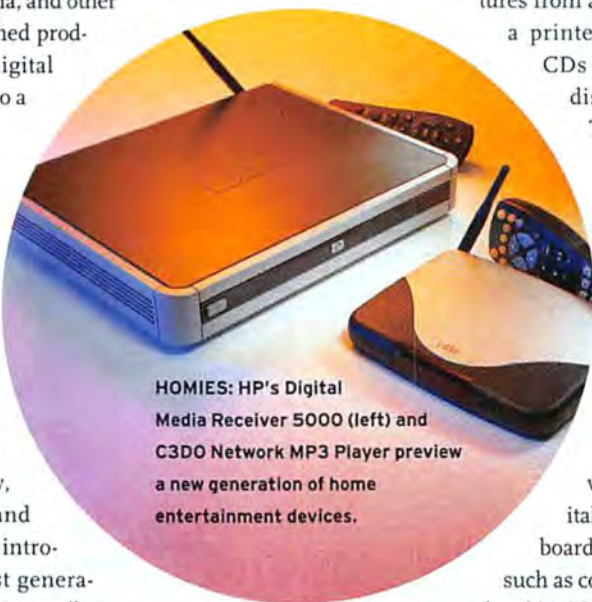
computers, which were introduced in January, already have built-in 802.11g capability.

THE BIG PICTURE

USING UPnP over either an 802.11 or a Bluetooth connection, you'll be able to send pictures from a digital camera to a printer, burn them to CDs and DVDs, and display them on a TV—without ever touching the PC. Of course, this will also sidestep computer software for tweaking the appearance of photos; some of these functions, however, will move into digital cameras with on-board software for tasks such as color correction and detail highlighting.

Dramatic price drops will encourage the digital camera boom. Greg Young, director of imaging for Sony, expects 5-megapixel models to sell for under \$500 by the end of this year and perhaps for even less in 2004. By that time, most high-end digital cameras will be around 8 megapixels.

But digital photographers will probably continue to refine and organize their shots on a PC. And that takes us to a final (daring?) prediction: PCs will remain at the center of your digital universe for many years to come. Not only do they offer the most power, but they have the flexibility to incorporate new technologies as they emerge. Two decades from now, when we predict even more dramatic innovation, we expect still to be writing about PCs.



HOMIES: HP's Digital Media Receiver 5000 (left) and CD3O Network MP3 Player preview a new generation of home entertainment devices.

products, already starting to appear, use the 11-megabit-per-second 802.11b standard, which lacks the bandwidth to transmit video (though music and photos are not a prob-

PCs will remain at the center of your digital universe for many years to come. Two decades from now, we expect still to be writing about PCs.

vices, including printers, scanners, digital cameras, televisions, and stereos.

Prior to that—and well before the end of 2004—Intel expects to deliver a wireless media adapter design to manufacturers for use in products

lem). But when the second-generation products show up next year with faster 802.11a or 802.11g wireless standards (the latter backward-compatible with 802.11b), streaming video could become a killer app. Apple's new notebook

FLASHBACK

1996

ON THE MONEY: Long before most of us had even heard of DVDs, Steve Manes in his "Is It World Class Yet?" column accurately predicts: "When it comes to consumer electronics...I like DVD's chances." Manes says he expects that DVDs will have a great future because the film and computer industries both see benefits to the format, and because it offers a relatively inexpensive form of storage. "I like cheap," Manes declares.

2000

BUT DID IT CRASH? In our January cover story "The Digital Future," we note that Intel is touting "the Ottoman PC, a high-concept home PC that packs a Pentium III system, a flip-up LCD, and



a wireless keyboard into a funky footstool."

2001

GEE, PLASMA SCREENS ARE STILL PRICEY: We classify 17-inch LCD monitors priced at under \$1500 as surprising bargains, and our quoted experts say prices will tumble to \$1000 and then creep back up in 2002. (Oops—by the summer of 2002, some 17-inchers sell for under \$500.)

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SNEAK PEEK

WINDOWS XP'S SUCCESSOR

LEAKED LONGHORN CODE PREVIEWS SEVERAL INTERFACE TWEAKS.



PRE-BETA code of the next major Windows (Longhorn) introduces new interface elements, including the Sidebar (above, right).

THE NEXT major release of Windows won't be ready for a couple of years, but it's already taking shape. We checked out a leaked pre-beta version of the successor to Windows XP, code-named Longhorn, that we found on the Internet.

Though Microsoft declined to comment for this story, company bigwigs Bill Gates and Steve Ballmer have given some broad hints about Longhorn. In numerous speeches and published reports, they've promised a totally revamped OS built on a new file system that gives users a single route to data, regardless of how that data is created or where on a PC or network it's stored (see find.pcworld.com/33386).

The new file system wasn't implemented in the alpha code we looked at. But Longhorn Build 3683 does contain a few intriguing interface tweaks—mostly still under construction—that indicate where Microsoft is heading.

Most interesting is a completely new desktop element called Sidebar that lets you place commonly used items, including the taskbar, recently launched applications, and a clock, into a vertical, transparent window on either the right or left side of the screen.

DUAL DESKTOPS

ONE OF Sidebar's optional elements, or "tiles," lets you switch between multiple virtual desktops—a standard feature of the graphical interfaces that ship with Linux, but hitherto available for Windows only in a few third-party graphics drivers and utilities. Using Sidebar's Desktop Manager tile, you can drag running applications from one virtual desktop to another, allowing you to use multiple programs simultaneously with less on-screen clutter.

A new theme, called Plex, offers a more rounded window style, while a revamped,

as-yet-nonfunctional Display Settings dialog box looks like something right out of Apple's OS X Aqua interface.

But it's unclear how these changes will help you find programs, e-mail, or Web data more easily, or how they'll hook into the new file system.

Also unclear is when we'll see Longhorn—and whether we'll see something else first. Last July, Gates said the OS would follow a new version of SQL Server, due in 2004, that will incorporate the file system intended for Longhorn.

Gartner analyst Michael Silver says that even if Microsoft slates Longhorn for the second half of 2004, its delivery could well slip into 2005. That would be nearly four years after Windows XP's debut—a veritable Saharan wasteland of lost revenues for a company that typically produces a new desktop OS every two years. With Linux and Apple's OS X both continuing to improve, analysts say that Microsoft could issue something smaller—say, a Windows XP Second Edition—before it herds the big one to market.

Microsoft has a history of creating interim OS releases that incorporate elements ready to roll from a development project, as well as bundled application updates and support for new hardware. The question is, would a pre-Longhorn Windows be a winner like Windows 98 SE, or a dud like Windows Me?

—Scott Spanbauer ►

IN BRIEF

Product Pipeline

PORTABLE POWER: Are portable devices draining your batteries? Rayovac's fast-recharging AA and AAA batteries, due this fall, could be the solution. Rayovac says that the nickel metal hydride batteries, which use the company's In-Cell Charge Control (I-C3) technology, will recharge in just 15 minutes and will last four times longer than typical single-use alkaline batteries in certain applications. Four AA batteries will cost \$15, and chargers will start at \$30.



MOVE OVER, VCR: Sony's new RDG-GX7 DVD recorder, the company's first designed for the living room, can record both DVD-RW and DVD+RW discs, along with DVD-R (write-once) media. It's slated to ship in June and has a projected price of \$800.

Did You Know?

SICK OF SPAM: In the U.S., 80 percent of adults online find spam "very annoying,"

80 PERCENT

up from 49 percent two and a half years ago. Three-quarters support outlawing spam outright.

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CONSUMER ALERT

SALES TAXES HIT THE WEB

MAJORITY OF STATES MOVE TO END THE TAX-FREE RIDE FOR ONLINE SHOPPERS.

HOPE YOU enjoyed last year's online holiday shopping deals, because the bottom line may well be higher at your favorite Net retailer next time around. No, it's not a bout of Internet inflation. It's state sales taxes, coming soon to a Web store near you.

States have complained for years that they've been missing out on tax dollars generated through Internet sales. Online retailers avoided collecting sales taxes due in part to a Supreme Court ruling that cited the complexity of such a task.

But that's about to change. Under the Streamlined Sales Tax Project, a states-led initiative to simplify sales taxes, roughly 40 states have been working to clarify their tax codes to make collection easier. (Currently, a seller that's online—just like any mail-order retailer—has to collect sales tax on a transaction only if it has a physical presence where the buyer resides.)

In November 2002, SSTP participants approved a new set of guidelines, the first step toward agreeing on definitions of items to be taxed. This is key, as the more than 7000 local and state jurisdictions involved often have different definitions for the same item (for example: Are marshmallows food or candy?). More

than 27 states plan to introduce legislation to adopt the new rules as law, according to SSTP steering committee member Bruce Johnson.



DIANE HARDT, cochair of the Streamlined Sales Tax Project, which is working to simplify states' sales taxes.

Utah Governor Michael Leavitt calls the new rules "a 21st-century system that will dramatically improve the morass that currently exists." States and cities would still set their own tax rates.

BIG MONEY AT STAKE

POTENTIALLY at stake are billions of tax dollars, though specific numbers vary depending on the source. Wisconsin alone claims it lost about \$250 million in sales tax revenue last year—a sizable amount that's hard to forgo in a tough economy.

Even if every state passes

SSTP legislation, not every online seller will collect sales taxes. The system remains voluntary because states can't change interstate commerce laws. That's up to the federal government, which is the SSTP's next target.

Once ten states representing 20 percent of the U.S. population pass the tax rules, the governors and state legislatures of all the states participating in the SSTP will ask Capitol Hill for laws to make seller compliance mandatory, says Diane Hardt, co-chair of the SSTP. In the states' most optimistic scenario, federal laws enforcing collection could appear as soon as 2004.

Some buyers may be seeing higher costs already. As of this writing, a group of at least five national retailers has approached state offices about voluntarily collecting sales taxes by February 1, independent of the SSTP. These vendors have negotiated with the various states amnesty deals that grant them immunity from liability for missed or improperly collected taxes on previous sales. The SSTP proposes a similar deal for vendors that voluntarily comply within a year of SSTP law enactment in their state.

Will the addition of taxes cause fewer people to shop on the Net? That's unlikely, says David Schehr, research director at GartnerG2. Most online shopping is already

IN BRIEF

Tidbyte

COPY CONTROLS UNDER CONTROL? The technology and recording industries announced in January plans to work together on a copyright protection scheme in an effort to avoid laws that neither industry would support. Participants such as Dell, Microsoft, and the RIAA affirmed their opposition to piracy and endorsed technology restrictions on copyrighted content. While the announcement represents progress, it isn't a watershed: The powerful MPAA was not involved.

Downloads

Head to find.pcworld.com/33383 to locate these files.

TOP 5

- 1 **Pop-Up Stopper 2.9** 442KB
Eliminate irritating pop-up windows with this free program.
- 2 **Atomic Clock Sync** 429KB
Keep your computer's clock accurate by syncing it with an atomic clock server.
- 3 **FreeRAM XP 1.22** 517KB
Is your PC acting sluggish? Free up precious RAM with this tool.
- 4 **IHateSpam 3.1.191** 4360KB
Gain control over the ever-increasing flood of time-wasting e-mail appearing in your in-box.
- 5 **DirectDVD 4.47** 10,700KB
Integrate your PC into your home entertainment system.

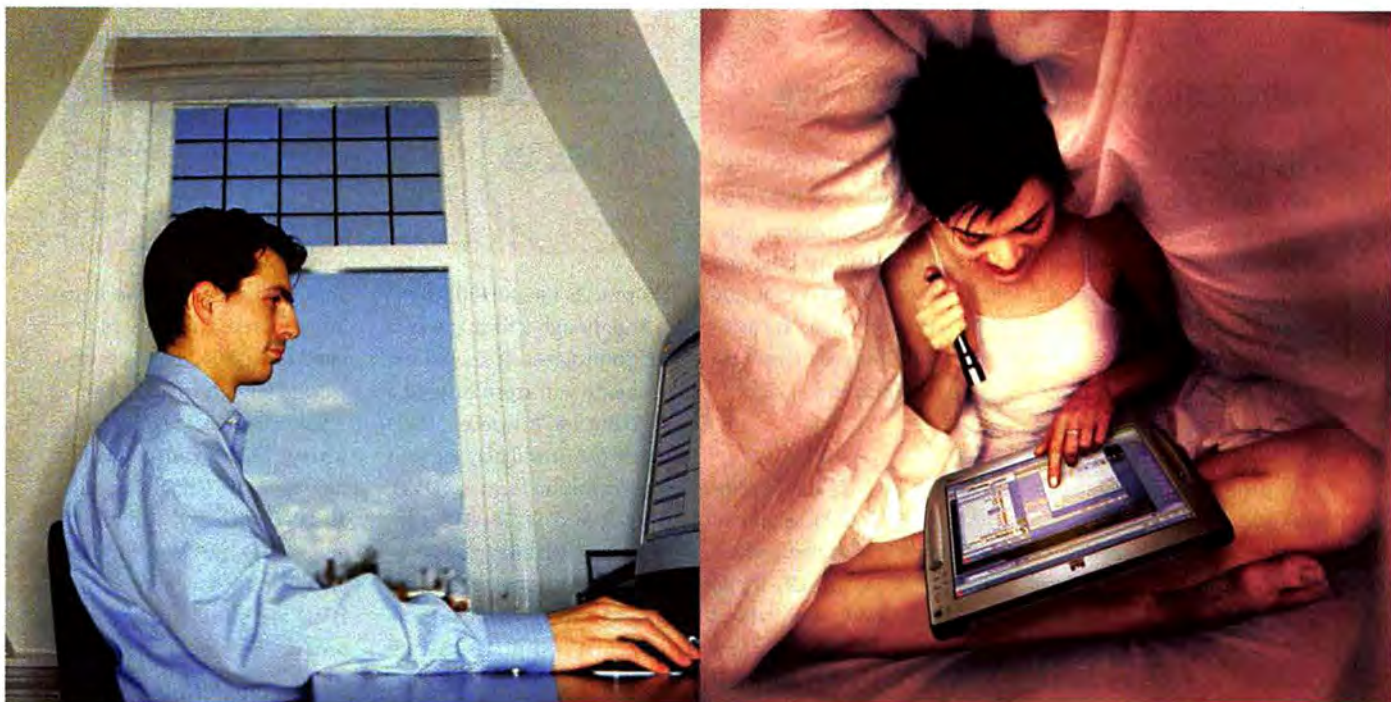
discretionary—shoppers buy what they want, not what they need. Moreover, most people buy online for the convenience and time savings, and paying a few dollars more will not change that pattern, he says.

Besides, if you opt to go offline to make your purchases, you'll find sales taxes ready and waiting for you there.

—Anush Yeghazarian ►

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*Normal operating range will cover all of most homes, but may vary dependent on hardware, connection speed and environment. **Software upgrade from Windows[®] XP Home only. ***Leading non-captive monitor brand by sales. Corporate names and trademarks stated herein are the property of their respective companies. Copyright © 2003 ViewSonic Corporation. All rights reserved. [10837-01B 01/03]



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See the difference.™

STORAGE

BYE-BYE CD-RW?

MORE CHOICES, PRICE DROPS FAVOR DVD.

A CD BURNER used to be the only practical and affordable option for a rewritable optical drive. That has changed radically. Selecting DVD burners over older CD-RWs is becoming a no-brainer, with the future clearly moving to DVD. And now multiple generations of DVD burners are available, giving you a range of speeds and prices to choose from.

Today, a top 52X/24X/52X CD-RW drive costs less than \$150. But for \$100 more, you can get a DVD burner with CD-RW functionality. If you add another \$50, you can buy a fast, new rewritable DVD drive like Pioneer's DVR-A05.

DVD offers plenty of benefits. While standard CDs store up to 700MB of data, DVD discs hold a whopping 4.7GB per side. That means enough capacity for a full-length DVD-quality movie, fewer discs to swap during backups, and less wasted space on the shelf.

CD media is still cheaper than DVD media, but both 2X

DVD-Rs and 1X DVD-RWs have dropped well below \$2 apiece, putting them on a par with CD-R/RW in cost per GB. Though 4X DVD-R and DVD+RW/+R media are pricier, all DVD media costs are falling with no end in sight.

MOST CONS GONE

HIGH-END CD-RW drives are faster with CD media than rewritable DVD drives, which max out at 24X for CD-R and 10X for CD-RW, with typical speeds of 16X/10X. If you burn lots of music CDs, a fast CD-RW drive *might* be best. You would notice the difference if you're upgrading from, say, a 16X CD-RW drive—our tests show that a 52X model cuts the burning time in half.

But burning DVDs at 4X is every bit as fast as, if not faster than, 52X *maximum* CD-R recording, which varies from 16X to 52X depending on the laser's position on the disc. (Note that 1X for DVDs means 1.385-Mbps throughput, while



COST IS still a factor, but there are few other reasons to pick CD-RW over rewritable DVD.

1X for CDs means 150 KBps.)

And though a format war is still in progress, it should not dissuade you from buying a DVD burner. Any recent DVD movie player will play the four most common formats (DVD-RW/-R and DVD+RW/+R), and many will even play DVD-RAM discs. However, you can hedge your bets with a multi-format DVD+RW/+R/-RW/-R drive such as the speedy, top-rated \$350 Sony DRU-500A.

Because users now have real choices, bargain hunters who don't need that many formats can opt for older drives like Pioneer's DVR-A03 (DVD-RW/-R), priced at just \$200. Owners of DVD-RAM video recorders should consider DVD-RAM/-RW/-R drives such as Panasonic's LF-D521 (less than \$300 on the street; older drives hover around \$200). DVD-RAM also holds

appeal for users who back up lots of data: These discs are rated for 100,000 rewrites, versus the other formats' 1000.

Software, too, is no longer a worry. Mastering packages like Easy CD Creator handle all DVD formats, and entry-level DVD movie authoring packages such as Sonic's MyDVD are simple to use and produce excellent results.

SOONER OR LATER

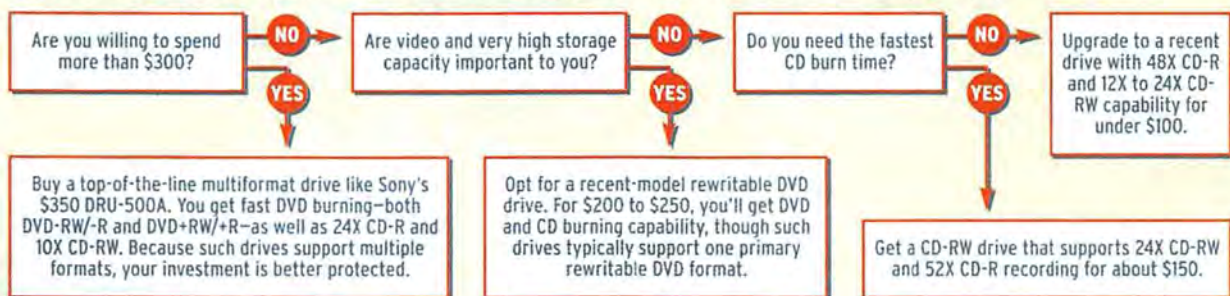
UNLESS price is your main concern, rewritable DVD is now the right choice, both for an upgrade and as a new PC's optical drive. And while you could save \$50 to maybe \$100 (and perhaps get faster rewritable DVD speeds) by waiting until year's end, think of all the home-movie fun you'll have missed—and all the disc swapping you wouldn't.

—Jon L. Jacobi ■

DECISION STEPS

IS IT TIME FOR YOU TO TAKE THE DVD PLUNGE?

IS YOUR OLD CD-RW drive too slow for you? Follow these steps to see which device will be best for your needs.



WHOOOSH



The world's fastest workgroup color printer has arrived.
The Xerox Phaser® 7300. You'd better hang on.
There's a new way to look at it.

Now color speeds through any office at 30 ppm.
The Xerox Phaser® 7300 tabloid color printer beats all speed records for workgroup color printing.* Powered by a 500MHz PC processor, it delivers black and white prints at 37 ppm, eliminating the need for multiple printers. You get 2400-dpi color that's always sharp and brilliant, with prints up to 12 x 18



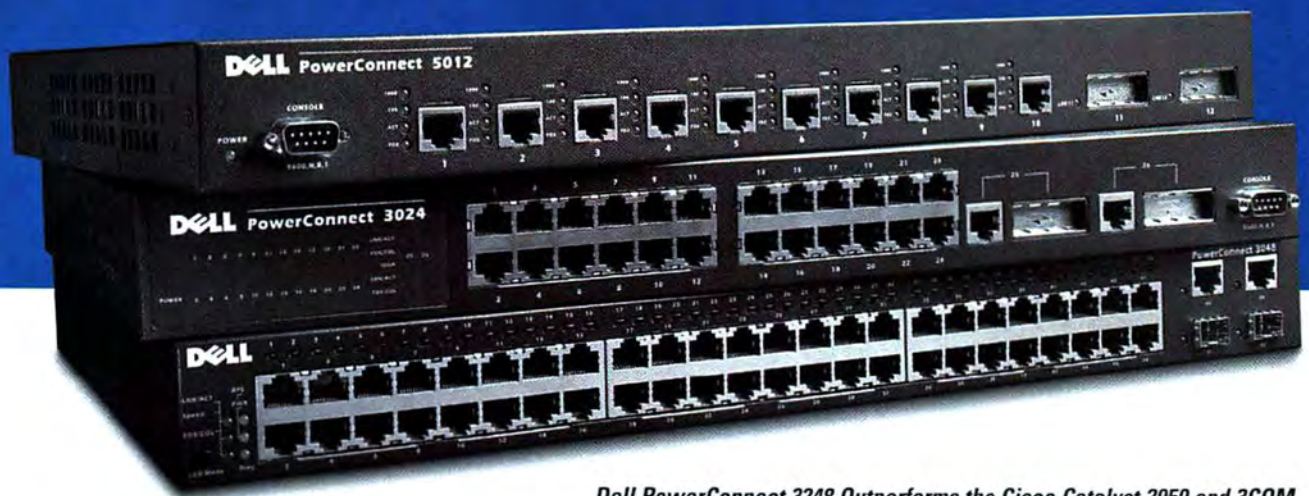
tabloid bleed. A hassle-free addition to any office, the Phaser 7300 uses single-pass technology to decrease paper jams, and Auto-Install and CentreWare® Web software for easy printer installation and management. To soar with our reliable, award-winning line of network printers, call 1-800-362-6567 ext. 1916 or visit xerox.com/officeprinting/bird1916

THE DOCUMENT COMPANY
XEROX.

*Based on rated print speed of workgroup printers in the \$1,000–5,000 estimated retail price category.
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Dell PowerConnect 3248 Outperforms the Cisco Catalyst 2950 and 3COM SuperStack 3 Switch 4400 by up to 47% in Layer 2 Throughput Tests.*

Tolly Group Report #202149 – September 2002



Call: M-F 7a-9p|Sat 8a-5p CT.

Pricing, specifications, availability, and terms of offer may change without notice. Taxes and shipping charges extra, and vary, and not subject to discounts. U.S. new purchases only. Dell cannot be responsible for errors in typography or photography.

*This device has not been approved by the Federal Communications Commission for use in a residential environment. This device is not, and may not be, offered for sale or lease, or sold or leased for use in a residential environment until the approval of the FCC has been obtained.

*Monthly payment based on 48-month QuickLoan at 12.99% interest rate for qualified Small Business customers. Your interest rate and monthly payment may be same or higher, depending on your creditworthiness. Minimum



It's a Dell, so you know you're going to save money. But let's talk performance. From standard Fast Ethernet

to high-speed Gigabit Ethernet over copper or fiber, Dell PowerConnect switches are designed to offer full wire-speed and non-blocking performance. Recent Tolly lab tests confirmed that the Dell PowerConnect 3248 outperformed industry leaders by as much as 47%. Plus, the PowerConnect 5224 has been lauded by *Tom's Hardware Guide* for its performance and manageability features for the price. PowerConnect switches also are highly interoperable and scalable, making them ideal for building a first-time network or expanding your existing one. So not only will you get one-of-a-kind Dell performance for less but, perhaps more importantly, there'll be fewer headaches too.

Dell | Managed Switches

PowerConnect™ 3024* Switch

Scalable, High-Performance Managed Switch

- 24 Fast Ethernet Ports Plus 2 Built-In Gigabit Uplinks
- Up to 12.8 Gbps of Wire-Speed Switching Capacity
- Stackable – Supports up to 144 FE Ports in a Stack
- 3-Yr Next Business Day Part or Unit Replacement¹²

\$599 as low as **\$17/mo.**, (46 pmts.²⁴)
60 Days Same-As-Cash
E-VALUE Code: 16381-S10205

Recommended upgrade:

- 3-Yr 7x24 4-Hr Part or Unit Replacement¹² add \$77

PowerConnect™ 3048* Switch

Rack-Dense, High-Performance Managed Switch

- 48 Fast Ethernet Ports Plus 4 Built-In Gigabit Uplinks
- Up to 21.6 Gbps of Wire-Speed Switching Capacity
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High-Performance, Enterprise Class Managed Switch

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- Advanced Management via Browser or Industry-Standard CLI
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E-VALUE Code: 16381-S10209b

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transaction size of \$500 required. Maximum aggregate financed amount not to exceed \$25,000. Under 60 Days Same-As-Cash QuickLoan, interest accrues during first 60 days after QuickLoan Commencement Date (which is five days after product ships) if balance not paid within these 60 days. OFFER VARIES BY CREDITWORTHINESS OF CUSTOMER AS DETERMINED BY LENDER. Taxes, fees and shipping charges are extra and may vary. Not valid on past orders or financing. QuickLoan arranged by CIT Bank to Small Business customers with approved credit. ¹²Technician, replacement part or unit (depending on service contract) will be dispatched if necessary following phone-based troubleshooting. Service may be provided by third-party provider. Subject to parts availability, geographical restrictions and terms of service contract. Service timing dependent upon time of day call placed to Dell. Replacements may be refurbished. U.S. only. ²⁴Tolly Group Report #202149 was commissioned by Dell. Dell, the stylized E logo, E-VALUE, and PowerConnect are trademarks of Dell Computer Corporation. ©2003 Dell Computer Corporation. All rights reserved.





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**SECRET TO GOOD
TECH SUPPORT**

**COPY-PROTECTED
CDs: WATCH OUT**

**HEADACHES WITH
AOL 8, MSN 8**



PC WORLD IN THE BEGINNING

WHEN I RECENTLY looked again at the premiere issue of *PC World*, I noted the advancements in hardware and software over the past 20 years. For example, a 5MB hard drive was advertised for \$1995. If prices per megabyte had remained the same, only Bill Gates could have afforded

to buy my new 60GB drive. The articles back then were as informative as they are today. The only sad part of this nostalgic trip was remembering the loss of your late founding editor, Andrew Fluegelman. As I recollect, he initiated the shareware concept. It's hard to imagine what will fill the pages of your magazine 20 years from now.

Allen Clewell, via the Internet

SYSTEMAX REPLIES

WE APPRECIATE the opportunity to address certain inaccuracies in the December 2002 article "You Call This Service?"

The article states that Systemax was

focused on original equipment manufacturers, when in fact only 15 percent of our PC sales are nonbranded. The other 85 percent are sold with a Systemax nameplate. Also, the article states that our initial success was from the sale of "generic" PCs. This is untrue and should have been corrected prior to publication.

As part of our total commitment to quality customer service, we survey all our customers on an ongoing basis to get their opinions on their experience when calling our technical support hotline. Our surveys show significantly different results from those of *PC World*. Overall, our statistics show our representatives answer calls in an average of 23 seconds. In our October/November 2002 survey, 1199 respondents reported that: ▶

CLASSIC LETTERS TO PC WORLD

On PC Journalism, \$10,000 PCs, and Windows

March 1983: As computers continue to transform our society, for *PC World* to concentrate only on the benefits of this technological revolution would be...for you to miss half the story.

Computers have just as much potential for dehumanization and alienation. Decisions are now being made that will determine whether this will be a country of easy access and free information exchange, or one in which the information poor are controlled by the information rich.

Juan Nix, Trinidad, Colorado

December 1985: Several factors will contribute to [software piracy's demise]: software prices are dropping; the average new user will be technically less sophisticated than most current users; site-licensing is becoming more common; lawsuits against wayward corporations are gaining strength

as a deterrent; and copy-protection schemes will be more sympathetic to the user and more effective in thwarting the hacker.

Joseph Curry, Ketchum, Idaho

February 1988: Multitasking is useless for a *personal* computer. In the history of operating systems, the primary reason for multitasking was not to allow a single user to exploit the processor more fully but to let many use the machine at once.

Microsoft seems fascinated with features—not with programs people really need.

Christopher Williams, Perrysburg, Ohio

May 1990: Who on earth would pay \$10,000 for a 386 when they could get [the same machine for much less]? After reading [a February review of 33-MHz 386 systems], I called a local dealer about an Everex Step 386/33 that *PC World* listed at \$10,215....

He gave me a price of \$6752 to \$6974 with a non-Everex monitor and graphics board.

Patrick Marshall, Washington, D.C.

November 1990: You chose to nitpick about the upgrade path [for IBM's PS/1]. How many home computer users will ever need to upgrade a system that already has a 10-MHz 80286 processor, VGA, 1.44MB floppy, 30MB hard disk, mouse, and internal 2400-bps modem, plus DOS in ROM?

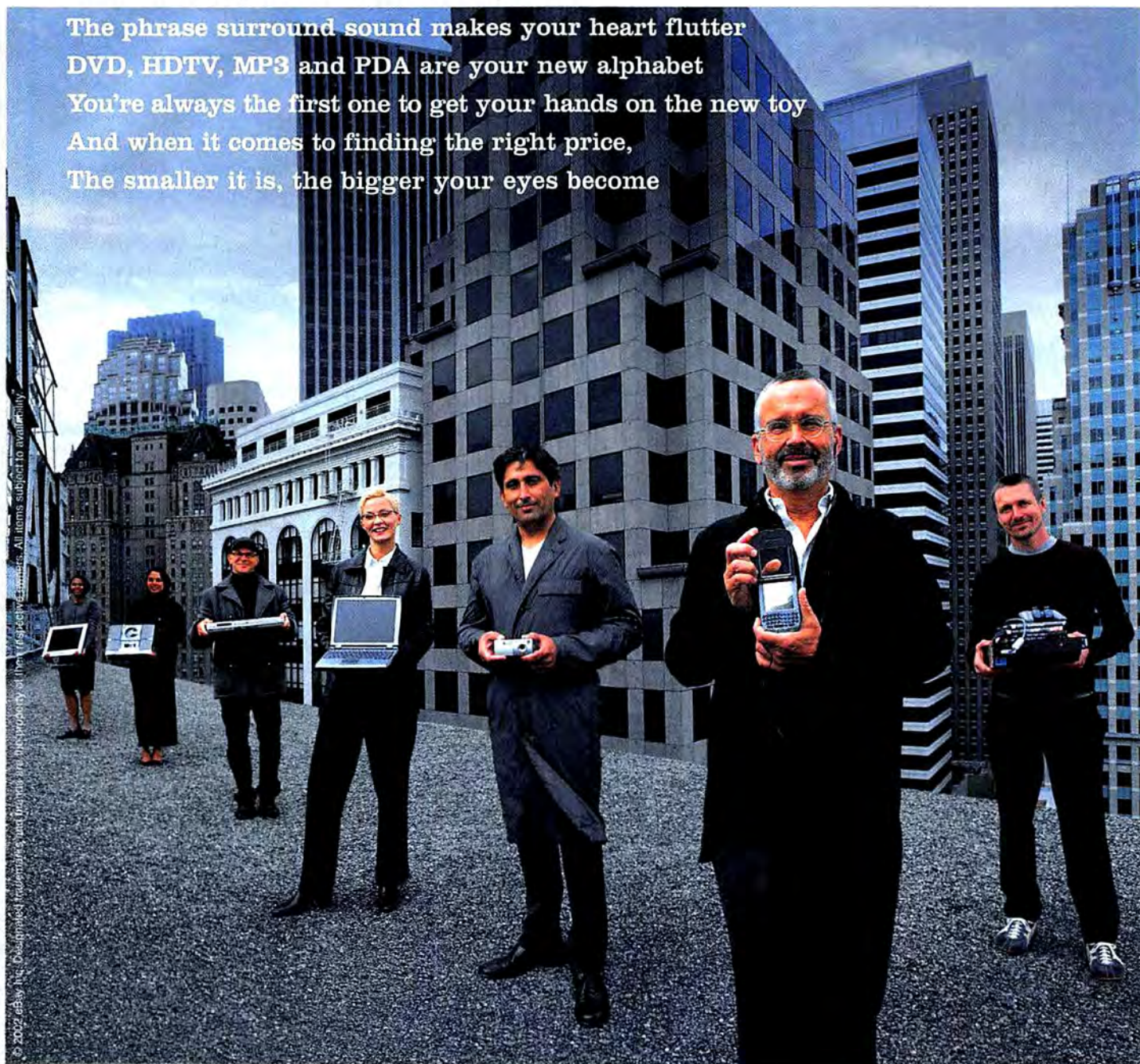
Mitch Wright, Gurnee, Illinois

November 1992: I'm still trying to find out why Windows is supposed to be so great. Honestly, why are thousands of adults across the country dragging little pictures around the screen like third-grade kids [playing with their] coloring books?

*Harold K. Farr
North Conway, New Hampshire*

The word plasma excites you

The phrase surround sound makes your heart flutter
DVD, HDTV, MP3 and PDA are your new alphabet
You're always the first one to get your hands on the new toy
And when it comes to finding the right price,
The smaller it is, the bigger your eyes become



ebay
Electronics

- 84 percent of the calls were answered in less than 5 minutes; 93 percent, in less than 10 minutes.
- 95 percent rated the knowledge of the tech support rep as good or excellent.
- 95 percent rated the attitude of the rep as good or excellent.
- 90 percent stated that the rep tried everything possible to resolve the problem.
- 91 percent rated their overall satisfaction as good or excellent.

Systemax takes customer support very seriously; we analyze our numbers internally and verify them using customer surveys. At Systemax, we stand behind the quality of our products 100 percent.

Chris Archer

VP of Customer Support, Systemax

WHY TECH SUPPORT IS POOR

IN YOUR ARTICLE "You Call This Service?" I found this quote:

"When we hire reps, we look for people with good customer-service skills first," says James Sherin, an account manager at Alorica, the company that operates the Emachines call center. "We can teach them technology," he adds."

This is one reason PC service is poor. For instance, would this statement make sense? "When we hire reps, we look for people with good customer-service skills first. We can teach them medicine."

CORRECTIONS

FEBRUARY'S *Top 10 Printers* should have listed the price of the Xerox Phaser 4400/N as \$1399.

In January's "Image Makers," the ink jet printer chart on pages 108-9 should have indicated that the HP Photosmart 7550 has no parallel port.

In "The New (Improved?) Wireless Web" (January), we should have said that the Kyocera 7135 phone does not yet have an announced carrier service.

January's "What's New for 2003" incorrectly listed the release dates for several Intel CPUs. The correct dates are as follows: 3-GHz P4, November 2002; 2-GHz Celeron and 2.2-GHz P4 Mobile, September 2002.

PC World regrets the errors.

To give better overall PC service, companies should hire technicians—then teach them customer-service skills.

James Warren, via the Internet

PC-DAMAGING COPY PROTECTION

IN JANUARY'S *Letters*, Paul Saran wonders about copy-protected discs crashing or damaging PCs. This concern is no longer hypothetical—I just had my first encounter with a copy-protected audio CD.

The disc's proprietary player prevents tracks from being copied or used in a portable player. On first use in a PC, without asking for permission, the player performs system changes, including a reload of audio drivers, requiring a reboot—and as a result, I lost my audio card.

A "Copy Protected" label was on the packaging, but no further warning.

Robert Walker, West Milford, New Jersey

KEEP LEGACY PORTS AND DRIVES

DON'T BE STUPID, PC makers. Keep your legacy ports and floppy disk drives ["Disappearing Ports and Drives," in "What's Hot for 2003," January].

I run a high school computer lab filled with IMacs. Nearly every day, students need to use floppy disks for their files. IMacs don't have floppy drives, so we must use an external drive on a USB port.

Why buy a computer without serial ports and/or floppy drives if your peripherals and floppies need them?

Jim Long, Victorville, California

MSN 8 VS. AOL 8


WHEN I TRIED to install MSN 8 recently, it wreaked havoc on my PC ["AOL and MSN: Duel at 8," *New Products*, January]. I was told that it had a problem with Windows Me, that it couldn't run with AOL on the same PC, and that I must try MSN 7.


AOL may have improved spam blocking, but it informs the blocked sender of the refusal (confirming the e-mail address is valid), and one is limited in the number of blockable senders—perhaps 100.


Leigh W. Lockwood, Doylestown, Pennsylvania


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

Things to know when you do it eBay

 eBay is a great place to get great deals on anything electronics related. You'll find all the top brand names and save up to 40% on retail prices.

 **Buy It Now** Don't want to bid on an item? If the thing you want has the "Buy it Now" icon next to it, you can buy it right away without waiting.

 **New** Thousands of brand new items are being bought and sold here everyday. With eBay, you have a choice of new, used and collectible items.

 **Live Help** Live Help is eBay's support line for new users that's available via live computer chat to answer any questions you may have.

PayPal PayPal is the fast, easy and secure way to pay on eBay. Use your credit card or bank account to pay instantly and get your items faster.

Do it 

AOL keyword: eBay

SAMSUNG

DigitAllwinner



ML-1651N
(17 ppm)

ML-7300N
(21 ppm)

ML-1430
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Price, performance,
admiring editors.
And the winners are...

- Samsung ML-1430 laser printer earned CNET's prestigious Editors' Choice honors for its superb value, "excellent" print quality and "swift" printing speed.
June, 2002
- Samsung ML-1651N ranked at the top of PC World's Corporate Monochrome Laser Printer list.
February, 2002
- Samsung ML-7300N wins "Bang for the Buck" award from Government Computer News for best performance and value.
May, 2002

To learn more about Samsung Monochrome Laser Printers,
visit us at www.samsungusa.com/printer or call 1-800-SAMSUNG.

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PLUGGED IN

STEVE FOX

Crackdown Coming on CD Copying

Plus: Gadgets get tossed, small biz gets help, and Big Brother gets nosy.



1 No More CD Copying

The Buzz: The days of ripping music CDs to your PC are numbered. Leading the charge is EMI: All of its new United States CD releases will be copy-protected by early spring, according to EMI's Richard Cottrell. (Some copy-protected CDs may already have landed; see *Letters*, page 43.) But copy-protected CDs don't play on some DVD players, so other labels are exercising caution. Universal, for instance, will probably release relatively few copy-protected discs stateside this year, and BMG (which copy-protects its European discs) won't release any. Still, now that one label has taken the plunge, other penguins are sure to leave the ice floe.

Bottom Line: To hear the recording industry tell it, those nasty CD pirates are to blame for lagging sales. Ah, now I know why no one buys Mariah Carey CDs.

2 Throwaway Technology

The Buzz: What's next after disposable razor blades and throwaway cameras? Disposable phones and DVDs, of course. Hop-On Wireless's cell phones extend the prepaid phone card concept in

the form of an LCD-less handset. The \$40 units—preloaded with 60 minutes of calling time—can be recharged with add-on minutes, recycled, or discarded. Even stranger are the new disposable (and recyclable) DVDs that become unreadable after a preset time. Thus far, the discs—from New York's Flexplay—have been used exclusively as promotional items, but it's only a matter of time before they show up in video stores.

Bottom Line: Products that suddenly stop working after a few uses? That's not a new idea: Microsoft perfected the gimmick years ago.

3 Wooing the Little Guy

The Buzz: Suddenly, tech vendors are cozying up to the small-business market. Cases in point: AOL for Small Business; Dell's new service to help small businesses set up networks; Microsoft's reworked Small Business Manager 7; and IBM's repricing of its WebSphere middleware package for companies with under 1000 employees.

Bottom Line: Small business is now seen as a big opportunity. That's what happens

when the economy craters and there's no more cash to be squeezed out of government, big business, or consumers.

4 You Better Watch Out

The Buzz: He's making a list and checking it twice; gonna find out who's naughty and nice. No, not Santa. I mean onetime Iran-Contra conspirator John Poindexter, who has been tapped to run Total Information Awareness (TIA), a federal project that will sift through mountains of public and private data to

"detect, classify and identify" terrorists. TIA will look for telltale patterns among credit card records, driver's licenses, airline ticket purchases, and the like.

Bottom Line: Civil libertarians are frightened about potential governmental abuse. Me, I'm just quaking at the prospect of John Poindexter decked out in a white beard and fuzzy red suit. ■



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

NAGGING QUESTION

Where Did the Flying Toasters Go?

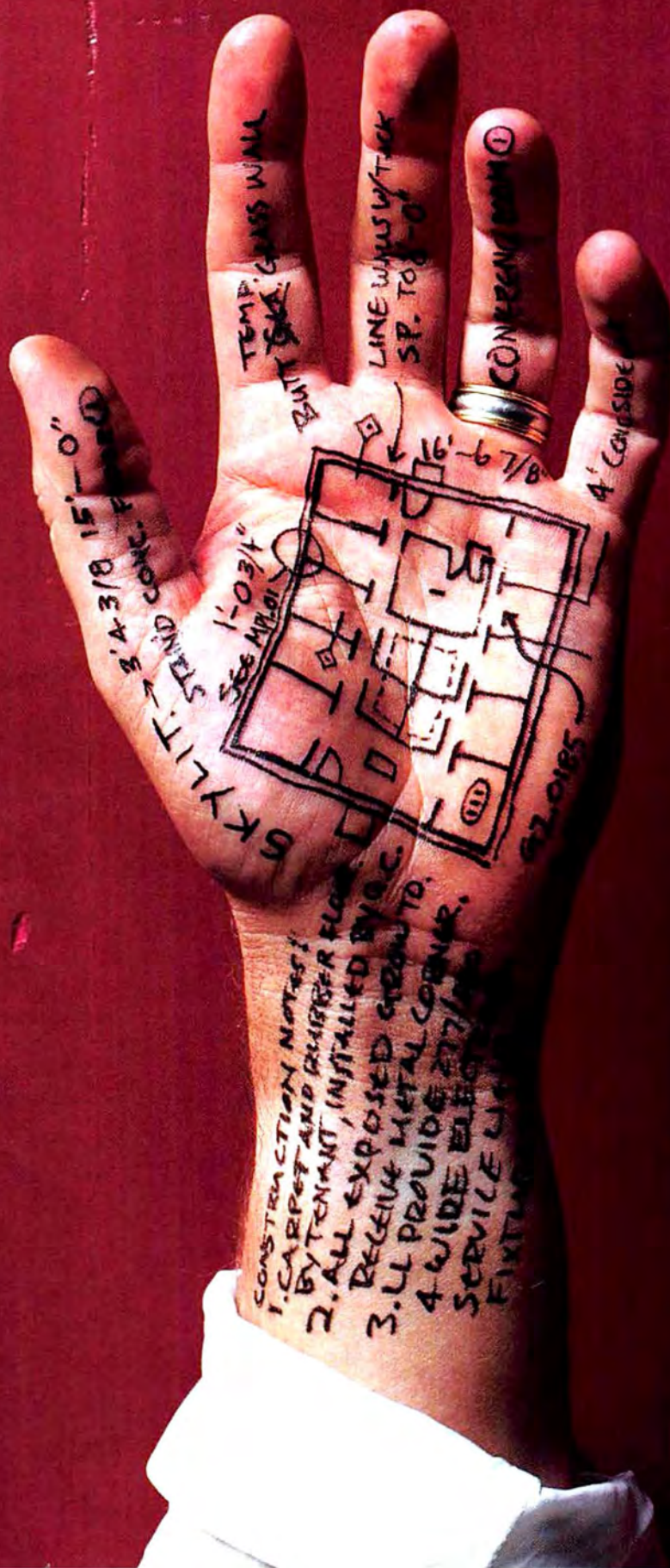
AS JOHN EASTMAN, the father of the flying toaster screen saver, tells the tale, he wandered into his kitchen late one night in 1989, saw

a toaster, "and my fevered brain put wings on it. I sketched it, coded it, and had it running the next morning." That screen saver, part of Berkeley Systems' After Dark col-



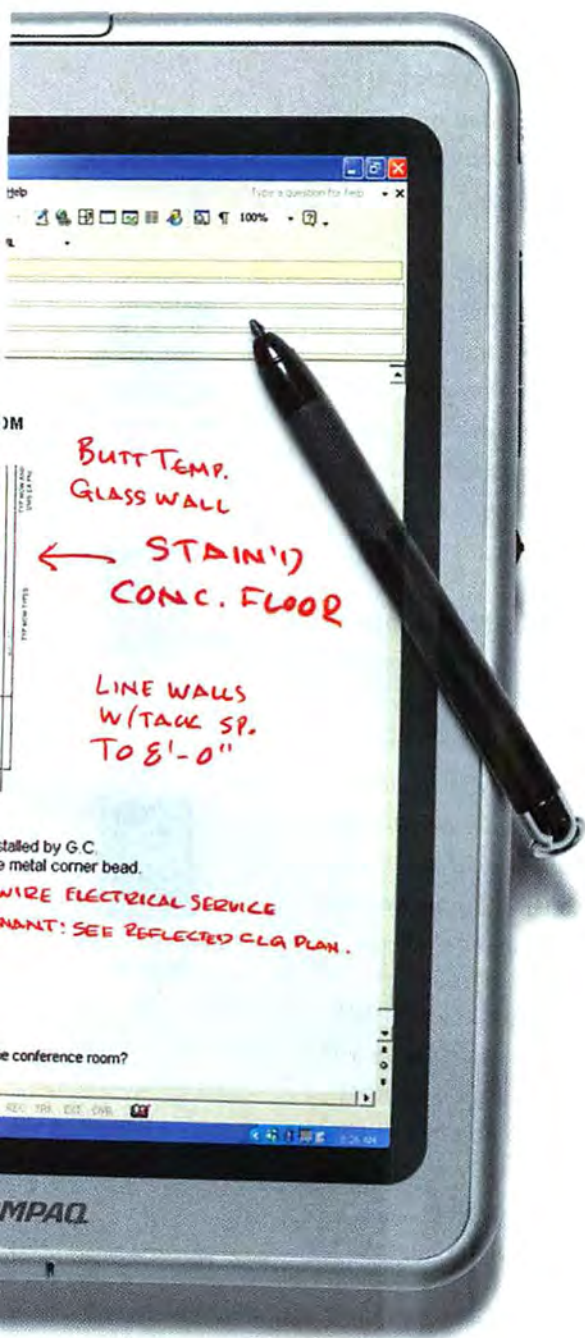
lection, was an instant hit. Regrettably, CD-ROMs got clobbered by the Net. Berkeley Systems was sold, and the new owners pulled

the plug on After Dark in 1999. If you miss those plucky little appliances, though, don't despair. After Dark X was released in 2002. Too bad it's only for Mac OS X.



When inspiration strikes so should you.

It's a laptop. It's a simple pad and pen. It's a Tablet PC.



It's the PC, evolved.

When inspiration strikes, will you be ready? Will you harness it or watch it skip quickly away? The Tablet PC puts the full power of Windows[®] XP Professional in a laptop computer that with a flip of the screen becomes as simple to use as a pad and pen.

You write, draw, scribble, and erase directly on the screen. Save your notes, share them, convert them to text—so your ideas don't get away. They get jotted down or sketched out, then made into more, wherever and whenever.

Download the Office XP pack for Tablet PC to write directly in Office XP documents. Now you can write e-mail in your own handwriting, using Microsoft[®] Outlook[®]. Mark up a Web article, make a quick sketch, then share it all with other PC users whether they have a Tablet PC or not.

You can use the Tablet PC with your mouse or keyboard as well as the digital pen. So whether you're in your office, in a meeting, in the hallway, or in a cab—the PC is more mobile, versatile, and powerful than ever before.

For more information, visit microsoft.com/tabletpc



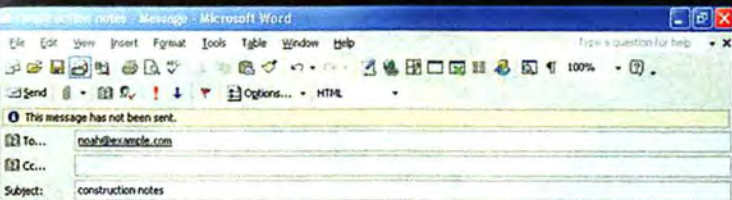
On your desk.



On your lap.

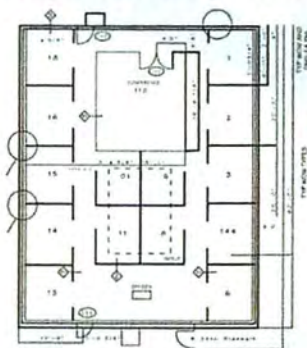


**Or in your hands.
Tablet PC.**



Hey Noah,
Here you go. This is still work in progress.

14th FLOOR: MAIN CONFERENCE ROOM



BUTT TEMP.
GLASS WALL

← STAIN'D
CONC. FLOOR

LINE WALLS
W/TACK SP.
TO 8'-0"

CONSTRUCTION NOTES:

1. Carpet and rubber floor by tenant, installed by G.C.
2. All exposed GPOW corners to receive metal corner bead.

3. LL PROVIDE 277/480 4 WIRE ELECTRICAL SER.
LIGHT FIXTURES BY TENANT: SEE REF.

-----Original Message-----

From: "Noah Ryan" noah@example.com
Date: Wednesday, January 29, 2003 3:26 PM
To: "Rob Garrett" rob@example.com
Subject: construction notes

Rob,
Where do you stand on the plans, especially the conference room?
-Noah

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Online bad guys can send spam under your name or steal your financial data.



NATURALLY, YOU HATE SPAM—who doesn't? So imagine how you'd feel if you suddenly started receiving angry e-mail messages from strangers accusing you of spamming them.

That's exactly what happened to Jonathan Frank, a retired traffic engineer who lives in Englewood, New Jersey. He and his wife, Michele, were shocked to learn that their primary AOL user name had inexplicably begun showing up in the Sender field of spam messages soliciting for porn and other Web sites. "We can't change or delete the master screen name

without giving up the account," Frank says.

Unfortunately, spammers can make it seem as if their messages are coming from your account, even though they have no way to access that account.

I spoke to AOL spokesperson Nicholas Graham, who compared the practice to scammers making phone calls and identifying themselves as other people. "If you were fooled by a caller who pretended to be someone else, you wouldn't blame the phone company," he says.

It may come as small comfort to you if you're accused of spamming, but Gra-

ham says that user-name takeovers typically don't last long. "Spammers usually move on quickly," he explains. "The best thing to do is to simply let it run its course, like a bad cold."

(Note: *PC World* provides some content for use on AOL.)

In Frank's case the perpetrator may not have had access to his mail account; in other cases, however, online miscreants are able to crack users' accounts, sometimes with serious consequences.

Instances in which spammers or other unscrupulous individuals gain access to e-mail user names and other personal information—and use them for nefarious purposes—aren't new, but they are on the rise. "There's a long, disgusting history of this type of name abuse," says Jason Catlett, president of the antispam group JunkBusters. "It's good old garden-variety fraud, and it's increasing at a steep rate."

INTERNET HARASSMENT

THE TREND IS alarming, especially when you consider that anyone with an e-mail account is a potential victim of user-name theft. Sometimes the culprits are motivated by personal malice or revenge, and they need nothing more than a valid e-mail user name to do their dirty deeds. "Occasionally victims' names are chosen at random," Catlett explains. But more often, the theft "is done for reasons of retribution or deliberate harassment in an attempt to slur a person or company's reputation. This type of attack can cripple small businesses." The perpetrator is frequently someone who knows the victim personally and knows the victim's password—or can figure it out, by access- ►

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ing the account on the Web and asking for the "hint" question, for example.

Catlett cites the instance of a spammer who several years ago pirated two AOL users' screen names and used them to mass-mail a solicitation for child pornography to hundreds of thousands of e-mail addresses around the world. An FBI investigation determined that the AOL users weren't involved in sending the spam. The creep who stole their names sent out the junk mail with yet another innocent person's name contained in the body of the message, as a way to harass that third victim.

Some victims of this variety of crime find themselves labeled not as spammers, but as fraud artists. In another recent case, a criminal took over a New York EBay user's account information—including her e-mail address—and used her positive feedback on the site to lure bidders to auctions of 15 nonexistent notebook computers. She learned of the break-in only when a suspicious bidder checked her record, noticed that she'd never sold computers before, and phoned to verify her identity.

How do you keep your virtual name from being used to perpetrate a scam? We all know we're supposed to make our passwords cryptic and never divulge them to anyone. But that's tough, and unfortunately some of the crutches we use to help ourselves remember our passwords can get us in trouble. As tempting as it is, don't keep passwords stored in your wallet, purse, or PDA. And be careful about using the password-hint option at Web sites—try to ensure that the hint doesn't make it easy for anyone who knows you to guess your password. Sites often suggest using your mother's maiden name or your favorite pet's name as a hint. That's lousy advice, since both pieces of information are easy to come by—especially for an acquaintance. Better are the sites that e-mail your password to you—rather than revealing it online—if you answer the hint question correctly.

Consider using separate e-mail accounts for shopping and newsletters.

If you frequent chat rooms, use a name separate from your e-mail address or AOL main screen name and use it for chatting. In fact, you should consider setting up separate e-mail accounts—or AOL screen names—for use when shopping, signing up for newsletters, and visiting other sites that require registration. That way, you keep your main e-mail account for the mail

you want and abandon any auxiliary account that's compromised.

If someone employs your e-mail user name to spam people or to commit fraud, notify your ISP's abuse department immediately. Attach the offending e-mail, including all message headers.

Internet dangers can go beyond impugning your reputation: Some Web fraudsters now go directly for victims' pocketbooks with increasingly sophisticated tactics. EBay users have been hit particularly hard by these scams, which usually involve a thief sending an official-looking e-mail that purports to come from EBay. The e-mail asks the recipients to update their personal information—including name, password, credit card number, and even social security and driver's license numbers—and provides a link to a site that looks amazingly like the real EBay, right down to the color logo, copyright information, and TrustE seal. This scam isn't new, but now it may be more likely to succeed because many of the counterfeit sites look so realistic.

COUNTERFEIT OFFERS

LAST DECEMBER, some EBay users were lured to a Web site called Ebayupdates.com. Before that, members were pulled into a scam at Change-ebay.com.

Many large online businesses have had their own problems with scammers. Last October, for example, some Yahoo subscribers received a phony request for their credit card information, although few fell for the hoax. Yahoo promptly notified its subscribers of the scam and warned them not to divulge their personal informa- ►

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PRIVACY WATCH

Wireless Keyboards That Blab

WIRELESS KEYBOARDS are more convenient than standard wired models—after all, who doesn't want to get rid of another cord on their desk? But, as an unfortunate pair of wireless keyboard owners found out, the long range of some devices can make them a privacy and security risk.

A couple of neighbors in the Norwegian town of Stavenger both had new wireless keyboards from HP. These keyboards, like most other wireless models, transmit keypresses to the computer via radio signals that are beamed to a receiver. But the neighbors quickly discovered that if both of them used their PCs at the same time—even though they were more than a football field's length away from each other in different apartments—both receivers would output anything that either neighbor typed.

HP's product manager in Norway, Tore Säreilind, was at a loss to explain the malfunction. "We have no logical or technical explanation for how this is possible," Säreilind said. "The keyboard should have a theoretical radius of about 20 meters."

Radio experts say that local weather conditions, or even unshielded power cables, have the ability to amplify or increase the range of radio signals.

The incident highlights some of the risks associated with using radio frequency (RF) wireless keyboards. Many older models provide very limited security options—sometimes as few as 16 radio channels that you have to change by hand on both the keyboard and receiver. Newer RF keyboards can automatically switch between several thousand radio channels to ensure greater security—though even with these keyboards in place, a motivated hacker with the right equipment can receive whatever you type.

At home, RF keyboards might broadcast credit card numbers or important passwords. In a business environment, you could transmit salary information to the office gossip, or even send proprietary information to corporate spies.

Logitech representatives say their RF wireless keyboards scramble their security codes each time the computer boots up. With more than 4000 possible combinations in the Logitech models, it's unlikely (though still possible) that someone

else's nearby receiver would pick up your radio signals. HP is increasing the number of security codes for its keyboards from 2 to 256.

RF keyboards that use the Bluetooth radio system provide the highest

security. Bluetooth keyboards encrypt the radio signal, and synchronize with the receiver connected to the desktop when you start your PC. Even if the keyboard's transmission penetrates walls or crosses large distances, it can't be decrypted by any receiver other than the one that it's matched to. At press time, only Microsoft offers a Bluetooth-enabled wireless keyboard in the United States.

Other kinds of wireless keyboards, such as those operating with beams of infrared light, are practically immune to this kind of accidental transmission. As anyone who has ever used an infrared remote control for a TV can attest, not only will an infrared beam not penetrate walls, but even in the same room the signal sometimes won't get to its intended destination if you don't aim correctly.

The moral of the story: If you want to be absolutely certain of the privacy of anything you type, stick with a wired keyboard or try a Bluetooth model.

—Andrew Brandt



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ON YOUR SIDE

Short Warranty on Dell's Software

I HAVE A WINDOWS XP problem on my Dell Dimension 4550. I called Dell and was told that my 30-day support warranty on installed software had expired at midnight that day. Apparently my warranty period started the day I ordered the system, not when I received it, so I lost four days of warranty time while my PC was being shipped. If I need any help now, I have to pay \$30. I spent 4 hours on the phone with Dell, and the two reps I talked to recently were rude and arrogant. I purchased a Dell product because I had heard the company's tech support is the best. If that was its best, I'd hate to see its worst.

George Stolzer, Philadelphia

On Your Side responds: I contacted Dell to clarify the company's support policies. Dell spokesperson Venancio Figueroa III

says that the company's 30-day warranty "begins on the system's invoice date, which is typically the same day the product ships." After 30 days, Dell techs refer customers to its fee-based software support. The policy on when coverage begins also extends to Dell's 30-day money-back guarantee and its hardware support (though, of course, hardware is typically covered for at least a year).

Dell is not the only company that starts the clock ticking as soon as possible on support options. Make sure you know when your deadline is up for free technical support. Try to test everything on your system, including the software, early so that you'll have plenty of time to iron out problems with the company's help.

—Grace Aquino

tion in response to any e-mail query.

Similarly, a grammatically challenged thief sent an e-mail message asking for account information from PayPal users last fall. It was closely followed by a second, slightly more convincing message that cited system problems and lost data as the reason for the request. The thief provided a link to a copycat PayPal page and included an offer for two free cash transfers, and some users were duped.

The best way to protect yourself from these scams is to be suspicious of all requests for "updated" information. If a company already has your information, don't give it out again without confirming the validity of the request, especially if the e-mail message includes a link allegedly to the company's Web site. Few, if any, companies will ever send you e-mail asking for sensitive information. If you do get such a request—especially if it's poorly written or contains spelling errors—pick up the phone and call the company directly. Or you can type in the site's URL yourself and navigate to your account information to make sure it's correct.

Don't trust the links in an e-mail to send you where they claim they will. For

instance, the linked text of the e-mail may read www.ebay.com, but the site the link sends you to may be www.iscamu.com. Always carefully look at the address in your browser's address bar.

If you suspect that your financial data is at risk, notify your bank, credit card companies, and the major credit bureaus—Equifax.com, Experian.com, and Trans-Union (www.tuc.com)—as well as local law enforcement and the FTC (www.consumer.gov/idtheft, 877/438-4338). And if you've been caught in a scam directed at users of a particular service, such as EBay, contact officials at the company as well, so that they can warn other users.

Unfortunately, these types of crimes can victimize anyone who uses the Internet. Keep your personal data private and your good judgment at hand. ■

Anne Kandra is a contributing editor and Grace Aquino and Andrew Brandt are senior associate editors for PC World. E-mail them at consumerwatch@pcworld.com. To read more Consumer Watch, Privacy Watch, or On Your Side columns, go to find.pcworld.com/31703, find.pcworld.com/31706, or find.pcworld.com/31709.

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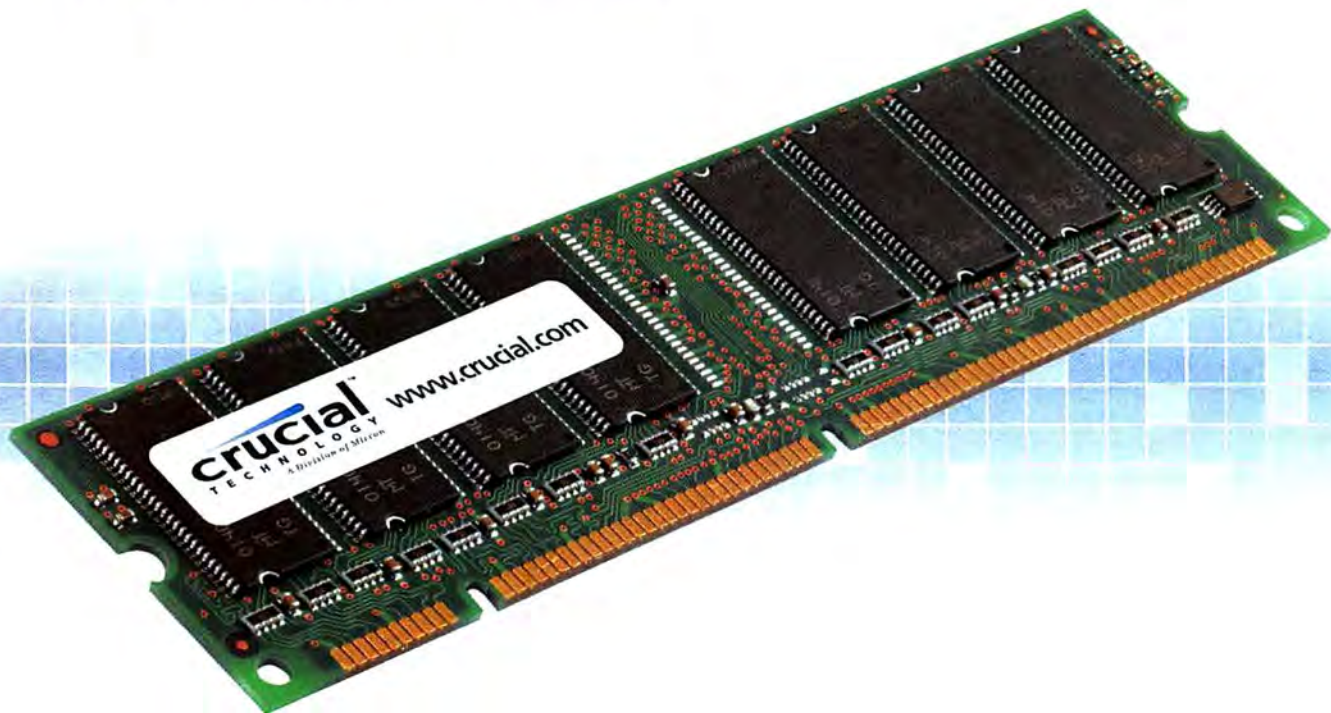


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A Boot Full of Windows Wonders

What will you do with all the time these downloads save you?

I'LL BET MY PC BOOTS faster than yours does. I'll even wager it's got a cleaner Registry file and less Temp folder garbage to slow down its performance. And I probably have more control over apps that open my files. My secrets? A handful of useful Windows utilities and a nifty (and free) spyware catcher that outdoes Ad-aware.

If you're using Windows XP, try BootVis, a free Microsoft utility that speeds up your machine's boot time, sometimes substantially: I saw a 25-second improvement in my PC's start-up after running the tool. (If you use another version of Windows, check out Kirk Steers's BIOS tutorial at find.pcworld.com/33242.)

BootVis offers a graphical view of your PC's boot performance and shows you why booting your system takes so long. After you download BootVis from find.pcworld.com/32681, create a folder named 'ptools' and install the utility into that folder. Launch the program and choose *Trace•Next Boot + Driver Delays*. When the dialog box appears, choose four repetitions and then go grab a cup of coffee. Don't interrupt the process, even if your PC seems to be frozen—BootVis takes its sweet time. The program watches the boot process and figures out how to load drivers, DLLs, and other components simultaneously. It also determines how to start loading some drivers before others have finished, and it identifies the files that no longer need to load.

Once BootVis is done, select *Trace•Optimize*. The program shuffles drivers and their load order based on what it has learned, making for faster boots. BootVis provides the details you need to find the problems that are slowing the boot process.

For instance, my system stalled when trying to connect to a nonexistent networked PC; removing this item from Network Neighborhood helped speed up my machine's boot process.

ANTI-SPY VS. ANTI-SPY

I KNOW THAT WE TOUT Ad-aware on page 106 as a great tool for finding and removing those insidious spyware programs that lurk on your hard drive and extract details about you. But I discovered an app that outshines Ad-aware: Spybot Search & Destroy. Both Ad-aware and Spybot are free, so I downloaded and ran them both, and then I compared the results. (If you do this, make sure to set the programs to find spyware, not remove it, during the test.) The score? Ad-aware found 9 items (cookies and one false-positive program), while Spybot red-flagged 26 items (cookies and two spy apps). Guess which of the two I always use now? Go to find.pcworld.com/32678 to download either program.

Having too many files in your PC's Temp folder can bog down system performance—but you already knew that. If you use Windows' Disk Cleanup utility to remove those files, your Temp folder still has files that are less than a week old. To empty the folder entirely, use JV16 Power Tools, a free utility that also finds invalid and obsolete Registry entries. Go to find.pcworld.com/32684 to download a copy.

This happens all too often: You double-click a file, and—instead of a familiar program launching—a different app starts. But now I'm happily protected by Open+, a nifty tool that lets me decide which program to open a file in. For example, when I click



a .jpg or other image file, I can choose to open it in a file viewer such as ACDsee or in a picture editor such as Paint Shop Pro. Ditto for playing an MP3 file: Open+ lets me decide between Winamp and Windows Media Player. For safekeeping, I can back up all of my file associations to a removable medium. Open+ costs \$30; visit find.pcworld.com/32687 to grab a trial version (registration required).

Okay, one more: ChangeExt is a free Windows Explorer add-on that displays details about a file when you right-click it. I use it to copy the file's name and path to the clipboard for pasting into shortcuts and elsewhere. Go to find.pcworld.com/32693 for your copy.

So, what am I doing with all my newfound spare time? I've spent some of it looking for other handy Windows utilities. You can read about them in one of my upcoming online newsletters. Go to find.pcworld.com/25821 to sign up. ■

Contributing Editor Steve Bass runs the Pasadena IBM Users Group. Contact him at homeoffice@pcworld.com. Visit find.pcworld.com/31610 for more Home Office columns.

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BUGS & FIXES

STUART J. JOHNSTON

Bug or Feature? We've Got the Answers

Here's how to handle snags with service packs, Outlook Express, and more.



RANTS AND pleas about misbehaving software often fill your letters to bugs@pcworld.com. So this month, I thought I would address some of your most common queries.

? AFTER installing Service Pack 1 for Internet Explorer 6.0, I haven't been able to open file attachments in Outlook Express 6.0. Is there anything I can do?

THIS PROBLEM involves a new default security setting that Microsoft put in place as part of the service pack for IE. To change the default so you can view attachments again,

click **Tools•Options** in Outlook Express and select the **Security** tab. Under 'Virus Protection', click *Do not allow attachments to be saved or opened that could potentially be a virus* to clear the option's check box. Then click **OK**. Go to find.pcworld.com/32879 for additional

information from a Microsoft Knowledge Base article.

? I TOOK YOUR advice (see find.pcworld.com/32942) and installed Service Pack 1 for Windows XP, but now I can't switch between e-mail accounts in Outlook Express. Is this a bug?

MICROSOFT IS aware of the problem but hasn't said when (or whether) it will fix it. This is a pain for people who need to set up multiple accounts (or identities) in Outlook Express to manage different e-mail inboxes. There is a way around the problem, though.

In OE, click **File•Identities•Manage Identities**. Click *Use this identity when starting a program* to clear its check box, and click **Close**. Thereafter, OE will prompt you—twice—to select an identity every time you open OE. Visit find.pcworld.com/32861 to read Microsoft's brief Knowledge Base article.

? I RECEIVED an e-mail about how to stop viruses from spreading. Referring to a *PC World* article, the anonymous writer advised me to enter !000 as a contact in my Outlook or Outlook Express address book. Thereafter, !000 would appear as the first entry and prevent worms from e-mailing themselves to everyone in my address book. Is this true?

I HATE to burst that bubble of hope, but the answer is no. Similar e-mail messages have been making the rounds for a couple of years, and the advice is bogus. Ignore it.

You're much better off getting an antivirus package and keeping it up-to-date. Visit find.pcworld.com/32975 for details about this hoax, and go to find.pcworld.com/30884 for tips on how to identify virus hoaxes in general. ■

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

IN BRIEF

Netscape Update

NETSCAPE IS now shipping version 7.01 of its browser. Netscape says that the updated version is more stable than its predecessor. Go to find.pcworld.com/32885 to grab a link to the download, and visit find.pcworld.com/32993 to access Netscape's release notes along with the list of known problems.

Outlook Weakness

AN ATTACKER could exploit a vulnerability in Outlook to send you a message that would repeatedly crash your e-mail application. Hop to find.pcworld.com/32864 to get a link to the patch.

Flash Flaw

MACROMEDIA has fixed a serious hole in its Macromedia Flash player that a bad guy could have exploited to take over your PC if you clicked an infected Flash (SWF) file. Go to find.pcworld.com/32978 for more details and for the updated Flash player (version 6,0,65,0).

BUGGED?

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

HOLEY WINDOWS: EIGHT FLAWS GET FIXED

MICROSOFT HAS PLUGGED eight new security holes affecting its Java Virtual Machine. The most serious glitch could allow an attacker to take over your PC remotely and perform any action that you could. The VM shipped as part of nearly all flavors of Windows and Internet Explorer. Nevertheless, you may not be affected by the problem (Microsoft stopped shipping the VM at different stages, only to start shipping it again later). Head to find.pcworld.com/32882 to learn more and to get a link to the patch.

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NEW PRODUCTS

EDITED BY ANNE B. MCDONALD

Handy but Pricey Portable LCD



AIRPANEL V110.

VIEWSONIC DEBUTS ITS WINDOWS POWERED SMART DISPLAY.

computing work, but the end result appears on the V110, which weighs 2.9 pounds and has a 10.4-inch screen.

Smart Displays will function only with systems running Windows XP Professional (because only XP Pro allows you to take over your PC remotely) and equipped with a Wi-Fi networking adapter. ViewSonic's pricey V110 package includes an XP Pro upgrade for XP Home users, as well as a USB Wi-Fi adapter for the host PC (the Smart Display's adapter is built-in).

A Smart Display's key advantage is convenience—it's hard to argue that anyone actually *needs* one. The device merely saves you from having to sit in front of your desktop computer or cart around a notebook, which may or may not be bulkier. For instance, the V110's 15-inch sibling, the \$1299 V150, tips the scales at 5.9 pounds, making it heavier

than many laptops (including the ones reviewed on the next page). Though both Smart Displays have optional docking stations (\$149 for the V110 and \$199 for the V150), only the V150's has a VGA pass-through, which lets that display also function as a primary monitor. However, both stations hold their Smart Display at angles suitable for viewing when you're standing or sitting above the level of the screens, and both recharge the lithium ion batteries.

CONVENIENT

NONETHELESS, a Smart Display device is useful in ways that become clear only after you have lived with it for a while. Logging in to the Airpanel V110 takes less than 30 seconds, and fast lookups—such as a short Google search or a Quicken bank balance inquiry—don't seem to put much of a dent in its battery life. (ViewSonic says that the V110 will operate for 3.5 to 4 hours per charge, a claim that held up in my informal tests with a shipping unit.)

Airpanel V110 Smart Display

ViewSonic

★★★★☆

Wireless unit makes mobile PC use easy, but it's too expensive.

Street: \$999

find.pcworld.com/33284

D I S P L A Y
SOMEDAY, EVERY truly digital home may have a convenient, wireless monitor-type device like ViewSonic's \$999 **Airpanel V110 Smart Display**. But that day will not arrive until the products' prices drop significantly.

The Airpanel V110 is a Windows Powered Smart Display unit, which, like the Tablet PC, is a hardware product based on Microsoft-designed soft-

ware. Smart Displays consist of an LCD touch screen that you can carry from room to room and use to control a fully functioning PC over a Wi-Fi (802.11b) network.

For instance, you can browse the Web or read e-mail using the V110 in the living room or kitchen, while your computer remains on in your home office or your den. The host PC does virtually all of the

64 SMART DISPLAY

ViewSonic Airpanel V110 Smart Display

65 NOTEBOOKS

Panasonic Toughbook T1, Sharp Actius PC-UM32W

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68 DIGITAL CAMERA

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68 PC DIGITAL VIDEO RECORDER

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PC SECURITY

Custom Dynamic Systems VirusLock Selector

LAPTOP ACCESSORY

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Veo Photo Traveler

70 TABLET PC SOFTWARE

Alias SketchBook Pro, Corel Grafigo,

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International Simply Accounting 2003,
Intuit QuickBooks 2003**74 WEB SITE DEVELOPMENT**

Macromedia Contribute

DIGITAL PROJECTOR

InFocus X1



Using a Smart Display is definitely speedier than trekking over to a desktop. And even if you have an ultrathin notebook, it can be more convenient to leave that plugged in and logged on continuously while you use the V110 for the occasional digital nibble, since you don't have to log on and off and you avoid running down your laptop's battery.

Setting up my test unit was quick and relatively painless. And using the V110 is essentially the same as using your PC, since the Smart Display takes full control of the host computer once you log in.

For a device that is clearly intended for heavy Web surfing, however, the absence of a wheel or toggle for scrolling is mystifying and inexcusable. And due to Wi-Fi bandwidth limitations, the V110 can't handle video files or serious 3D games, but you can stream music to the V110 or use it as a remote for a computer connected to your stereo.

None of these drawbacks seriously affects the V110's value to the user. The problem is that the device's convenience simply isn't worth \$1000. If Smart Displays drop to about \$300, though, I'd certainly be tempted to add one to my home network.

—Edward N. Albrow

Ultrathin Notebooks Get Even Lighter

NOTEBOOKS

OWNING A thin-and-light notebook used to mean getting low performance at a premium cost. Prices still rise as the weight and size shrink, but these days you are at least promised better performance and longer battery life. I looked at shipping versions of two diminutive, powerful notebooks: Panasonic's 2.4-pound **Toughbook T1** and Sharp's 3.1-pound **Actius PC-UM32W**.

Each notebook sports a 40GB hard drive; 256MB of SDRAM; a 12.1-inch, 1024-by-768 active-matrix screen; twin USB 2.0 ports; Windows XP Professional; ethernet/modem ports; and a lithium ion battery. Sharp claims a 2.4-hour battery life, while

Panasonic boasts of a whopping 5 hours for the T1. We seldom find that real-life battery use equals manufacturers' claims, however.

While Sharp built a Wi-Fi (802.11b) adapter into the PC-UM32W, Panasonic calls the T1 "Wi-Fi Ready" (read: \$269 extra for that capability). The Sharp notebook includes an external USB 1.1 6X CD-ROM drive; Panasonic charges \$439 extra for an 8X DVD and 16X/10X/24X CD-RW combination drive. In addition to a Type II PC Card slot, the Sharp has a CompactFlash slot, while Panasonic put a Secure Digital Card slot in the T1. The Sharp model runs a 1-GHz

Actius PC-UM32W

Sharp

★★★★☆

A well-engineered, very thin ultraportable with good performance plus many extras.

List: \$1999

find.pcworld.com/33290

Toughbook T1

Panasonic

★★★★☆

A good-performing, lightweight notebook, but not as many included features as the Sharp.

List: \$1850

find.pcworld.com/33287

Low Voltage Intel Pentium III-M CPU; the Panasonic uses an 866-MHz Ultra Low Voltage PIII-M. Both models easily performed basic business tasks.

Many ultraportables sacrifice keyboard size to maintain miniaturization, but I found both keyboards to be touch-typist friendly even though they are 5 percent smaller than the keyboards on most notebook PCs.

The Panasonic unit is lighter, but I feel that the Sharp is the better deal, with its built-in Wi-Fi and included CD-ROM drive.

—Michael S. Lasky ▶



LIGHT: Notebooks from Panasonic (left) and Sharp.

Gain Control Over Your Digital Images

PHOTO MANAGEMENT

DIGITAL CAMERA OWNERS often find themselves overwhelmed by hundreds or even thousands of pictures stored on their PCs. I looked at three new software packages that try to make importing, editing, and organizing images into a digital photo collection as painless as possible. ACD Systems' **ACDSee 5** and Adobe Systems' **Adobe Photoshop Album**, both \$50, seem appropriate for slightly more experienced digital enthusiasts, whereas Lifescape Solutions' \$30 **Picasa 1.5** is aimed at family photographers.

While overall I found Adobe Photoshop Album to be the best balance of form and function, all three let you easily e-mail and print photos, as well as create slide shows. Image properties, such as file size, date, and exposure data, are displayed on command. To help you get organized, the programs use similar methods of tagging your pictures with keywords such as "vacation," "friends," and "family." You may also customize tags to create categories for more-specific sorting. A handy timeline feature lets you view images in chronological order.

START MANAGING

PICASA 1.5 has a clean, uncluttered interface and is the easiest to navigate of the three. The trade-off is that the program sacrifices some scope: Its image editing capabilities are limited, and its slide show is not as customizable as those in the other two album-manager programs. However, this shipping software is won-



ACDSEE 5's interface offers a myriad of options that may overwhelm.



ADOBE Photoshop Album's Quick Guide window simplifies tasks.

derfully efficient at finding sources of images (including card readers). Once Picasa gathers the images, the program displays them in a series of thumbnails arranged by folder. All 200 of the images on my hard drive were easily

moved, tagged, and selected. The software also lets you perform simple edits, such as brightness/contrast adjustment, rotation, and red-eye reduction. I prefer to do edits in Photoshop, but newbies will likely find that Picasa's

editing options are adequate.

ACDSee 5's interface is dense and often difficult to navigate; many small buttons, icons, and windowpanes compete for attention (though you can customize windows and toolbars). But it has great user control; for example, you can add a caption to each picture, perform fairly sophisticated image edits, and create tailored slide shows. My shipping program also let me add keywords and descriptions to my pictures, allowing for more-precise searches. ACDSee will automatically search your computer's hard drive for images, but to acquire photos from another source you'll need to browse your system. This program's options and complex interface caused me to consult the manual more frequently than I did with the other programs.

UNCOMPLICATED

ADOBE Photoshop Album offers many of the features that ACDSee does but is easier to use. On launch, my preproduction copy opened a simple dialog box asking what I wanted to do, from acquiring new images to opening, editing, and sharing photos already stored on my computer. Like ACDSee, Photoshop Album allows you to edit and organize images with fairly comprehensive tools. It also has a customizable slide-show function and an elegant interface.

—Kathleen Cullen ▶

ACDSee 5

ACD Systems

★★★★☆

Includes solid features, but its competitors are easier to use.

List: \$50

find.pcworld.com/33278

Adobe Photoshop Album

Adobe Systems

★★★★☆

Best balance of function and form for intermediate/advanced users.

List: \$50

find.pcworld.com/33125

Picasa 1.5

Lifescape Solutions

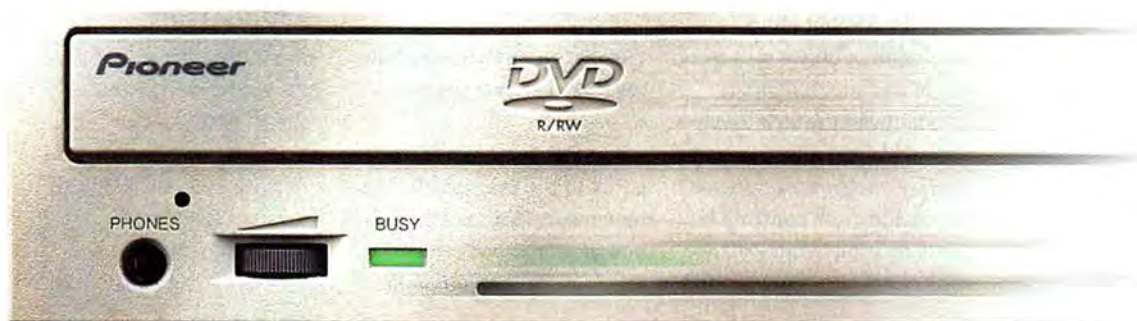
★★★★☆

Extremely simple to use; best of the three programs for novices.

List: \$30

find.pcworld.com/33281

Pioneer *sound.vision.soul*



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Tiny 5-Megapixel Camera

DIGITAL CAMERA

KYOCERA SAYS that its \$600 **Finecam S5** is the world's most petite 5-megapixel camera. The size is indeed wonderful, but the quality of the camera's images leaves much to be desired.

The Finecam S5's small, stainless-steel case is its finest feature: Despite weighing just 6.9 ounces, it feels well-made and substantial, though I prefer the sliding lens safeguards of other cameras to the S5's black metal curtain protector.

Finecam S5

Kyocera

★★★★☆

A lot of megapixels per ounce, but its pictures are so-so.

Street: \$600

find.pcworld.com/33293

This camera captures large files (over 2MB at its best setting), which usually translates into lots of image detail. But many of our test images showed extensive graininess, and they weren't as sharp as you might expect. Pictures taken with Canon's PowerShot G3 (which costs \$200 more than the S5, but has a resolution of only 4 megapixels) looked much sharper.

In fairness, the S5 is a snapshot model not meant to compete with enthusiast cameras. It provides few controls beyond a simple white-balance calibrator and settings for

sharpness and color intensity (chroma). More important, it lacks a low-light focusing aid, and indoor photos came out fuzzy, even with flash. However, the battery was hardy.



THE FINECAM S5's 5 megapixels don't result in great pictures.

The Finecam S5 certainly packs in the megapixels, but remember: That's not the only indicator of a good camera.

—Alan Stafford

QUICK TAKES

PC Data Security

CUSTOM Dynamic Systems' **\$70 VirusLock Selector** helps bullet-proof your data by adding a power selector to an empty externally accessible drive bay. Back everything up to your own second hard drive, and then switch that drive off—you instantly have an impregnable, bootable backup system. find.pcworld.com/31769

—Rex Farrance

Laptop Table

IS YOUR notebook the only PC you have? The Plastic-smith's **\$80 Lapvantage Deluxe Dome** is a stand that adjusts to place your laptop at just the right level for you. find.pcworld.com/33368

—Aoife McEvoy

Mini PDA Camera

VEO'S **\$100 Photo Traveler** will transform any Palm handheld with a Secure Digital expansion slot into a camera capable of capturing decent 640-by-480-resolution photos. It is also available in a Pocket PC Compact-Flash version. find.pcworld.com/33365

—Yardena Arar



Make Your PC Into a TiVo

DIGITAL VIDEO RECORDER

FOR UPWARD of \$200, companies like Sonicblue and TiVo sell digital video recorder (DVR) boxes that let you automatically record, watch, and pause live TV programs at any time, without using VHS tapes. If you'd like to do this on your PC, look into SnapStream Media's **SnapStream Personal Video Station 3**.

For just \$50 (\$90 including

the PCI TV-capture card you'll need if your system lacks a graphics card with a TV input; \$120 with a remote control added), PVS 3 enables you to watch and record shows on your computer. (Microsoft's Windows XP Media Center Edition builds in DVR capability, but that OS can't be purchased separately; it comes only with new systems.)

The positives: The software is less expensive than even the lowest-priced ReplayTV or TiVo boxes. For access via the Internet to TV listings—which you'll find essential if you intend to streamline the process of choosing particular shows to record—SnapStream costs only \$5 a month versus ReplayTV's \$10 and TiVo's \$13.

In addition, PVS 3 is more flexible than its stand-alone competitors. It allows you to watch the programs you have recorded on another PC over your home network, the Internet, or a Pocket PC-based PDA. Or you can put the programs on DVD if you have a DVD burner.

But the PVS 3 system has its disadvantages, too: Watching TV on a computer screen can be unpleasant, and connecting a TV to the video-out port of your graphics card requires that the PC be near your TV. And if you want the TV-capture card and the remote control along with the software, you're getting fairly close to the price of an entry-level DVR box.

The image quality you get with PVS 3 depends on your

PC's speed, but on my test system (a 1.2-GHz Athlon PC with a GeForce4-based graphics card and 512MB of RAM), it was certainly acceptable. Nevertheless, even at the higher quality settings, the same program looked worse on the preproduction PVS 3 software than it did on my TiVo.

—Richard Baguley ▶

SnapStream Personal Video Station 3

SnapStream Media

Preproduction unit, not rated

Cheaper but less convenient than a digital video recorder box.

List: \$120 with software, PCI TV capture card, and remote control.

find.pcworld.com/33296

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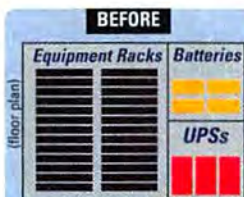
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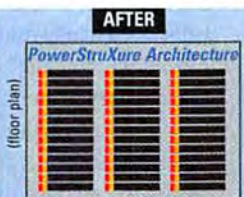
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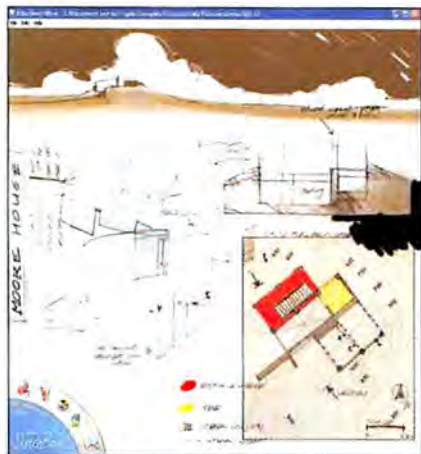
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Tablet Software Packages Get Graphic

TABLET PC SOFTWARE

NEW TABLET PCs already come bundled with Windows Journal—Microsoft's software application for taking notes by hand—as well as other programs that take advantage of tablets' pen functions. Why stop there, though?

I tried out three Tablet PC software packages: a preproduction version of Alias|WaveFront's **Alias SketchBook Pro**, a free download of Corel's **Corel Grafigo**, and FranklinCovey's \$170 **TabletPlanner**. All use a tablet PC's support of pen input to expand the functionality of traditional PC software.



USE ALIAS SketchBook Pro software with your Tablet PC to create colorful freehand drawings.

Alias SketchBook Pro is far more versatile than its name might imply. Beyond free-form drawing, you can use its toolbox of 20 brushes and 300

built-in background templates to jazz up handwritten notes before sending them.

The user interface is based on a set of "floating" or movable menus. Each time you press your tablet's pen on a tool palette—say, for brushes or colors—choices pop up. Other features include pan/zoom and controls that enable you to rotate, vertically flip, and mirror your images.

DRAW THE LINE

SKETCHBOOK PRO offers you the option of using a nearly limitless supply of transparent "layers," or overlays, to add written comments and sketches above your document. You might, for instance, grab a digital photograph or Web page, scrawl "Check this out!" on a SketchBook layer, and then e-mail the whole kit and caboodle to a friend or colleague. Though SketchBook Pro supports Outlook file attachments in JPEG, PNG, and TIFF file formats, you can preserve the

layers only by using TIFF. My version of SketchBook Pro lacked backgrounds and had limited brush and color controls. The final version is

expected to include those features and to cost \$129.

Like most other early software packages available for Tablet PCs, Corel Grafigo is geared mainly toward mobile employees in large businesses, some of whom should get a lot of use from the application's great graphics tools and Symbols palette.

One particularly handy tool is shape recognition, which produces geometrically precise shapes when you doodle anything roughly resembling your desired figure, whether it's supposed to be a triangle or an ellipse.

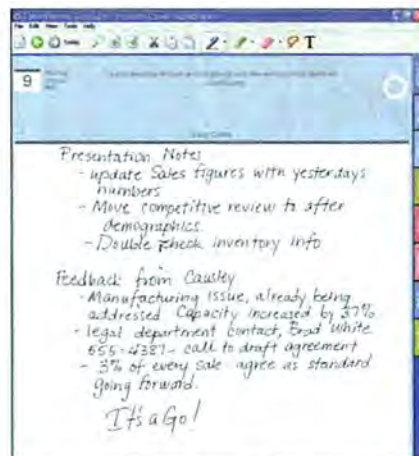
In my tests, Corel's shape recognition seemed to work more accurately than Windows XP Tablet PC Edition's much-ballyhooed handwriting recognition, which Corel Grafigo also supports. You might wait until the full version arrives this summer to get improvements to collaborative work and shared whiteboarding.

FAMILIAR INTERFACE

ABOUT 6 MILLION people worldwide already use FranklinCovey Planner, either on paper or electronically. Its familiar interface is in Tablet-

Planner, offering a daily task list; daily, weekly, and monthly calendars; a contact list; and financial forms such as a car mileage log, a check register, and a monthly budget.

TabletPlanner adds handwriting tools and the ability to search through handwritten



IT'S EASY to scribble notes and memos into your FranklinCovey TabletPlanner calendar.

and text information. In addition, you can import any document that you've created in a Windows application—such as Word—into the program so that you can consolidate your information there.

You can write with the pen tool, of course, or use it to draw symbols showing the status of daily task items. Unfortunately, writing with my shipping TabletPlanner's digital ink was noticeably slow. According to FranklinCovey, the next version of the software will have an improved search engine, as well as an address book that should possess a Microsoft Outlook-type look and feel.

If you'd like to try any of these three applications before you commit to them, just go to find.pcworld.com/33308 to get a free download.

—Jacqueline Emigh ►

Alias SketchBook Pro

Alias|WaveFront

★★★★☆

Good for labeling digital photographs and for freehand business drawing purposes.

List: \$129

find.pcworld.com/33050

Corel Grafigo

Corel

★★★★☆

Makes schematic drawings and any type of hand drawings look more professional.

Free download

find.pcworld.com/33044

FranklinCovey TabletPlanner

FranklinCovey

★★★★☆

An excellent handwriting-enabled central space to store and search notes, contacts, and calendars.

List: \$170

find.pcworld.com/33047



It's so far forward, it's a shame to call it backup.

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is here**

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BrightStor™ ARCserve® Backup



Computer Associates™

Simply Accounting: Simply a Better Buy

ACCOUNTING SOFTWARE

WITHOUT DECENT accounting software, things could get very ugly for your business.

I looked at shipping versions of two major accounting packages: ACCPAC International's **Simply Accounting 2003** and Intuit's **QuickBooks 2003**.

My pick is Simply Accounting 2003, which provides capabilities that rival category leader QuickBooks 2003's but at a fraction of the price (\$39 for Simply Accounting Basic; \$200 for QuickBooks Basic).

A third accounting package also is out—MYOB Plus 12, which now includes stronger inventory capabilities. This improvement may make it worthwhile for existing single users to spring for the \$119 upgrade, but version 12 does not have enough meat for others to consider switching.

WEB'S UP

SIMPLY ACCOUNTING 2003's most significant improvement is Simply Webstore, whose superb integration with the accounting software makes e-commerce easy. With a single

click, you can now synchronize new products and prices that have been entered into the accounting system with those listed at your Web store.

In addition, you can accept online orders around the clock and retrieve them into Simply Accounting 2003 for approval before processing. You can require up-front payment for all orders made with a credit card, or you can offer regular customers your standard credit terms. ACCPAC's monthly Web hosting charges for the store start at \$35.

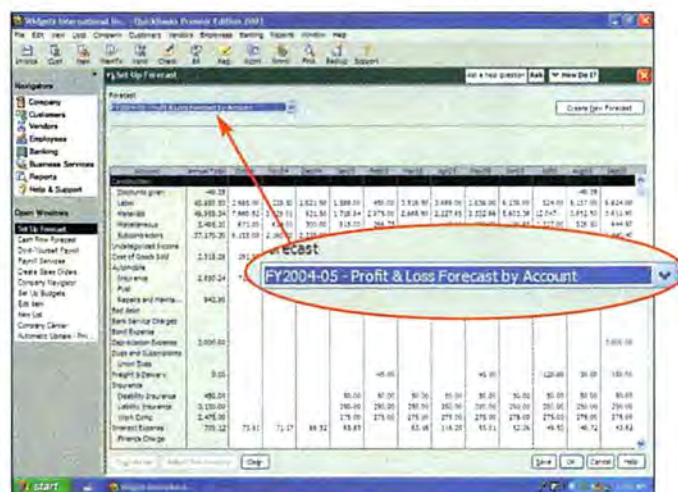
Other enhancements to the \$40 Basic 2003 version include better sorting and report options, tighter security right down to the record level for improved segregation of employee duties, and extra hourly payroll rate fields to handle shift differentials.

The \$89 Pro 2003 version adds time and billing features, electronic funds transfer, and support for multiple-currency transactions. (Basic's upgrade cost also is \$39, Pro's is \$89.)

If you're considering switching, Simply Accounting 2003

smooths the path by converting data exported from its competitors QuickBooks and MYOB. Note, however, that

suitable for small businesses that combine several products into a single unit for sale. It also now lets you create and track customer sales orders—especially helpful for handling relatively complex orders your



INTUIT QUICKBOOKS Premier 2003's already strong financial planning capabilities are enhanced with better forecasting features.

making this sort of change is much easier to accomplish at the beginning of a fiscal year.

PRICEY BOOKS

SMALL-BUSINESS accounting leader QuickBooks offers a host of features, but it's expensive. The prices of the Pro and Basic versions are each \$20 more this year—despite the fact that most improvements are available only in the Premier edition, whose wallet-flattening \$500 price didn't increase. Intuit did throw a bone or two to users of all versions, such as improved backup options (including scheduling and integrity checking). But these minor enhancements hardly justify the upgrade costs: Basic, \$100; Pro, \$180; and Premier, \$380.

QuickBooks 2003 does finally catch up to the competition by adding an inventory assembly feature, which makes it

business can't fill right away.

QuickBooks 2003 also beefs up already-strong financial planning features with both a financial forecaster and a business plan creator. You can still export data to Excel, but you may not need to use a spreadsheet to augment the built-in planning capabilities.

—Richard Morochove

QuickBooks 2003

Intuit

★★★★☆

Expensive, but worth it for top-notch financial planning.

List: Premier \$500, Pro \$300, Basic \$200

find.pcworld.com/33311

Simply Accounting 2003

ACCPAC International

★★★★☆

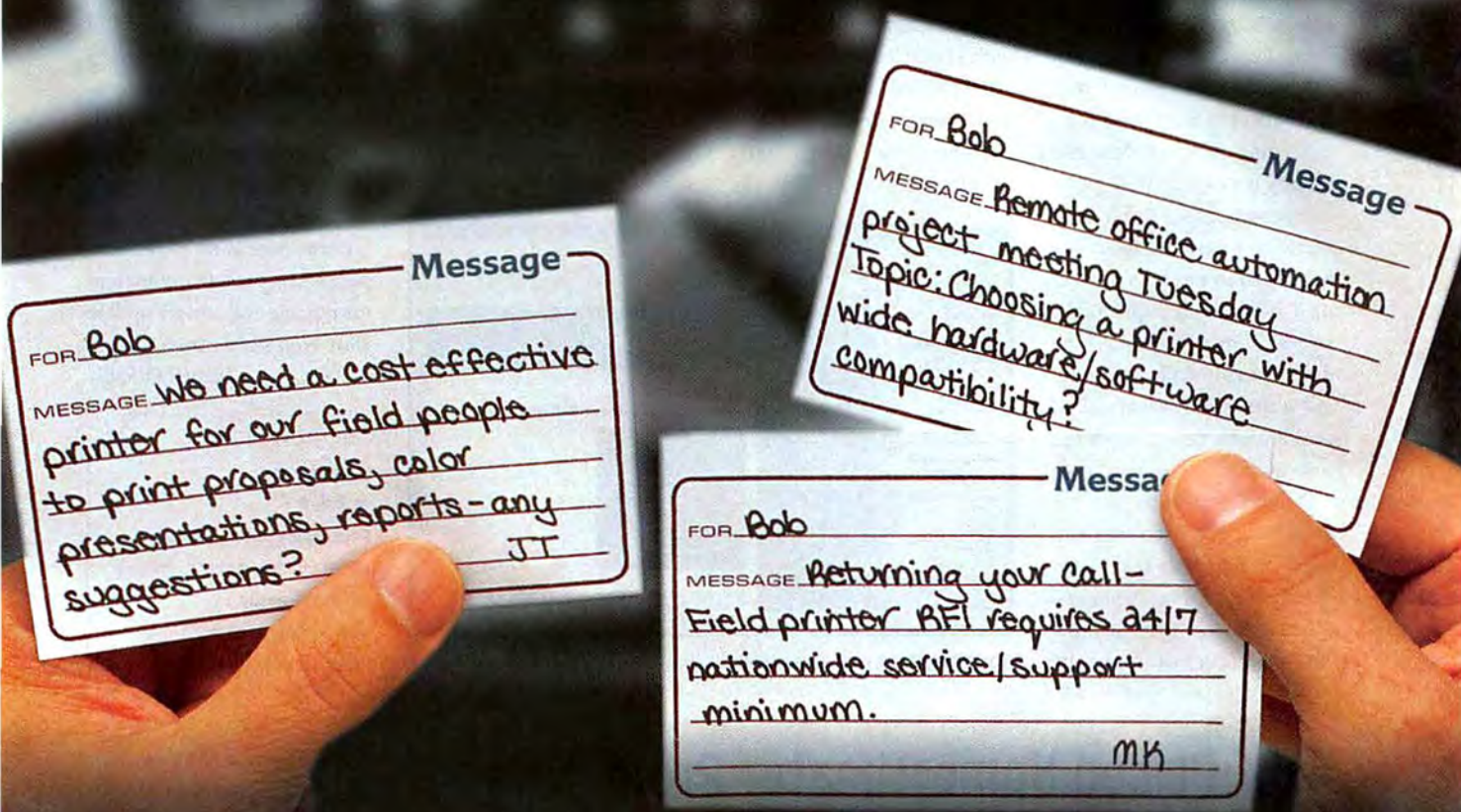
Highly competitive with QuickBooks, at a lower price.

List: Basic \$39, Pro \$89

find.pcworld.com/33314



SIMPLY ACCOUNTING 2003's Simple Webstore lets you easily sell items online and then synchronize sales with the accounting system.



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Easy Web Site Updates

WEB SITE DEVELOPMENT

DOUGHNUTS AND WEB sites have at least one thing in common: Freshness counts. But relying on professional Web developers to keep your site's information up-to-date can quickly get expensive.

Macromedia's **Contribute** software offers the tools any organization needs to freshen up a site without requiring its users to possess fancy Web development skills and without putting the site at risk of accidentally being rendered unbrowseable.

Using Contribute, you can even drag and drop text, images, or complete files from Word, Excel, PowerPoint, and other popular applications. The program automatically

and easily converts new content to the Web page's style and format, all in accordance with HTML code standards.

Contribute, \$99 per license, lets in-house or contract Web designers control what parts of your company's HTML site

may be accessed for adding or updating information.

In my tests, Contribute's connection wizard allowed me to access and update a Web site just a few minutes after I installed the program. I needed to know only the FTP address of the site's server (you also can connect via a LAN or corporate network).



CONTRIBUTE'S Office-like toolbars make site updates a breeze.

The site's pages are listed in the software's Places window in the top-left portion of the screen. Clicking the page name opens that page in the large content window on the right side of the Contribute screen, where you can add or change text and images. You can publish the page with a single click or save it for posting after it has been reviewed.

Contribute is an easy, inexpensive way to let nondevelopers quickly and simply update your Web site's content.

—Dennis O'Reilly

Contribute

Macromedia

★★★★☆

Reasonably priced software allows nondevelopers to freshen a Web site easily.

List: \$99 per license

find.pcworld.com/33317

Well-Priced Home-Theater Projectors

PROJECTOR

SUB-\$2000 DIGITAL projectors for home-theater use are finally hitting the shelves. I looked at InFocus's digital \$1699 **X1**, which the company says can be used for business, school, or home; but at 6.8 pounds it's pretty heavy to cart around. Philips's older but superb LC6231, meanwhile,



VIEW MOVIES at home with the InFocus X1 digital projector.

has dropped in price to \$1999.

In my tests, the affordable X1 produced good images from video piped directly into the unit from a DVD player. The quality of images tested through a PC by our lab, however, was mediocre for both text and graphics—and that's a problem if you intend to use the X1 for business. This projector works with a 2000-to-1 contrast ratio and has a lamp life rated at 3000 hours.

In operation, the X1 creates 37 decibels of fan noise—tolerable for business or school applications, but subpar for home-theater use. The LC6231, by compari-

son, produces a whisper-quiet 27 decibels of fan noise.

The X1's fan noise was moderately bothersome, but not so distracting that it spoiled my movie watching. If the projector were mounted on the ceiling, I doubt noise would be an issue at all.

As for imaging, the X1 uses Texas Instruments' Digital Light Processing dual-mode technology, designed to generate brighter and crisper images than an LCD projector like the Philips can. It also incorporates Faroudja's Directional Correctional Deinterlacing technology to keep contrast high and colors stable.

When I viewed movies, the X1's images had crisp edges and smooth texturing, but

contrast was a problem and required more fiddling with controls than I would have liked. The X1 has standard composite video and S-Video inputs, but lacks component video inputs, which evidently is a cost-cutting measure.

Persnickety home-theater shoppers can do better than the X1, if they're willing to pay more. For the rest of us, the unit's multiuse attributes and decent home-theater imaging make it worth considering.

—Ramon G. McLeod ■

X1

InFocus

★★★★☆

Great price and multiuse attributes, but picky home-theater shoppers can do better for more money.

List: \$1699

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picture quality of Sony's Emmy®-winning* FD Trinitron® CRT displays. What do all of these professionals have in common? A need for top quality, reliability, performance and Sony has the ideal display for you and your business – from



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DeluxePro™ Series to the highly specialized PremierPro™ Series. See for yourself. To find the ideal display to match your business needs, see "How to Choose a Display" at www.sony.com/idealdisplay.

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IBM ThinkPad R40

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System Specifications:

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ServicePac® Service Upgrade
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Next Business Day Response (#69P9194) \$399

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- IBM Embedded Security Subsystem 2.0 (requires download of security software)
- Titanium Composite top and bottom covers for added strength

System Specifications:

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- 256MB DDR SDRAM • 40GB hard drive
- Ultrabay Plus CD-RW/DVD-ROM combo
- Integrated Wi-Fi wireless
- Microsoft® Windows® XP Professional
- 3.0-hr Li-Ion battery • 5.1-lb travel weight
- 3-yr system/1-yr battery limited warranty

\$2,549

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128MB USB Memory Key (#22P8998) \$129

Lexmark Z65 Color Jetprinter (price with system purchase) (#W7LEX65) \$119.99

Targus DEFCON Authenticator PC Card Fingerprint Reader (#31P6763) \$174.99

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Telephone support may be subject to additional charges. For onsite labor, IBM will attempt to diagnose and resolve the problem remotely before sending a technician. "Certain Microsoft" software products included with this computer may use technological measures for copy protection. IN SUCH EVENT, YOU WILL NOT BE ABLE TO USE THE PRODUCT IF YOU DO NOT FULLY COMPLY WITH THE PRODUCT ACTIVATION PROCEDURES. Product activation procedures and Microsoft's privacy policy will be detailed during initial launch of the product, or upon certain re-installations of the software product(s) or reconfigurations of the computer, and may be completed by Internet or telephone (toll charges may apply). ‡These model numbers achieved eTesting Labs, Inc.'s BatteryMark™ 4.0 1-Battery Runtime Time of at least the times shown above. This test was performed without independent verification by eTesting Labs, Inc.; eTesting Labs, Inc. makes no representations or warranties as to these test results. 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For the 9x5x4-hour service, calls dispatched after 1:00 p.m. local time, you can expect the service technician to arrive by the morning of the next business day. For noncritical service requests, a service technician will arrive by the end of the following business day. If the machine problem turns out to be a Customer Replaceable Unit (CRU), IBM will express ship the part to you for quick replacement. †Onsite 24x7x2-hour service is not available in all locations. External peripherals, such as racks, tape drives and channel controllers, require their own, separate service coverage; they are not covered under the attached Machine. Service activation is required immediately following purchase. For ThinkPad notebooks requiring LCD or other component replacement, IBM may choose to perform service at the depot repair center. For failing non-IBM components, customer must provide replacement part unless IBM has a Technical Support Agreement with the manufacturer. Service does not cover accessories, supply items and certain parts such as batteries, frames and covers. With Intel SpeedStep, processor speed may be reduced to conserve battery power. †Based on IEEE 802.11b. This wireless LAN product has been designed to permit legal operation worldwide in regions in which it is approved. Operation on channels 12-14 is not permitted in all regulatory regions of the world. Consequently, the wireless LAN feature is limited to operate on channels 1-11 and will not support channels 12, 13 and 14. This product has been tested and certified to be interoperable with the Wireless Ethernet Compatibility Alliance and is authorized to carry the Wi-Fi logo. IBM does not manufacture, warrant or support this product. IBM logos and trademarks used under license. Contact IBM for details. All offers subject to availability. IBM reserves the right to alter product offerings and specifications at any time without notice. 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IBM NetVista M42
(shown with optional
flat panel monitor)





Stability and manageability for your business

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Distinctive Features:

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System Specifications:

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- Intel Extreme Graphics
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- 1-yr parts and onsite labor limited warranty*

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\$499

NavCode™ 848034X-M488

(does not include operating system,
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20/40GB TR7 IDE Internal Tape Drive* (#48P7042) \$549

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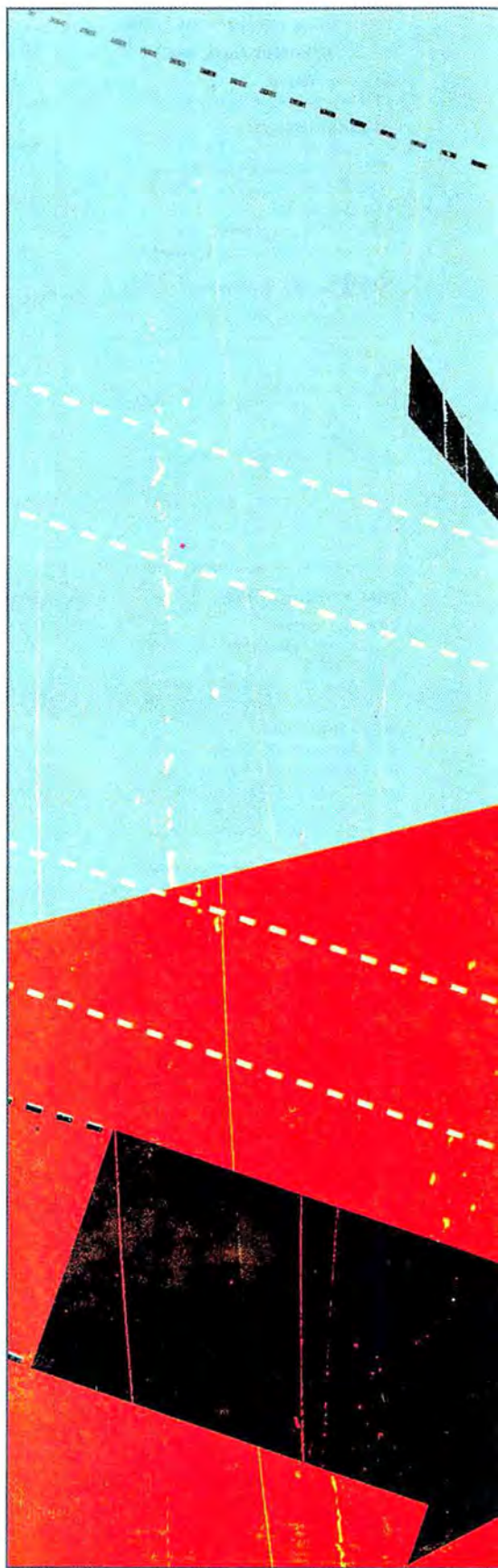
20 Things You Didn't Know Your PC Could Do

Teach that old machine new tricks—from the amazingly practical to the practically amazing. ►

BY ERIC DAHL

ILLUSTRATION BY TAVIS COBURN

ICONS BY CAMPBELL LAIRD







Turn On in Less Than 30 Seconds

EACH MORNING WHEN I get into the office, I hang up my coat, drop my bag in a corner, and start the process of turning on my PC. Five minutes later, I'm ready to work after waiting for the machine to boot, typing in my network password, waiting for plug-ins to load, and finally opening all the applications I use each day. Who needs all that waiting?

Try this little experiment if you'd like to save some time: Go to the Start menu and click *Shut Down*. Choose the *Stand By* or *Suspend* option (depending on your version of Windows, it may be in a drop-down list), and click *OK* if necessary. If the room just got quieter, congratulations—you have a new way to turn off your computer. If you didn't find that option, or if your PC's fans kept whirring, read on. You aren't out of luck yet.

If the option did work, your PC should quickly return to the state you left it in—with applications open, MP3s playing and everything—when you press the power button again. This feature, called *Suspend to RAM*, saves almost as much power as turning off your computer, by shutting down nearly every PC component and storing the machine's state in system memory.

Not all systems support *Suspend to RAM*, and some that do support it don't come with the option enabled. To begin with, you need to be running Windows 98 SE, Me, 2000, or XP. If you are and things still don't work as expected, check your machine's

hardware support by rebooting and then entering your PC's setup utility. (Watch the screen as the PC boots; it should tell you which key to press.) The labels mentioned below will vary, but they should be typical.

Look for a power-savings or power-management category. Search there for settings related to suspend modes. Enable any setting labeled '*Suspend Mode*' or '*ACPI Function*'. If you can choose different types of suspend mode (my home PC has a setting called '*ACPI*

Suspend Type'), select *Suspend to RAM* by choosing *S3* or *STR*. Save your changes, exit the setup utility, and boot into Windows.

If you're running a pre-XP OS, double-click *Power Options* in the Control Panel and click the *Advanced* tab. If possible, select the *Stand By* option. That should enable *Suspend to RAM*. For more on speeding up PC start times, see *Home Office*, page 59.



SAVE TIME booting your PC by choosing the 'Stand By' option when you shut down.

Put You on the Evening News

YOU WON'T EXACTLY be making news with your PC, but with a Webcam, a green backdrop, and Serious Magic's \$100 Visual Communicator software (www.seriousmagic.com), you can create a convincing imitation of the nightly news. Visual Communicator combines a TV prompter-style interface with a feature called V-Screen that replaces a green backdrop with an image or a video clip in real time. The process, known as chroma-keying, is the same one that puts the weather map behind the forecaster on the evening news.

Visual Communicator comes with plenty of professional-looking effects, transitions, and overlays that you can add to your presentation. Use it to put that annoying accounting guy's PowerPoint presentation to shame, or pull in video clips from your child's soccer game and produce a home version of SportsCenter.



SERIOUS MAGIC'S Visual Communicator. A new \$350 Pro version produces higher-resolution video.

USB POWER

Charge Your Cell Phone

DON'T BOTHER packing your cell phone charger the next time you head out on a business trip. If you're carrying a laptop, or if there is a PC equipped with USB at your destination, you can use a simple USB adapter to charge your phone. Adapters like APC's USB Mobile Phone Chargers (www.apc.com) and SMC's EZ Connect USB Phone Chargers (www.smc.com) are available for most popular phones and cost from \$10 to \$30. Best of all, they're easier to coil and carry than your average phone charger.



Get You a Beer

STRAP A NOTEBOOK PC to Evolution Robotics' \$500 ER-1 Personal Robot System chassis, and you have a toy that can put Sony's robot pet, Aibo, to shame. The ER-1 uses a Webcam to help it spot objects that you've programmed into its software. An optional gripper arm lets your ER-1 lift and carry objects. While it can't host your next party, the ER-1 can make a unique upgrade to an old notebook. Mobile computing, indeed.

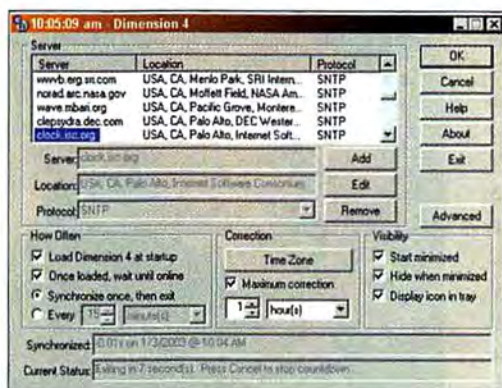
Maintain Perfect Time

DON'T BE surprised if you occasionally end up late for a meeting when you rely on your PC's clock. Most computers do a poor job of keeping time, losing as much as a couple of seconds a day. That may not seem like a big deal, but let it go on for a few months and it's more than enough to put your PC's clock several minutes on the slow side.

Windows XP users can solve this problem easily. Simply right-click the clock in the corner of the taskbar, click *Adjust Date/Time*, select the *Internet Time* tab, and check the *Automatically synchronize with an Internet time server* box. When your computer connects to the Net, it will periodically check in with an atomic clock and make sure that you have the correct time.

A free program like Thinking Man Software's Dimension 4 can perform the same task for PCs running earlier versions of Windows. Dimension 4

can operate in the background, syncing your clock every few minutes, or the application can do its thing as soon as it detects a Net connection, and then shut down and get out of your way. On a broadband-connected PC, it often can correct your time and exit before all of your plug-ins load. Head over to find.pcworld.com/33245 to download a copy.



THINKING MAN SOFTWARE'S Dimension 4 provides plenty of control over time-syncing your PC's clock.

Make a Cup of Coffee

NICK PELIS HAS BUILT what looks like the ultimate power user's machine—a computer with a built-in coffeemaker. Pelis's custom-modified case, or case mod, includes a dual-processor Pentium III system, 1GB of memory, and a White-Westinghouse four-cup coffeemaker.

Case modders like Pelis use Dremel tools and ingenuity to add all sorts of stuff—from useful tweaks like increased cooling to crazy stuff like cold-cathode lighting, clear acrylic windows, and, well, coffeemakers—to their anything-but-beige PCs. In a sense, case mods are like an external version of desktop customization. As people spend more time with their PCs, they're finding new ways to make them look and feel like their own.

Premodded PCs from companies like Voodoo Computers and CyberPower are starting to appear in our *Top 100* section. And kits from companies like FrozenCPU.com have made modding a PC easier than ever. ▶



Nick Pelis,
Durango, Colorado.



Give You a Little Peace and Quiet

hot CPUs, high-rpm drives, and heat-pumping graphics cards in current PCs has become a noisy affair—to the point where shutting down your PC can make sense if you need to think clearly.

But it doesn't have to be that way, as Mike Chin, editor and publisher of Silent PC Review, found out after he moved a third PC into his home office and got fed up with the noise. "That's when I started tearing them apart and trying to make them quieter," Chin recalls, and that's how his Web site (www.silentpcreview.com) got started. Now Chin tests PC parts from fans to hard drives to power supplies, trying to find the quietest components.

If you want a quieter PC, you need to find and replace the loudest part in your case, and then work from there. As a quick test, open your case and carefully cover each fan, noting any change in noise. When you identify a particularly loud component, look for a replacement.

Silent PC Review features a section that recommends parts it has noise-tested, but those parts can be hard to find. Online specialty stores such as Directron (www.directron.com) and Silicon Acoustics (www.siliconacoustics.com) are your best bet.

DON'T YOU occasionally wish that your PC would just shut up already?

The job of cooling

According to Chin, one of the loudest components is usually your CPU's fan and heat sink. A replacement heat sink like the \$45 Thermalright SLK-800 or one of Zalman's Flower models can run with a nearly silent fan. Be careful when unclipping and removing your heat sink, and install its successor according to the manufacturer's directions to avoid damaging your CPU.

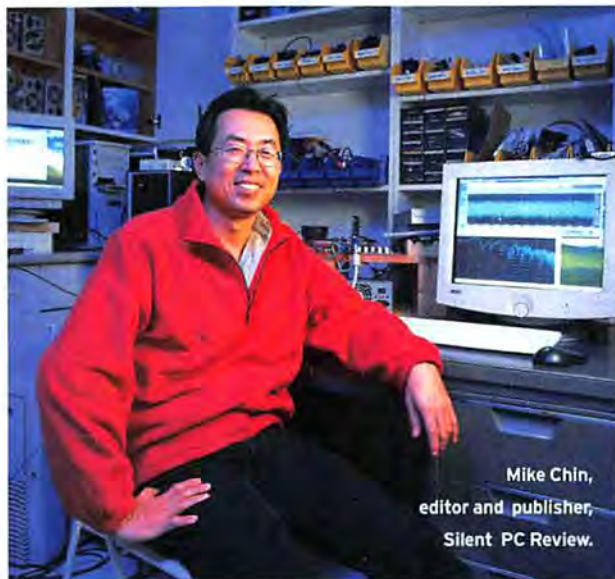
Hard drives are another likely culprit. Most of a drive's noise comes from the vibration produced by constantly spinning the

discs at high rpm. If you have an extra 5.25-inch drive bay, you can use a product such as NoiseMagic's \$30 NoVibes III drive enclosure to suspend the drive in rubber O-rings, drastically reducing noise. As for noisy CD and DVD drives, there isn't much you can do beyond running a software utility to slow them down.

Finally, look at your power supply and at the other fans in your case—especially small ones, which can emit a high-pitched whine. Some, like the fan on your motherboard's chip set, can be replaced with noiseless heat sinks. Graphics cards require extensive cool-

ing, making quiet replacements tough to build. One made by Zalman includes a top-mounted fan and covers an adjacent PCI slot.

What does all this work get you? Chin says it goes beyond a more enjoyable computing experience: "My ability to concentrate on my work is about twice what it was when I had noisy PCs. It's not just about making it pleasant, it's about productivity."



Mike Chin,
editor and publisher,
Silent PC Review.

Look at Least as Cool as a Mac

IS THE LATEST CROP of Mac ads getting to you? If you're tired of the taunts of your Mac-loving friends, take heart in a few tweaks that can make your PC look almost as slick as one of those overpriced desk lamps.

Want a more Mac-like desktop? Stardock's \$50 Object Desktop provides all kinds of enhancements

to the plain-vanilla Windows you're used to—and it can deliver a reasonable facsimile of OS X's Aqua interface to your PC with a plug-in called ObjectDock (www.objectdock.com). Add a Macintosh desktop skin from Wincustomize.com to complete your PC's transformation.

If the sleek-looking case is what you really desire,

take some inspiration from the "Rotten Apple" case modification that hobbyist Brian Holmes built for HardOCP.com (visit find.pcworld.com/33452 to see a photo). Holmes took a G4 case, gave it a custom paint job, and built a super-fast Athlon system into it. Now that's a switch I can deal with.



PHOTOGRAPH: RICH FRISHMAN

Print Digital Art on Canvas

SPECIALTY-PAPER vendors—for example, Burlington (www.burlingtonpaper.com)—can help you change things up on your ink jet printer with an array of different media. Need a new mouse pad? Print one yourself on some silk fabric. Want a snazzy CD label? Try one of the metallic or holographic backgrounds included in

Burlington's \$17 Silver Spectrum CD

label kit. Have a great digital art project? Get it down on canvas the easy way with some treated canvas media at \$9 for six sheets. And to think, all these years you've been printing just on paper.

Follow You Anywhere

EVERYONE KNOWS how long it can take to get up to speed on a new machine. Organizing your desktop, storing your files and e-mail in the right place, and setting up your favorite bookmarks can take hours each time you migrate to a new PC or have to use an unfamiliar one on a business trip. Fortunately, there are some ways you can speed up the process.

Miramar's \$39 Desktop DNA Professional software can collect and save all your critical files, desktop settings, and application preferences in a single, self-extracting "DNA" file that you can take with you. Desktop DNA can't pack up your software, but it can store your software preferences in case the machine you migrate to has the same apps. Install the DNA on a new computer, and it's almost like you're using your home PC. An undo file lets you restore the PC to the state you found it in.

Pair Desktop DNA with a key chain-size USB flash-memory device for a neat way to carry your PC in your pocket. USB memory keys can store up to 2GB these days—more than enough to hold application settings and critical files for a typical PC.

If you're concerned about privacy on the PCs you'll be using temporarily, WinBoot.com's \$20 P.I. Protector 2 software (see find.pcworld.com/33401) can redirect your Web history, cache files, and other browser-generated data to your USB memory key, leaving no trace of your surfing on the hard drive.

Burn a Movie Without a DVD Burner

IF YOU AREN'T quite ready to shell out the money for a rewritable DVD drive, the CD-RW drive that you probably already have can tide you over. Almost every

CD-burning package includes an option to burn Video CDs that will play in most DVD players. Check the section on supported formats in your DVD player's manual to confirm that VCD will work on yours. If you see listings for CD-R and VCD or Super VCD (SVCD) formats, you're good to go.

Fire up your CD-mastering software and look for a Video CD project option. Roxio's Easy CD Creator keeps it in the 'Make a photo or video CD' section. In Ahead's Nero, it's in 'Other CD formats'. To compile a disc, drag video files into the CD project. Most software will convert video files to the correct format for you. Finish your project, pop in a blank CD, and test it out.



A SIMPLE VIDEO CD PROJECT in CeQuadrat's WinOnCD 5 Power Edition. WinOnCD re-encoded the two .avi files before burning.

Just don't expect VCDs to look as good as DVDs. A VCD stores video at about half the resolution of a DVD to help make up for the difference in capacity. It also uses MPEG-1 encoding, an earlier version of the MPEG-2 compression used on DVDs, and it maxes out at 74 minutes of VHS-quality video per

disc. An SVCD disc uses a better encoding scheme to record video at closer to DVD quality. Either Video CD format looks good enough for general purposes—such as archiving shows recorded on a TV-tuner card.

Note: If you plan to burn SVCDs, you may have to resize your video beforehand so that it will display correctly (see find.pcworld.com/33305 for further details).

QUICK RECOVERY

Reboot After Crashing

A CRASH-FREE PC may be impossible, but you *can* have a PC that restarts automatically if it freezes up. Tripp-Lite's (www.tripp-lite.com) WatchDog system works with several of the company's uninterruptible power supplies (such as the \$160 SmartPro 550 USB). WatchDog monitors your OS and reboots the PC if it stops responding, ensuring that any critical PCs you have will remain up and running while they're unattended. Download a copy at find.pcworld.com/33494.



Stream Your Collection of MP3s to You Anywhere

IF YOU have a broadband connection and \$13 (for a yearly subscription), your PC can play your MP3s for you anywhere. Muse.net's software agent catalogs the songs stored on your PC and streams them to you on demand at any other PC connected to the Net or to your home network. You access your collection through a slick browser-based interface that permits you to create playlists and initiate playback on any Muse-enabled PC. Some configuration hassles await if you're operating behind a firewall; but once that's sorted out, your celestial jukebox can be just a few clicks away.



MUSE.NET LETS YOU browse your MP3 collection from any Net-connected PC—much as the My MP3.com service used to.

Understand Your Body Language

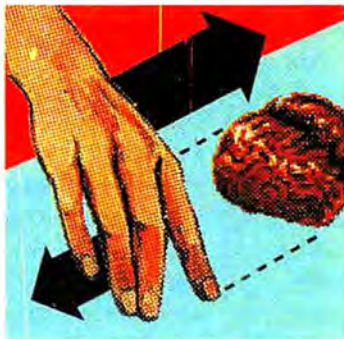
COMPUTER MICE HAVE been around for ages, and (apart from the addition of scroll wheels) we're still using them the same way we did 20 years ago. Isn't this getting a little old? Don't we need some new ways to interact with computers?

Conventional wisdom has held that voice recognition would be the answer, but out-of-the-box accuracy isn't improving, and training such software takes time. That's why many developers are now turning to gesture recognition as a means to boost our PC control options. Opera

(www.opera.com), a free Web browser, incorporates mouse gestures that automate common tasks. For example, you can right-click and flick your mouse right or left to move forward or backward in your browser's history. Other commands let you easily reload a page or open a new window. A planned add-on will work the same for Mozilla in the near future.

Jeff Doozan's free-ware plug-in, Strokelt (we don't name them, we just write about them), extends that functionality to the

rest of Windows, letting you bind simple mouse gestures to almost any command you can think of. Head to find.pcworld.com/33404 to download a copy.



Gestures made an appearance in one of last year's popular PC games: In Lionhead Studios' *Black & White*, players can draw simple shapes like spirals and stars to cast spells. Microsoft has gotten into the act, too—its new Tablet PC operating

system recognizes more than 40 gestures that a user can make with the stylus. ►

Control Your Stereo System



I HATE HAVING to do the multiremote shuffle just to watch a DVD on my home theater system. That's why Philips's Pronto-series remotes—touch-screen LCDs that can learn the codes in your existing controls—are so attractive, though their \$400-to-\$1000 prices aren't. But if you have an infrared-equipped PDA, a download can turn it into your dream remote. For Palm OS devices, try Pacific Neo-Tek's \$25 OmniRemote Pro (www.omniremote.com). For Pocket PCs, try Griffin Technology's \$30 Total Remote (www.griffintech.com), which includes an enhanced IR transmitter, or PDAwin.com's \$15 TV Remote Controller 5.1. Also, watch for new PDAs using a technology called Nevo (www.mynevo.com) that come with remote enhancements built in.

REMINDERS

Wake You Up

IPING.COM LETS you schedule all kinds of reminders, from wake-up calls complete with a weather report to simple meeting alerts. A \$10-per-month subscription fetches you up to 70 calls each month, and a downloadable plug-in for Outlook makes scheduling an IPing call even quicker.

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MSN 8 provides protection you don't get with AOL, including a smart filter that learns to recognize and block the junk mail you don't want, and a Block Sender List that keeps out messages from senders you specify.

Want to help protect your children with harder-working parental controls?

With our enhanced online security tools, you can block specific Web sites or even whole categories of sites, and customize restrictions based on your children's ages. You can even review a list of the sites your kids visit — so you'll feel more at ease about letting them surf on their own.

Want to add protection to your computer? With MSN 8, the virus protection is built in.

Our virus protection is powered by industry leader McAfee. So incoming messages are automatically scanned to help eliminate destructive viruses before they do damage. And the software is updated regularly to help ensure that it recognizes the latest threats.

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Program Your New Phone

PDAs AND PC CLOCKS aren't the only things you can sync. Thanks to Future Dial's \$30 SnapSync (www.futuredial.com),

you can sync your cell phone, too. SnapSync can help you transfer your contacts from your computer to your

phone—a welcome innovation, as anyone knows who has bought a new cell phone and then spent hours programming the numbers stored on the old phone into it. A service called MightyPhone (www.mightyphone.com) lets you do the same for address books and calendar information if your phone supports a standard called SyncML (few do currently, but more are on the way) or if you have a PDA-style smartphone that supports the BREW standard.



Heat a Small Room

BETWEEN MY 19-inch monitor and my 300-watt tower system, it never feels like winter as long as my PC's on. All those drives, chips, and add-in cards generate lots of heat inside today's PCs, to the point where a couple of them can effectively heat a small home office. Here's a look at how much some typical PC components can change the temperature of a small room.

HEAT STATS

HOW HOT WAS IT?

COMPONENT	Power consumption (watts)	Heat effect (degrees F per hour) ¹
19-inch CRT	95	1.80
CPU	80	1.51
CD-RW and DVD drives	40 (total)	.76
Hard drive	25	.47
Other components	40	.76
Total	280	5.30

¹ Calculations assume a well-insulated 8-by-10-by-8-foot room.

JUST FOR LAUGHS

Rip an LP With Your Scanner

THIS ONE MAY BE a little nutty, but you have to admit nobody knew PCs could do it. In fact, I'm still not sure they can. This clever but crazy hack runs a virtual needle around a scanned image of an LP to create a .wav file of the recorded music. You won't want to rip your old LPs this way, though. Programmer Ofer Springer's demonstration file, a reconstructed recording of Vivaldi's "The Four Seasons," sounds like it's being played at your neighbor's house—across the street. Still, it's good enough that you can recognize bits of the melody. See find.pcworld.com/33407 for more, or download and compile the Digital Needle source code, fire up your scanner, and try it yourself.

Revisit Software of Yesteryear

TAKE YOUR PC on a trip down memory lane by running a 20-year-old program or two. Software emulators harness the power of your PC to run a virtual version of an older machine. Sites like EmuUnlim.com can point you to a downloadable emulator for virtually any antiquated computer, from the TRS-80 (trs-80.com) to the Commodore 64 (find.pcworld.com/33398).

For a retro gaming fix, check out ClassicGaming's selection at www.classicgaming.com/vault. The site's extensive collection of emulators and ROMs (downloadable versions of the old game cartridges) includes a multitude of favorites

from such antediluvian systems as the Atari 2600 and the Intellivision.

One caveat: While some early programs such as VisiCalc (find.pcworld.com/33395) and a handful of games are available for free, in most cases you must own a physical copy of the software to be legally entitled to run it. You knew you kept those old boxes of cartridges for a reason, didn't you? ■

Eric Dahl is an associate editor at PC World.



EMULATING PITFALL ON A PC is much easier than dragging your old Atari 2600 out of the basement.



Sometimes the **best place**

to **find peace** and **quiet**
is in your **computer room.**



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The essentials of imaging

www.minolta-qms.com

20 Years of Hardware

YOU CAN SAY THAT AGAIN

"Before you conjure up grandiose plans for hauling the Compaq around, you should load a suitcase with 28 pounds and carry it around for a day."



—PC World founding editor Andrew Fluegelman tries the original Compaq "portable" PC, 1983. It cost \$3000.



FORGOTTEN PIONEER

IN 1936, German aircraft engineer Konrad Zuse, fed up with using his slide rule for time-consuming calculations, quit his job, and spent more than a year assembling the Z1, the first programmable, binary-based computer.

POP QUIZ #1

1 In 1989, the latest trans-portable PCs featured color 'gas plasma screens'. The problem with these screens was

- ☐ a) They became highly flammable if they got too hot.
- ☐ b) They could be viewed only in a dark room.
- ☐ c) Gas was expensive in 1989 because of a gas shortage.
- ☐ d) The gases used would eventually lose their charge, degrading the image.

2 In 1994, Intel shipped some 2 million Pentium chips containing a bug (discovered later) that could

- ☐ a) Prevent you from using non-Microsoft software.
- ☐ b) Stop games from playing.
- ☐ c) Cause rounding errors in some applications that perform calculations.
- ☐ d) Cause a CD-ROM to spin out of control.

3 In 1996, Microsoft spearheaded an initiative to simplify PC hardware. This included a plan to develop PCs that turn on instantly the way TVs do.

- ☐ True ☐ False

4 The first two-button mechanical mouse for PCs was released in 1983 and cost a whopping \$195 (today you can buy an optical mouse for \$10). This mouse was made by

- ☐ a) Logitech.
- ☐ b) Microsoft.
- ☐ c) Apple.
- ☐ d) Kensington.

Answers: 1.d, 2.c, 3.True, 4.b

It's a removable storage feast.

THE UBIQUITOUS floppy disk started at 5.25 inches and held a scant 160KB of data. Over time, cost per MB fell precipitously while capacity increased. Today, CD-R media can store up to 700MB of data and DVD-R media can accommodate an astonishing 9.4GB of data.

MEDIA	Capacity	Year first available*	Disk price*	Cost (per MB)
5.25-inch floppy	160KB	1981	\$2.60	\$16.25
3.5-inch floppy	720KB	1985	\$3.50	\$4.86
Zip	100MB	1995	\$16.65	\$0.17
CD-R	650MB	1996	\$1.79	\$0.003
DVD-R	9.4GB	2002	\$7.89	\$0.0008

*FOR PC USE. *AT TIME OF INTRODUCTION. SOURCE: PC WORLD RESEARCH.

THINGS WE MISS:

Psion Palmtops (1984–2001)

USABLE keyboards, powerful office apps—in many ways, the handhelds produced by Britain's Psion still make Pocket PCs and Palms seem sadly underpowered.



GREAT PC WORLD MOMENTS?



MEET PC PETE

1983: Our original (and mercifully, only) magazine mascot, a ventriloquist's dummy dubbed PC Pete, helps choose the winner of a \$14,000 PC.



20 Products We Love



Introducing the winners
of our Stuff We Love awards:
hardware, software, and sites that
are anything but ordinary.

BY THE EDITORS OF PC WORLD
PHOTOGRAPHS BY STAN MUSILEK
ICONS BY CAMPBELL LAIRD

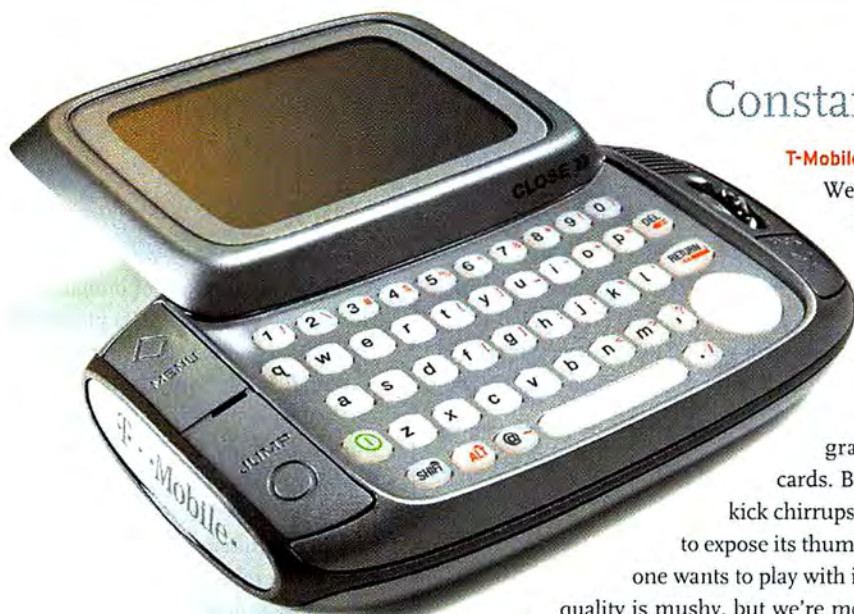
WE'VE COVERED TECHNOLOGY for 20 years, and some days we feel like we've seen more than enough. Now and then, though, we have to marvel at the innovativeness of certain products we evaluate.

So to celebrate our 20th anniversary, we want to highlight some of the hardware, software, and Web sites that make even the most jaded editor among us sit up and take notice.

The 20 winners here fulfill their missions elegantly, through skillful engineering and good industrial design. They're the gadgets we visit each others' offices to play with, and talk about over a cup of java. Because we're passionate about these computing tools, we're calling them the Stuff We Love.

This isn't our World Class Awards (find.pcworld.com/33491) under an assumed name: World Class winners are chosen for both performance and value, but we didn't have to stick to a budget when we stocked this toy chest. The Stuff We Love is a very subjective and highly selective shortlist.

We would appreciate hearing about the stuff you love, too: Drop us an e-mail at stuffwelove@pcworld.com and let us know what you find indispensable.



Constant Companion

T-Mobile Sidekick (\$250, www.t-mobile.com)

We've done the Palm, been tethered to a BlackBerry, and cozied up to a Motorola StarTAC. But they're all ancient history now that we've found the T-Mobile Sidekick, with its always-on wireless e-mail, GSM phone, Web browser, AOL Instant Messenger, calendar, and games. Everything is crammed into a polished gray case not much bigger than a deck of cards. Best of all is the little two-note riff the Sidekick chirrups when the user rotates its screen clockwise to expose its thumb keyboard. Heads turn. Eyes bulge. Everyone wants to play with it. Sure, we're sorry that the phone's sound quality is mushy, but we're more PDA people than phone folks anyway. Besides, technolove means never having to say you're sorry.

Cooliest PC You Can Carry in One Hand

Alienware Navigator Pro
(\$1999, www.alienware.com)

If you tote the deep black Navigator Pro through your office, you run the risk of leaving a trail of drooling geeks in its wake. Alienware's first Windows XP Media Center Edition PC provides virtually every kind of expansion port or card slot up front, and it has hookups for cable TV, ports for digital and analog displays, and optical audio output in back. We only regret how loud it is when it's on. The high-pitched whine that the cooling fans and hard drives emit may prompt owners to put this bookshelf PC (about as tall as a trade paperback) inside a home entertainment center cabinet rather than giving it the prominent display that it otherwise deserves. ►





DVD Burner From the Future



Sony DRU-500A (\$349, www.storagebysony.com)

With Sony's DRU-500A, you don't have to worry about which consortium comes out on top in the DVD format wars. The drive can record using DVD-R, DVD+R, DVD-RW, or DVD+RW discs, so it's like a VCR that works with both VHS and Betamax tapes. We wish it could write to CDs more quickly, but we liked how fast it could burn DVDs.

Masterful Miniature Music

IRiver IFP-180T (\$140, www.iriver.com)

No bigger than a pack of bubble gum, IRiver's newest flash MP3 player, the IFP-180T, is designed so that its small (but high-resolution) display can face forward when it's resting on a surface.

But we don't adore the \$140 player just for its good looks: It produces fantastic sound in a minuscule package, and it can tune in to FM radio and make recordings from the radio or via its built-in microphone. We tested a model with 128MB of internal memory; however, by now you should be able to purchase a 256MB version.



Whole Planet Access

EarthViewer3D LT

(\$79, www.earthviewer.com)

Looking for the ultimate map? Keyhole's EarthViewer3D LT—part street map, part aerial and satellite photos—is available as a subscription service (with free evaluation) delivered to your PC via the Internet. In effect, the EarthViewer3D client gives you control of your own personal satellite in orbit. It instantly delivers a (not-live) satellite or aerial photo of most points you specify on the globe; enter a street address and your view zooms from a space-station perspective down to street level. We still craved more, however: You get street-level detail only for major world cities and certain hot spots (such as Kabul and Baghdad), betraying Keyhole's spy satellite heritage.

Pixels Aplenty

Samsung SyncMaster 240T (\$3429, www.samsung.com)

If glamorous weren't already a word, we'd have to invent it to describe the 240T—24 inches of wide-screen LCD. If your spreadsheet doesn't fit on this big boy, you need to get out more. But the 240T isn't notable only for the acres of desktop it delivers. In some monitors this size, text can get blurry, but the Samsung remains sharp and easy on the eyes. The monitor's design is attractive, too, with flat speakers that hang on either side of the screen. And it'll accept nearly any input you throw at it, including analog and digital PC video, and composite, S-Video, and High Definition television signals. Its 16:10 aspect ratio is perfect for wide-screen DVD movies, and its picture-in-picture function lets you do some work while keeping an eye on the game. You can use the included remote to control the 240T, but you might want to get close so you can use the extremely

nifty space-age buttons along the bottom edge. No need to press: You just cover them with your finger, and they respond.





Heavenly Home-Theater Speakers

Logitech Z-680 (\$400, www.logitech.com)

Logitech's Z-680 speakers give home-theater enthusiasts the best 5.1-channel PC sound we've heard at this price. The powerful set works equally well for movies, games, or music, and it includes a fifth speaker for a center channel and a digital control pad that decodes Dolby Digital and DTS surround-sound signals. Thoughtful design touches (such as speaker stands that convert into wall mounts) round out the package.

Phenomenal Photo Printer

Epson Stylus Photo 2200

(\$699, www.epson.com)

The crème de la crème among photo ink jet printers, this model has all the features a serious photographer could want: seven ink cartridges (including a light black for realistic depth and shading), an extrawide carriage that can handle prints up to 13 inches wide, and both FireWire and USB 2.0 connections. Most significantly, it produces the best photos we've seen from an ink jet: Colors pop, details appear in sharp focus, and skin tones look natural.



The 21st-Century Sketchpad

Corel Grafigo (free download, www.corel.com/grafigo)

Visual thinkers and in-meeting doodlers, rejoice: Corel's free program Grafigo allows you to sketch or draw flowcharts (and add labels in your own handwriting) on your Windows Tablet PC (see our review in *New Products*, page 70). We wish that we could use Grafigo on nontablet PCs. You can also annotate JPEG and bitmap files with Onionskins, a kind of translucent sticky note. And even if you can't draw an entirely symmetrical square, Grafigo knows you're trying to—its shape recognition transforms elliptical circles and lopsided squares into perfect geometric figures.



OBJECT OF DESIRE

Massive Megapixeler

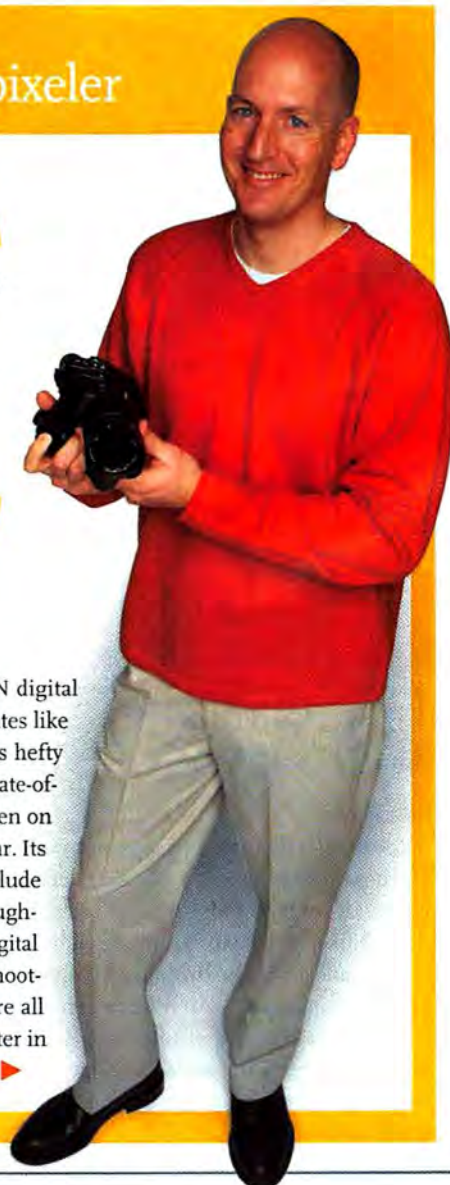
"Takes awesome pictures, and you can tie your kite to it."

—Alan Stafford,
Senior Editor

Olympus Camedia E-20N

(\$1499, www.olympus.com)

The Olympus Camedia E-20N digital camera looks, feels, and operates like sophisticated machinery. This hefty 5-megapixel model remains state-of-the-art despite its age—it's been on the market for more than a year. Its most noteworthy features include a high-quality lens, true through-the-lens viewing (rare with digital models), and a progressive shooting mode that lets you capture all the action as it snaps the shutter in as little as 1/18,000 second. ▶

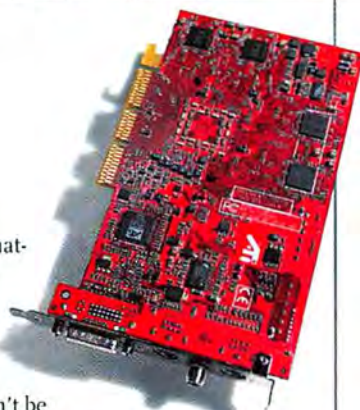




The Graphics Board Gamers Dream Of

ATI All-in-Wonder 9700 Pro (\$449, www.ati.com)

As far as PC gamers are concerned, three things matter in a graphics board: frame rate, frame rate, and frame rate. The latest iteration of ATI's multimedia 3D board delivers all the performance you'd expect of its Radeon 9700 graphics chip and 128MB of graphics memory, so game fans won't be disappointed. On top of speed, the card adds a TV tuner and software that transforms your PC into a digital video recorder.



A Multilingual Messenger

Trillian Pro

(\$25, www.ceruleanstudios.com)

Instant messaging is an amazingly handy tool with one truly irritating flaw: Not one of the major clients lets you communicate with folks who use a different IM program. So thank goodness for Trillian Pro. This invaluable IM utility enables you to talk effortlessly with users of AOL Instant Messenger, ICQ, MSN Messenger, and Yahoo Messenger—and even to fans of Internet Relay Chat. Trillian Pro can also tap into news services, get a local weather forecast, check your e-mail or calendar, and send messages to cell phones.



Lightweight Note-Taker

AlphaSmart Dana
(\$399, www.alphasmart.com)



Combining the simplicity of Palm OS 4.1 with the convenience of a laptop-size keyboard, the Dana is a versatile, inexpensive notebook alternative. The 2-pound device sports 8MB of on-board memory, two expansion card slots, and a backlit, 560-by-160-pixel monochrome touch screen that's 3.5 times larger than the screen of a typical handheld, along with a full-featured word processing program and spreadsheet. One of its best features is its unique ability to pour the contents of documents you type on the Dana directly into any application already open on your PC, with the push of a button.



Everyman's Web Soapbox

Blogger.com

(basic version free, www.blogger.com)
Freedom of the press, A.J. Liebling once wrote, belongs to those who own one. Scratch that—it belongs to anyone with a browser and a Blogger account. Free sign-up gives you the power to create an online journal (aka Web log, or just "blog") in minutes. Blogs won't replace traditional media, but the best ones make the Web vastly more interesting.

Now on the Big Screen

Best Buy VPR Matrix 200A5 notebook

(\$2400, www.vprmatrix.com)

With an aspect ratio of 15:10, this notebook's 15.2-inch screen displays beautiful, bright, clear movies as capably as it does memos or spreadsheets. Two FireWire ports—useful for importing video from a digital camcorder—make it suitable for editing. We wish it had a recordable DVD drive for all the video files we'll use it to create, but we still like its combo CD-RW and DVD-ROM drive. Built-in Wi-Fi and Ethernet ports let you connect to the Internet virtually anywhere you go. ▶



save the day

DVD VIDEO

Use DVD Builder™ to turn home movies into DVDs, complete with transitions, music and animated menus. Then share them today, tomorrow or twenty years from now.

PICTURES

Digital pictures never fade. Use PhotoSuite® 5 to organize, edit and burn all your family photos to CD, so your precious memories will be safely preserved for the long haul.

MUSIC

Use AudioCentral™ to create your own personal CD music mixes, edit tracks, add effects and cross-fades or play, organize and burn original compositions.

DATA BACK-UP

Birth certificates, insurance records, tax information – archive all those large important family files to multiple discs and keep them organized and accessible.



INTRODUCING NEW EASY CD & DVD CREATOR™ 6 FROM ROXIO®

Completely redesigned to be even more intuitive and capable, Easy CD & DVD Creator 6 is the most powerful and easy to use suite of digital media software out there. Use it to capture, manage, edit, and burn photos, video, music and data to CD or DVD. Then keep all your stuff organized at your fingertips for easy access whenever you need it with Easy CD & DVD Creator 6, from Roxio. To learn more check out roxio.com or visit your local software retailer.



Silent and Sharp

Philips LC6231 Home Theatre Projector
(\$2500, www.philips.com)

The first things you'll notice about this projector—its sharp, clear imaging and its exceptional color reproduction—are not its only notable qualities. It's also nearly silent; on other models, fan noise can be a drag when you watch a DVD. Its bulb is rated to last 6000 hours, three times longer than other makers' bulbs.

The Notebook Store of the Future

Dynamism.com (www.dynamism.com)

Pssst: Toshiba, Sony, and other laptop giants make amazing notebooks they never sell in the United States—sleek machines that pack innovative features and plenty of power into smaller-than-a-bento-box cases that weigh as little as 1.8 pounds. To buy one, you need to head to Japan—or to Dynamism.com. The store installs the U.S. version of Windows and adds a stateside warranty.

dynamism.com

OBJECT OF DESIRE

Networking Made Easy

"Wi-Fi just keeps getting faster and cheaper."

—Yardena Arar,
Senior Editor

D-Link AirPlus DI-714P+
Wireless Router

(\$150, www.dlink.com)

Networking isn't supposed to be this easy—but we're not complaining. D-Link's wireless gateway puts an end to mangled installations. You can set up the device in minutes, and it offers up to twice the data transfer speed of other gateways in its price range.

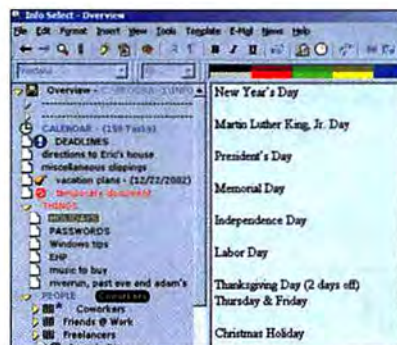


Earphone Love

Shure E5c (\$499, www.shure.com)

If you're tired of listening to music that sounds like it's being played through a fuzzy sock, Shure's extravagantly pricey E5c headphones are your ticket to exceptional portable audio fidelity. The professional-quality headphones block all ambient noise and provide beautifully clear sound that conveys all the subtleties of your music. Budget-minded audiophiles can opt for the \$199 E2c, which lacks the ergonomic molded earpieces. Finally, you can listen to crystal-clear music whenever you want—even on a noisy jet aircraft.

Elegant Bucket of Information



Info Select (\$150, www.miclog.com)

When you think, "Here's something I'd like to store in the computer, but I don't know where to put it," the answer is, "Put it into Info Select." This one-of-a-kind app almost instantly retrieves just about any stored information: notes, calendars, databases, contact lists, e-mail and newsgroup messages, images, and more. You can also use it to attach reminders to any item and to encrypt sensitive data.

**Quick. Before defragmenting,
you may wish to consider one additional accessory.**



PerfectDisk "is blindingly fast"

Microsoft® Certified Professional Magazine, November 2002



PerfectDisk® 2000 Version 5. (Shades not included.)

Microsoft® Certified Professional Magazine also said stuff like, "In all cases, the results were superb" and "...installing and using PerfectDisk is simple."

PerfectDisk defrags disks quickly and totally; one pass, done. Fact is, there's just no other product faster, more accurate or more complete. And, PerfectDisk is the only defragmentation solution on the market that's Windows 2000 certified for servers and workstations.

What's more, our generous trade-up policy means you can make the leap to lightspeed without blinking an eye. Why wait? Download a free demo copy today. Trust **PerfectDisk**... from RAXCO Software, the leader in disk optimization software tools for more than 25 years.

Microsoft®
GOLD CERTIFIED
Partner



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Perfect Software for an Imperfect World

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www.raxco.com





tame your desktop

Six Degrees™



From the tangle of all your files and email, Six Degrees simply connects you with what you need, now.

Instead of spending hours searching, you spend seconds finding. It does the organizing. You get on with your work. And your life.

Simply download our free demo:

www.getsixdegrees.com

Or use the sample CD included with this issue!

creo™

20 Years of Software

YEAH, RIGHT!

"When you walk into an office in 1998, the PC will sense your presence, switch itself on, and promptly deliver your overnight e-mail, sorted in order of importance."



—PC World fearlessly foretells the future of software, 1987. Sixteen years later, we're still waiting for these advances to happen.



FORGOTTEN PIONEER

IN 1958, DR. WILLIAM Higginbotham—a cofounder of the Federation of American Scientists—went from working on an atomic bomb project to inventing Tennis for Two, a proto-Pong game played on an oscilloscope linked to an analog computer.

POP QUIZ #2

1 The IBM PC and compatibles used DOS as their basic operating system, remnants of which persist in Windows XP systems today. What does DOS stand for?

- ☐ a) Doctor's Orders System
- ☐ b) Disk Operating System
- ☐ c) Dynamic Operating System
- ☐ d) Dallas Operating System

2 The Y2K problem arose because

- ☐ a) Computers couldn't handle dates that didn't begin with '19'.
- ☐ b) Chips embedded in all computerized hardware—from PCs to elevators—were programmed to make the products obsolete after December 31, 1999.
- ☐ c) PC BIOSs didn't provide for the extra leap year day in 2000, and the resulting asynchronicity could have caused computers to freeze and maybe stop working altogether.
- ☐ d) To save memory and storage space, early PCs were designed to track only the last two digits of the year, making it impossible for them to properly recognize the change in the century.

More than 5 trillion served.

ANALYSTS were calling e-mail the killer app back in 1995 when roughly 100 billion e-mail messages zipped around networks worldwide. No doubt e-mail still owns that title, considering that e-mail users sent close to 5.5 trillion messages last year. And that doesn't even include the ever-increasing deluge of spam e-mail. Volume will continue to rise. Research firm IDC estimates that e-mail users will fill in-boxes with close to 7 trillion e-mail messages in 2003.

E-Mail Messages Sent Annually, Worldwide (in Trillions)



INCLUDES PERSON-TO-PERSON E-MAIL MESSAGES ONLY. DOES NOT INCLUDE SPAM OR E-MAIL NOTIFICATIONS. SOURCE: IDC

EVEN PC WORLD HAD A CENTERFOLD



BILL GATES STRUTS HIS STUFF

1987: We inexplicably run a centerfold of a (fully clothed, thank you) 32-year-old software tycoon named Bill Gates.

THINGS WE MISS:

Borland Sidekick (1983–1999)

THE FIRST personal information manager was lean and versatile—until the bloatware known as Outlook killed the category.



3 Windows 3.1 sold more than 1 million copies within two months of its release in 1992. In contrast, Microsoft Bob, a 1995 graphical user interface aimed at home users, managed sales in its first six months of

- ☐ a) 2 million.
- ☐ b) 500,000.
- ☐ c) 100,000.
- ☐ d) 30,000.

Answers: 1.b; 2.a,c,d; 3.d

› Use it to make to-do lists,
then use it to complete them.



› Compaq Presario 2100T Notebook

Quick Shop Code: Q5-3B4

- Intel® Celeron® processor 1.60 GHz
- Microsoft® Windows® XP Home Edition
- 128MB DDR SDRAM
- 20GB Hard Drive*
- CD-ROM Drive
- 15" XGA TFT Display (Free Display Upgrade)¹
- ATI Mobility Radeon 4X ACP and 3D Architecture
- Integrated 56K Modem and 10/100 Base-T Ethernet LAN

Personalize by upgrading:

- 256MB DDR SDRAM: Add \$50
- 30GB Hard Drive*: Add \$25
- DVD-ROM Drive: Add \$50
- Microsoft® Office XP Standard Edition: Add \$119

\$799

\$899 - \$100 mail-in rebate = \$799¹

Upgrade to the Compaq Presario PC, and just maybe you'll upgrade things at home. With increased storage and speed, you can manage more tasks faster and easier than ever. In other words, the Presario helps you spend less time managing life and more time living it. When it really matters, choose Compaq.

FREE DISPLAY UPGRADE¹

For a limited time, get a free upgrade from a 14.1" to a 15" XGA TFT Display. Offer good on purchase of customized Compaq Presario 2100T, 2100Z, and 2500 series notebooks. Offer valid 2/5/03 to 3/25/03.

Quick Shop Codes

To find these products on our Web site, enter the Quick Shop Code in the Quick Shop field.

Compaq recommends Microsoft® Windows® XP Professional for Mobile Computing.

Prices shown refer to hpshopping.com selling prices, do not include applicable sales tax and shipping, are valid in the U.S. only and are subject to change or cancellation without notice. See hpshopping.com for more details. Illustrations may not accurately represent exact configurations priced. Retail prices may vary. HP is not liable for editorial, pictorial or typographical errors in this advertisement. *For hard drives, GB=billion bytes. ¹Free upgrade from a 14.1" XGA TFT to a 15" XGA TFT offer is valid on customized Compaq Presario 2100 series notebooks and 2500 series notebooks. Offer good on items purchased between the dates of 2/5/03 and 3/25/03 only. ²\$100 mail-in-rebate offer good on purchases made between 12/30/02 and 6/1/03 on qualifying Compaq Presario Notebook PCs. ³\$50 printer bundle mail-in-rebate offer good on the purchase made between 1/5/02 and 4/12/03 on qualifying Compaq Presario PCs and qualifying HP Deskjet Printers. ⁴\$50 PC mail-in-rebate, \$50 monitor mail-in-rebate and \$50 PC bundle mail-in-rebate offers good on purchases made between 1/5/03 and 4/12/03 on qualifying Compaq Presario Desktop PCs. ⁵\$50 PC mail-in-rebate offer good on purchases made between 1/5/03 and 4/12/03 on qualifying Compaq Presario Desktop PCs. Products purchased before or after these dates are not eligible for this offer. Purchase date is determined by invoice or receipt date. These offers are combinable with other HP offers. Offers not valid on refurbished HP products. Offers are limited to product on hand, and NO substitutions with other products are eligible. Keep copies of materials submitted; originals become HP property and will not be returned. HP reserves the right to request additional information regarding this claim. False information disqualifies this claim, making it subject to review under U.S. postal regulations or Canadian law. Violators may be prosecuted. Only purchases made by an end-user customer or a commercial business



➤ Compaq Presario 2100Z Notebook

Quick Shop Code: QS-3B5

- AMD Athlon™ XP Model 1800+ with PowerNow!™ Technology
- Microsoft® Windows® XP Home Edition
- 256MB DDR SDRAM
- 30GB Hard Drive*
- DVD-CD/RW Combo Drive
- 15" XGA TFT Display (Free Display Upgrade)†
- ATI Mobility Radeon 4X AGP and 3D Architecture
- Integrated 56K Modem and 10/100 Base-T Ethernet LAN

Personalize by upgrading:

- 512MB DDR SDRAM: Add \$100
- 15" SXGA+ Display: Add \$50
- 40GB Hard Drive*: Add \$49
- Microsoft® Office Professional: Add \$349

\$999

\$1,099 - \$100 mail-in rebate = \$999†

➤ Compaq Presario 2500 Series Notebook

Quick Shop Code: QS-002

- Intel® Pentium® 4 processor 2.00 GHz
- Microsoft® Windows® XP Home Edition
- 256MB DDR SDRAM
- 30GB Hard Drive*
- DVD-ROM Drive
- 15" XGA TFT Display (Free Display Upgrade)†
- ATI Radeon 4X AGP and 3D Architecture
- Integrated 56K Modem and 10/100 Base-T Ethernet LAN

Personalize by upgrading:

- DVD-CD/RW Combo Drive: Add \$50
- 40GB Hard Drive*: Add \$49
- 512MB DDR SDRAM: Add \$100
- Microsoft® Office XP Standard Edition: Add \$119

\$1,099

\$1,199 - \$100 mail-in rebate = \$1,099†

➤ Compaq Presario 2500 Series Notebook

Quick Shop Code: QS-005

- Intel® Pentium® 4 processor 2.40 GHz
- Microsoft® Windows® XP Home Edition
- 512MB DDR SDRAM
- 30GB Hard Drive*
- DVD-CD/RW Combo Drive
- 15" XGA TFT Display (Free Display Upgrade)†
- ATI Radeon 4X AGP and 3D Architecture
- 3 USB 1.1 ports

Personalize by upgrading:

- 512MB DDR SDRAM: Add \$100
- Integrated 802.11b Wireless LAN: Add \$50
- 40GB Hard Drive*: Add \$49
- Microsoft® Office Professional: Add \$349

\$1,299

\$1,399 - \$100 mail-in rebate = \$1,299†



➤ Compaq Presario 6400NX Desktop and Monitor

Quick Shop Code: QS-3B6

- AMD Athlon™ XP processor Model 1800+ 1.53 GHz
- Microsoft® Windows® XP Home Edition
- Compaq MV7500 17" CRT Monitor (16" VIA)
- 128MB PC2100 DDR SDRAM
- 40GB Ultra DMA Hard Drive*
- 32X CD-RW Drive***
- JBL Platinum Speakers

Personalize by upgrading:

- HP 120 PhotoSmart Digital Camera: Add \$99.99
- HP Deskjet 3420 printer: Add \$29 (after \$50 bundle mail-in rebate)**

\$599.99

\$749.99 - \$150 mail-in rebate = \$599.99†

➤ Compaq Presario 6000Z Desktop and Monitor

Quick Shop Code: QS-020

- AMD Athlon™ XP processor Model 2200+ 1.80 GHz
- Microsoft® Windows® XP Home Edition
- Compaq CV7500 17" CRT Monitor (16" VIA)
- 256MB PC2100 DDR SDRAM
- 60GB Ultra DMA Hard Drive*
- 16X DVD Drive***
- JBL Platinum Speakers

Personalize by upgrading:

- 512MB: Add \$100
- 48X CD-RW: Add \$99
- 64MB DDR ATI Radeon 9000 Graphics Card: Add \$40
- HP Deskjet 3820 Printer: Add \$49 (after \$50 printer bundle mail-in rebate)**

\$799

\$849 - \$50 mail-in rebate = \$799†

➤ Compaq Presario 6000T Desktop and Monitor

Quick Shop Code: QS-023

- Intel® Pentium® 4 processor 2.40 GHz
- Microsoft® Windows® XP Home Edition
- Compaq CV7500 17" CRT Monitor (16" VIA)
- 512MB PC2100 DDR SDRAM
- 80GB Ultra DMA Hard Drive*
- 16X DVD Drive***
- 48X CD-RW Drive***

Logitech Z-340 2.1 Speakers

Personalize by upgrading:

- Increase your Hard Drive to 120GB: Add \$80
- DVD + RW Drive: Add \$109
- Logitech Z-640 5.1 Speaker Set: Add \$50
- HP Deskjet 5550 Printer: \$99.99 (after \$50 printer bundle mail-in rebate)**

\$1,169

\$1,219 - \$50 mail-in rebate = \$1,169†

BUY NOW



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COMPAQ



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20 Tools for Trouble- Free Computing

Want to make everyday tasks easier,
safer—even more entertaining?
These no-hassle utilities do the job right.

BY ROBERT LUHN AND KIRK STEERS
ICONS AND ILLUSTRATIONS BY CAMPBELL LAIRD

WE ALL WANT AN EASY LIFE. And life is easier when you have your PC under control. So here are our picks for the 20 best utilities—plus 15 alternates worth considering—to keep your stuff organized and your PC running smoothly.

Protect Your Files

IT'S BETTER to deal with PC problems before they happen. These programs find, diagnose, and fix troublesome areas and back up the important



files and folders you have on your system. But note: Like a car mechanic under the hood, some of these utilities may on occasion cause damage inadvertently, in the name of helping your ailing computer. For instance, if a program removes an entry from your Registry, some applications may stop working. So before using any utility that changes things on your system, remember to back up your hard drive.

1 BACK IT UP
BackUp MyPC 4.85, Stomp, \$69
find.pcworld.com/33053

Stomp's BackUp MyPC has an easy-to-use interface: You can run a full backup of your system or restore individual files or groups of files with the click of a single button. Need to back up selected folders and files? Run a wizard, select your files, identify where you want to back them up, and click a button. The program does the rest, automatically formatting media and spanning multiple backup disks if needed. You can back up to another hard drive, to floppy drives, to network drives, or to CD-R, CD-RW, or rewritable ►



DVD drives. Restoring files—individually, by folder, or en masse—is just as simple. As you'd expect, you can schedule backups to run overnight, and you can protect your backup with a password.

An alternative is PowerQuest's \$50 **Drive Image 2002** (find.pcworld.com/33056), which takes an exact snapshot of your drive. This makes it just the ticket if you have a drive meltdown or want to move one PC's contents to another machine, although Drive Image will also back up files you may not care about.

2 DEFRAG YOUR DISK

Norton Utilities 2003 Speed Disk (in SystemWorks 2003), Symantec, \$70 find.pcworld.com/33062

As you use your computer, files tend to become fragmented and spread all over your hard drive. A disk defragmenter can make accessing files quicker by putting all the pieces back together.

Rock-solid disk defragger Norton Speed Disk has been around for nearly as long as the personal computer, and it does the job without fuss. It shows disk fragmentation graphically; lets you dictate which files will be relocated to the front of the disk (for faster loading) or at the end, and which are unmovable; and can schedule defragging, so that the task is done at a time when you aren't using your system.

One notable stand-alone competing product is Executive Software's \$30 **Diskeeper 7.0 Home Edition** (find.pcworld.com/33065). Besides largely matching Norton Speed Disk in the features department, it offers speedy disk analysis and defragging, and it can be set to run in the background as you save your files.

3 RECOVER DELETED FILES

Norton Utilities 2003 UnErase (part of SystemWorks 2003), Symantec, \$70 find.pcworld.com/33062

When *Back to the Future's* Marty McFly screwed up, he just zoomed back to a time when he could fix things. If you're a PC user, you can turn to Norton's UnErase. First, stupidly erase the file you're working on. Next, scream. Then go to the Windows desktop, right-click the *Recycle Bin* icon, select *UnErase Wizard*,

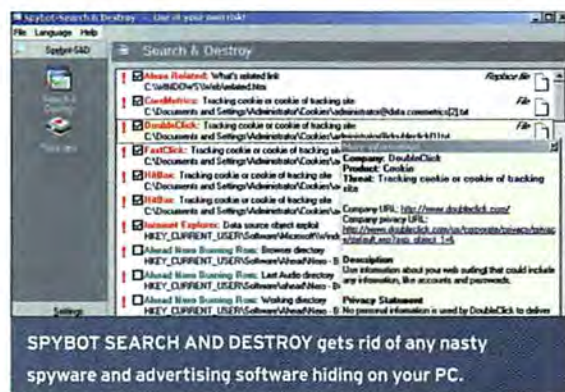
click the file in the list, and then click the *Recover* button. That's it—the file reappears like magic in its previous location. If it can't automatically recover a file, the UnErase Wizard will help you try to reconstruct it. The Norton Utilities CD also contains a DOS version of UnErase that you can run on any system.

A second choice is Executive Software's **Undelete 3.0** (find.pcworld.com/33068), which has most of the same features as Norton UnErase (though it doesn't show you all erased and recoverable files by default; instead, you must click through the

drives and folder icons in Undelete's Explorer-like tree). Once installed, Undelete—like the Norton product—takes over Windows' Recycle bin. You can search the bin, right-click a deleted file, and restore it with another click. If you wish, the restore can be to a different location (unlike with UnErase).



NORTON SPEED DISK reorganizes and defragments the files on your hard drive so that accessing them is quicker.



SPYBOT SEARCH AND DESTROY gets rid of any nasty spyware and advertising software hiding on your PC.

4 REMOVE SPYWARE

Spybot Search and Destroy 1.1, PepiMK

Software, free
find.pcworld.com/32678

Spybot sifts through your hard drive, looking for spyware, adware, cookies, and files that may be used to track your computing habits and send the information to the devil knows who. Offenders are listed by severity; with a click you can get details on the threat and the recommended action. With another click, Spybot removes the selected items. Big pluses: You can undo most changes, the program is frequently updated, and it offers

tools for fixing broken desktop links and Registry errors. Spybot is extremely thorough—sometimes too thorough, since it flags even mundane activity logs (such as the name of the last file opened by programs like Microsoft Word) and offers to delete them. But if guarding your privacy is paramount, Spybot is a must-have partner for your antivirus and firewall programs.

Lavasoft's **Ad-aware** (\$15, find.pcworld.com/33071) is a capable alternative spyware catcher, but version 5.83 hasn't been updated for some time, which means that it may miss some recently released spyware and advertising programs. Lavasoft has been working on a thoroughly revamped version 6.0, but the update wasn't available for download at the time of writing.

GET NET PROTECTION

ZoneAlarm Pro 3.5, Zone Labs, \$50
find.pcworld.com/33074

Got broadband? When you open that big fat pipe to the Net, you also create a potential autobahn into your PC for hackers and spyware. Luckily, ZoneAlarm Pro can stop both, and its ad blocking software smacked down just about every ad we came across. ZoneAlarm's user controls are impressive: You move sliders to determine the level of security you're after, or click a tab to set custom security levels by site or application. The free version of ZoneAlarm lacks ad blocking but is a competent firewall.

Symantec's **Norton Internet Security 2003** (\$70, find.pcworld.com/33350) adds Norton AntiVirus and spam filtering for \$20 more. And like ZoneAlarm Pro, IS 2003 has a deep end: You can fuss with rules, communications settings, and more. Norton's notable downside: Support calls cost \$30 per incident.

KEEP VIRUSES AWAY

Norton AntiVirus 2003, Symantec, \$50
find.pcworld.com/33077

Norton AntiVirus has an intuitive interface and catches viruses the way Torii Hunter catches fly balls. Furthermore, Symantec (like most antivirus programs) supplies automatic virus and engine updates and scans incoming e-mail for viruses. If you use an instant messaging program like Yahoo or AOL Instant Mes-

senger, AntiVirus can scan those messages for bad stuff, too.

Trend Micro's **PC-cillin 2003** (find.pcworld.com/33080) is another good option. For the same price as Norton AntiVirus, you get a good virus checker and a personal firewall. PC-cillin scans incoming and outgoing e-mail in your e-mail program, Web-based e-mail, and AOL. And you get free phone support.

DIAGNOSE PC PROBLEMS

Sandra Standard 2003, SiSoftware, shareware
find.pcworld.com/33083

Your PC feels poorly and you want to know why. Sandra Standard lets you do a thorough inventory, run diagnostics, and generate a wide variety of useful reports. It can reveal hidden information about your system, from the speed of your AGP slot to the version of DirectX that's installed on your machine. For the price—the Standard version is free, the Professional version costs \$35—you can't beat it.



CLASSIC UTILITIES

Tools That Have Passed the Test of Time

COMPUTERS have changed immeasurably over the years, but people still rely on certain classic utilities, year in and year out.

First and foremost is **Norton Utilities 2003**

(\$50, find.pcworld.com/33062), originally released back in 1984. Beginning as a utility for testing your hard drive, Norton Utilities has kept pace with computer technology, providing a comprehensive set of tools for looking at the innards of your system.

LAP-LINK (1.22) Copyright 1986, Local Drive (C:) 8416 Free			
	<DIR>	1-13-83	
AUTOEXEC.BAT		501	11-12-98
COMMAND.COM		93880	5-11-98
CONFIG.SYS		331	11-12-98
EXTRACT.EXE		93242	5-11-98
FORMAT.EXE		63900	5-11-98
FORMAT.COM		49575	5-11-98
HIMEM.SYS		33191	5-11-98
LL.EXE		36480	1-27-87
MSCDEX.EXE		25473	5-11-98
QAKCDROM.SYS		41302	5-11-98
PRUNZIP.EXE		29378	2-14-96
READNIP.TXT		11648	1-28-80
SCANDISK.EXE		143818	5-11-98
SUBST.EXE		17904	5-11-98
SYS.COM		18267	5-11-98

THE USER INTERFACE for LapLink has changed from version 1 (left).



Steve Gibson's **SpinRite 5** (\$89, find.pcworld.com/33353) has a similarly long and distinguished history. It's been the ultimate low-level format/repair/recovery tool

for hard drives since 1988, when the size of such drives was measured in megabytes. Now they are measured in gigabytes, but SpinRite still provides tools for fixing them.

LapLink Gold 11 (\$89, find.pcworld.com/33158) is another great

old-timer: It debuted in 1987 as a program for copying files over a serial connection between computers running DOS. LapLink has since evolved into a comprehensive syncing, migration, and remote access

suite, adding capabilities without losing sight of the core features that have made it a classic—and we recommend it again on page 112.

—Robert Luhn



8

HIDE YOUR TRACKS

Tracks Eraser Pro 3.1, Acesoft, \$30

find.pcworld.com/33089

Tracks Eraser Pro wipes out all traces of your activities on the Internet, from cookies to cache to your browser's autocomplete feature. The program is proactive, too: It erases your digital steps as you tiptoe around the Net and is a snap to run. Click a test button to see what Tracks Eraser can clear out; then click another to finish the job. Tracks isn't limited to browsers—it can remove the details of what you've been doing in Windows, Outlook Express, Acrobat, Yahoo Messenger, and many other programs (although it doesn't support the full version of Outlook).

A second option is McAfee's \$30 **QuickClean 3.0** (find.pcworld.com/33092).

This utility covers much the same ground as does Tracks. It can detect spyware and clean files based on age or size; it also includes a stand-alone file shredder.

Windows' Disk Cleanup tool is more limited than these utilities, but it is fairly fast and does a reasonably thorough job—and it's free.



TRACKS ERASER PRO can eliminate the traces of your browsing on the Web.

NO MONEY DOWN

Five Free Tips

YOU DON'T need to spend money to make your PC run smoothly. Here are five improvements that won't cost you a penny but will make your life easier.

♦ LET THE HELP DO IT. To deal with programs that lack a scheduler, Windows' Scheduled Tasks utility lets you automatically run any program at any predetermined time. Find it in Windows XP under *Start•All Programs•Accessories•System Tools* (*Start•Programs•Accessories•System Tools* in Windows Me and Windows 2000).

♦ GO EASY ON THE EYES. Preserve your vision with two free utilities from Windows XP **PowerToys** (find.pcworld.com/33167). Image Resize lets you enlarge a graphic file by right-clicking. Taskbar Magnifier enlarges whatever is under your cursor and displays it in a small window on the

task bar—great for making small print readable.

♦ ONE CLICK FITS ALL. **Tray Commander Lite** (find.pcworld.com/33170) lets you launch programs, open oft-used folders, and shut down your PC in two mouse clicks—very handy for frequent tasks.

♦ MAKE A FRESH START. Accelerate your Windows start-up by disabling programs that automatically start with Windows. Go to *Start•Run*, type *msconfig*, press Enter, and select the *Startup* tab; uncheck the box for anything you don't want starting up with Windows. Recheck the box to change it back again.

♦ LISTEN UP! Let your PC read to you. **ReadPlease 2003** (find.pcworld.com/33173) is a text-to-speech utility that enables you to listen to long blocks of text while you work on something else. —Kirk Steers

9

SECURE YOUR FILES AND E-MAIL

PGP 8.0, PGP, \$39

find.pcworld.com/33131

You're not the only one searching for your true identity; lots of hackers out there would like to get to know you better. PGP 8.0 protects your important files and e-mail messages with strong encryption. The program—originally known as Pretty Good Privacy—automatically integrates into Outlook Express and Eudora, making encrypting e-mail as easy as clicking Send. The program can also add an encrypted virtual drive to your PC. Save a file to this drive, and it's safely scrambled so intruders can't make head or tail of it without knowing your secret passphrase.

Sort Your Files

ORGANIZING the thousands of files on your PC can be a real pain. Data gets spread all over your hard drive, and finding what you need when you need it can be a real challenge. Fortunately, a number of utility programs will help bring order to the chaos.



10

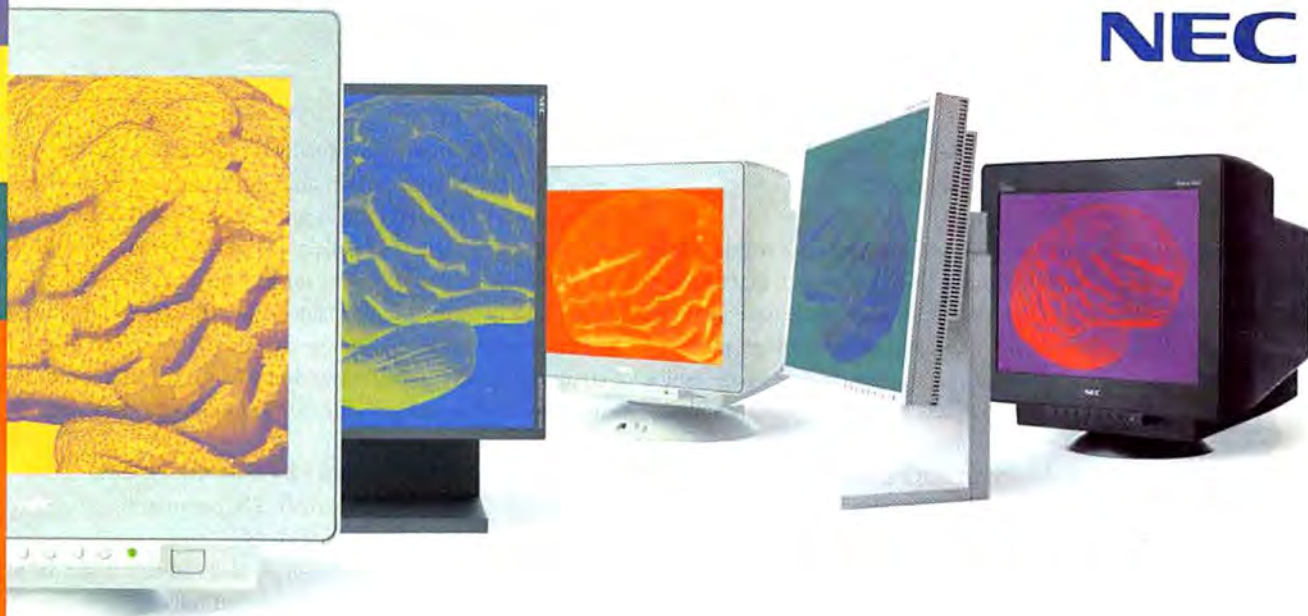
ORGANIZE EVERYTHING

PowerDesk 5.0, Vcom, \$30

find.pcworld.com/27941

Windows Explorer works fine for casual maintenance, but anyone who manipulates files regularly will appreciate a more sophisticated tool. PowerDesk looks and acts like Windows Explorer, but it does much more. Abundant tools offer quick access to commonly used files, folders, and programs. Move the cursor over a file's icon, and a pop-up window displays the file's vital statistics and user-added comments—very handy for identifying files with cryptic names. And an excellent file viewer utility lets you see the contents of documents. Another useful feature is a file size manager that identifies the fattest folders. ►

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11 ORGANIZE DIGITAL PHOTOS

Photoshop Album, Adobe, \$50
find.pcworld.com/33125

What do you get when you cross a big hard disk with a digital camera? Lots and lots of pictures. So many, in fact, that you may waste more time looking for pictures you already have than you spent actually taking them. Photoshop Album offers plenty of tools for sorting and annotating photos. A simple image editor lets you perform basic editing tasks such as cropping, adjusting brightness, and removing the dreaded red-eye in one click.

If you don't need the image editing tools, **Picasa** (\$30 from Lifescape Solutions, find.pcworld.com/33128), simplifies the jobs of searching, sorting, and sending any number of photos to a Web site, printer, or e-mail address. An intuitive interface displays thumbnail images sorted by time or location, and you can launch a slide show with a single click.

ACDSee 5 (\$50, find.pcworld.com/33443) is yet another photo-organizing option worth considering: In addition to cataloging and editing files, it can convert files from one format to another.

12 PLAY THE RIGHT TUNES

MoodLogic 2.0, MoodLogic, \$30
find.pcworld.com/33134

Having the right music to accompany the right moment can be magical. But by the time you've plowed through thousands of MP3 files and assembled just the right playlist, the right moment

may be just a memory. Let MoodLogic do the hunting and gathering for you. Working from an online database, MoodLogic's software classifies each song in your collection. Pick a song, artist, or genre from your MP3 collection, and MoodLogic's software assembles a playlist of similar songs. The catch: The database is a work in progress; if your tastes stray from the mainstream, some of your songs may not be classified. Paying \$30 buys you credits to classify 10,000 songs, but you can get additional credits by submitting song profiles to the MoodLogic database.

13 CONTROL YOUR PC FROM ANYWHERE

GoToMyPC, Expertcity, \$20 per month
find.pcworld.com/33143

When you're on the road, a laptop usually suffices to get the job done. But wouldn't it be nice if you had full access to the files and functions of your primary PC when you needed them? That capability is just what remote-access software delivers; and for ease of use, the remote-access star is GoToMyPC.

The \$20 per month (or \$180 per year) service from Expertcity takes only about 5 minutes to set up. It lets you use your main PC as if you were sitting in front of it from any Web browser. The service's primary drawback is that it can be cumbersome to use over a dial-up phone connection. Other potential snags: GoToMyPC requires an "always-on" connection for your primary computer, and it may not work across some firewalls. Fortunately, you can try out the service for 60 minutes at no cost. ▶

HARDWARE UTILITIES

Four Devices for an Easy Life

THERE'S MORE to easy computing than software. Here are four handy devices that we recommend to keep your PC running smoothly.

♦ **STORE FILES ON YOUR KEY RING.** USB microdrives such as **Trek's ThumbDrive** (find.pcworld.com/33179) provide an easy way to take your data with you. These miniature drives can hold up to 1GB of data. Trek's 128MB ThumbDrive costs \$100.

♦ **RUN TWO PCs FROM ONE MONITOR AND KEYBOARD.** A KVM (keyboard, video, and

mouse) switch like the **IOGear MiniView Micro KVM** (\$40, find.pcworld.com/33182) lets you use a single keyboard, monitor, and mouse to control two PCs. Just wire the KVM switch to your PCs and then hit the button to switch between controlling the two PCs.

♦ **BACK IT UP WITH A TOUCH.** The **Maxtor Personal Storage 5000DV** external hard drive (\$265, find.pcworld.com/33183) makes backing up data a breeze. Just plug the device in

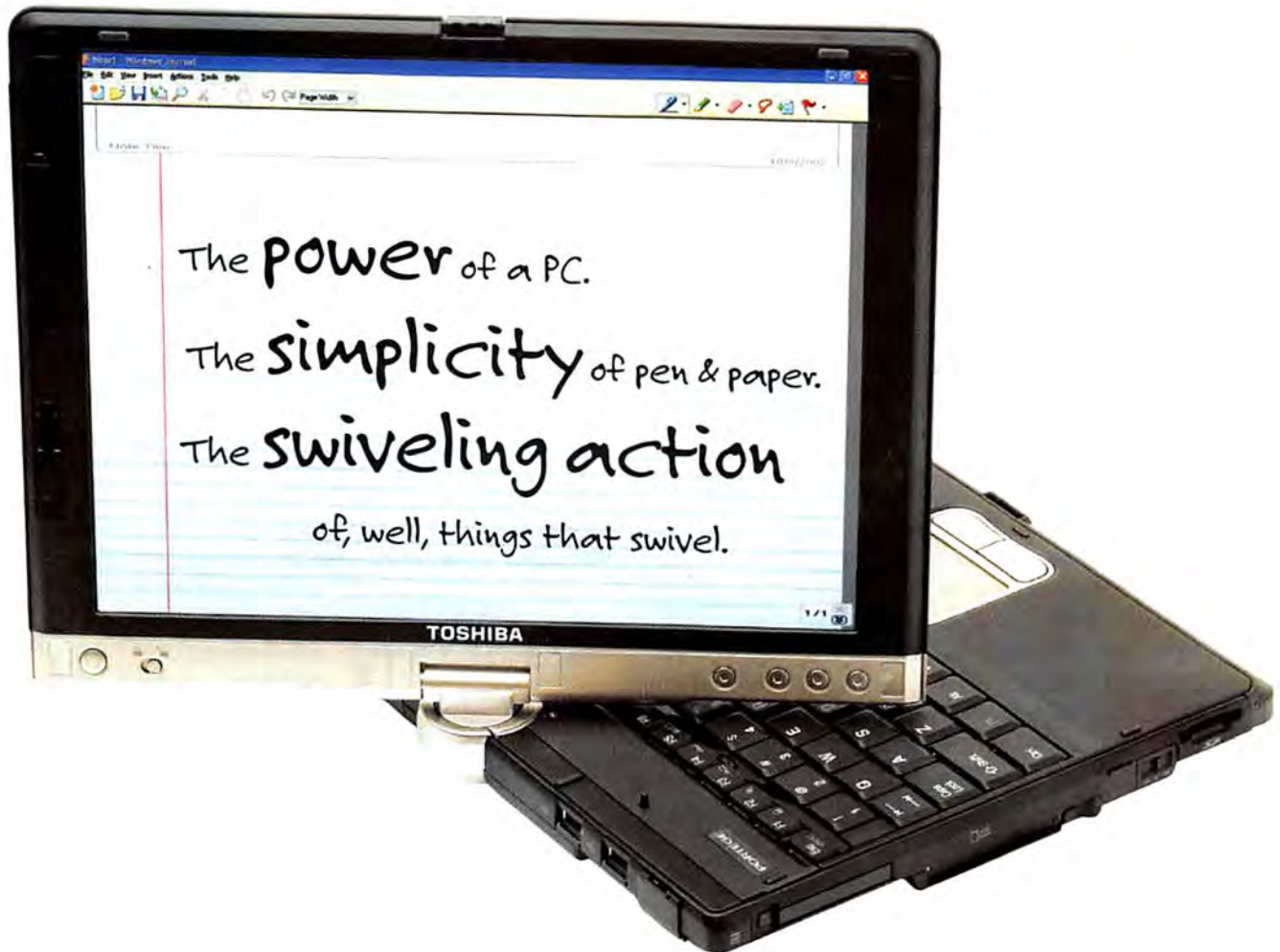
(it comes with both FireWire and USB 2.0 interfaces), and press the button on the front to back up all of your data.

♦ **PROTECT YOUR PC.** An uninterruptible power supply like the **APC Back-UPS ES725** (\$90, find.pcworld.com/3318) can help safeguard your computer against power outages and power and phone line surges (from lightning strikes, say) that could fry your computer. And in case the power

should remain off for a long time, the device includes software that will gracefully shut down your system. —Richard Baguley



MAXTOR 5000DV (front), APC Back-UPS ES725 (rear).



Introducing the Portégé® 3500. It's a notebook. It's a tablet. It's innovative engineering at its most versatile. Use it as a notebook with a fast Mobile Intel® Pentium® III Processor - M @ 1.33GHz, generous 12.1" diagonal color screen, large memory capacity and integrated Wi-Fi wireless technology. Then swivel the display, and it's a tablet. Write on the screen with a digital pen to take notes or add handwriting to a document. Plus, it includes Microsoft® Windows® XP Tablet PC Edition Operating System for maximum power and portability.

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14

SQUISH 'EM DOWN

WinZip, WinZip Computing, \$29
find.pcworld.com/33146

When it comes to storing or moving files online, less is definitely more. Compressed files are faster to send and can be encrypted for security. Windows XP's built-in zip utility is adequate for compressing the occasional file or folder, but demanding users will want a more powerful tool. We recommend WinZip from WinZip Computing, which makes the compression process easy and provides a choice of either a wizard-based or a more conventional drag-and-drop interface.

Another option is **Stuffit** from Aladdin (find.pcworld.com/33152). This program amply justifies its extra cost (\$70) if you frequently have to exchange files with Mac users who employ the .sit format. Try before you buy: Free, stripped-down versions of both WinZip and Stuffit are available for downloading.

15

REPARTITION YOUR DRIVE

PartitionMagic 8, PowerQuest, \$70
find.pcworld.com/33155

Keeping everything on a massive hard drive with just one partition is like storing files in a file cabinet the size of a small room: As you accumulate data and software, files get lost in the morass. One way to simplify things is to carve out multiple partitions in your hard disk, each of which shows up in Windows as a separate drive letter. For this task, PartitionMagic from PowerQuest is the best utility around. Its simple graphic interface and software wizards make repartitioning a drive easy. Although \$70 may seem like a hefty sum of money to spend on software that you'll probably run only a few times, you'll benefit every day from having done so.

16

MOVE YOUR DATA

LapLink Gold 11, LapLink, \$89
find.pcworld.com/33158

If you need to shift data from one machine to another, you can't beat LapLink Gold 11. This classic (see the sidebar on page 107) lets you copy files from one machine to another, either over included serial and parallel cables, or over the Net. You can also take control of one PC from the other, as if you were at the other PC's keyboard. You don't even need to have LapLink installed on both machines: With the Surf Up feature, you can get to files on your home or work PC from any computer that has Web access.

Use Your Files



PERSONAL COMPUTING is not just about fixing problems and backing up files. It's also about using all the stuff you have on your machine. Here are our top choices for playing your music, viewing your photos, and more. Although we've sorted these tools into different categories, some of them do perform overlapping functions. MusicMatch, for example, can play a number of video files; DVD playback programs can play digital audio; and applications like Windows Media Player 9 (still in beta at this writing) try to work with everything.

17

PLAY YOUR MUSIC

Musicmatch Jukebox 7.5, Musicmatch, \$20
find.pcworld.com/33095

Musicmatch is the Swiss army knife of the digital audio world. With a click or two, you can open and play your music files, cre-

ate playlists, download tunes to a long list of portable MP3 players, print out color CD labels and jewel case inserts, and do lots more. Need to reduce plus-size WAV files to slim MP3s? The program has a built-in converter. Want to burn music to CD? Musicmatch includes a tool that is every bit as sophisticated as Roxio's \$100 Easy CD Creator.

Version 3.0 of Nullsoft's **WinAmp** (find.pcworld.com/33098) offers the usual suite of file and streaming music playback, a built-in equalizer, and powerful playlist creation and editing fea-

tures, along with video playback and other customization options. But bugs and sluggish performance hamper this new version, so you may prefer to stick with the popular **WinAmp 2.81** (find.pcworld.com/33101) until 3.0 gets patched.

18

EDIT SOUND AND MUSIC

Sound Forge 6.0, Sonic Foundry, \$350
find.pcworld.com/33104

There's a reason why companies make erasers and why programs like Sound Forge exist: to excise your mistakes. If you make recordings—from music to voice to MP3s—you'll need to trim out pauses, remove ums and ahs, and negate coughing sounds or sneezes. Simply open the audio file and display the cardiogram-like waveform, which you can then manipulate ►



MUSICMATCH is a great program for playing and organizing your digital music files and copying them to portable players.



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SONIC FOUNDRY'S Sound Forge 6.0 audio editor includes a waveform display.

with a number of powerful tools. For example, you can mix multiple tracks and apply various sound effects (such as adding concert hall acoustics to a vocal), and Sound Forge lets you preview and undo the

edits ad infinitum. Then, once you've tweaked the audio to your liking, you can burn the file to CD or save it to your hard drive in any of a dozen sound and video formats.

Looking for a more attractive price, and don't need all those high-end features? Consider Stomp's \$69 **MySoundStudio** (find.pcworld.com/33107). This WAV/MP3 editor allows you to mix multiple tracks, edit soundtracks accompanying your videos, remove noise from sound files, and convert files from one format to another. Although its interface is not as intuitive as Sound Forge's, the program delivers some powerful, convenient tools such as on-screen pan and mixer controls for tweaking and refining your digital music or other sound files.

19

REMOVE THE RED-EYE

Photoshop Elements 2, Adobe, \$89

find.pcworld.com/33110

Inevitably, your digital photos won't always turn out as you'd like. People end up with eyes as red as wild fruit flies' and with lamp-posts sticking out of their crania. Fortunately, Photoshop Elements 2 comes to the rescue, with an array of tools for fixing common photo problems. Step-by-step guides (called "recipes") take you through the most common tasks, such as adjusting brightness and color, fixing red-eye and scratches, and removing objects that appear in undesirable locations.

Jasc Software's **Paint Shop Pro 7** (\$75, find.pcworld.com/33113) is another great editing program. Admittedly, it isn't quite as comprehensive as Elements, but it does include handy tools for printing out multiple photos and creating photo album pages.

20

PLAY DVDs

PowerDVD Deluxe 4.0, CyberLink, \$70

find.pcworld.com/33116

CyberLink's PowerDVD Deluxe 4.0, a DVD player program, comes with a huge range of features, including support for DTS digital surround sound and Dolby headphone technology, which emulates surround sound on a standard set of headphones. When you watch movies, video and sound are sharp; and the control panel is easy to use, so you won't need the manual. You also get some useful extras: five dual speaker settings that you can change on the fly, the ability to capture a video frame, and

an interactive timeline so you can quickly skip around the disc.

Microsoft's forthcoming **Windows Media Player 9** (find.pcworld.com/33119) can play DVDs, too. But wait until it ships—the beta version is extremely difficult to uninstall, and it relies on third-party add-ins for DVD playback and MP3 encoding.

WinDVD Platinum from InterVideo (find.pcworld.com/33119) is a bit more confusing to set up than PowerDVD, but this \$100 program carries a full complement of playback features and such intriguing extras as the ability to finish a movie within a certain time by speeding up playback. ■

Robert Luhn is a writer based in El Cerrito, California; Kirk Steers is a contributing editor for PC World; and Richard Baguley is a senior associate editor for PC World.

ANNOYING UTILITIES

Frustrating Features

SOMETIMES a great program is dragged down by the stuff that comes with it. Here are three utilities we'd like to install but find too frustrating to use.



RealOne Player

(find.pcworld.com/33434) once set the standard for streaming audio, then blew it by tracking our listening habits, loading on extraneous features, and putting us through an installation procedure that added icons everywhere and tried to make itself the default player for all our digital media. And why is it that every time we played something, we got an annoying pop-up ad that tried to sell us another version of the program?



Kazaa (find.pcworld.com/33437)

is a great peer-to-peer file-sharing program, but the sneaky spyware

and advertising programs (find.pcworld.com/33428) that it forced us to install pelted us with targeted ads and tracked our surfing habits. An enterprising hacker has created a Kazaa client without the spyware; see www.kazaalite.com.



Gator EWallet

(find.pcworld.com/33446) seems to fulfill a very useful function: It automatically remembers things like username, password, and credit card number for online forms. Less obviously, though, it tracks the Web sites users visit and pops up targeted ads. So if you happen to go to an online bookstore, for instance, you might receive an advertisement for a rival bookseller. Don't bother with Gator; give RoboForm (find.pcworld.com/33449) a try instead.

—Robert Luhn

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September 25, 2001

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* UPS System Cost (Data: \$1,319 for SU2200RTX2U. Source: Tripp Lite MSRP). Average Network Downtime Cost (Data: \$84,000 per hour. Source: International Data Corporation study).

hw=wh

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20 Years of Online

GOING OUT ON A LIMB

"If you absolutely, positively have to get your document there right now, you may want to consider electronic mail."



—In 1984, *PC World* cautiously recommends an exotic new communications technology.

THINGS WE MISS:

Webvan (1998–2001)

THE PIONEERING Web grocer lost a fortune delivering everything from toilet paper to fresh Maine lobsters with style. It was fun while it lasted.



WE INVITE YOU TO COME SEE THE 2020 AND MEAN ABOUT THE DECISION-20 FAMILY AT THE TWO PRODUCT PRESENTATIONS WE WILL BE HOLDING IN CALIFORNIA THIS MONTH. THE LOCATIONS WILL BE:

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FORGOTTEN PIONEER

THE FIRST spam slithered into in-boxes long before most people had in-boxes. Early Internet users say that a marketing rep at Digital Equipment Corporation sent the first unsolicited commercial e-mail on May 1, 1978. The message invited all 594 people with Arpanet accounts to product demonstrations. This is one innovator who's probably happy to go unre-membered: Only the offender's e-mail address, THUERK at DEC-MARLBORO, still appears in the online record.

POP QUIZ #3

1 QuantumLink was the full proper name of

- ☐ a) Microsoft's first e-mail program, which famously flopped at its introduction in 1983.
- ☐ b) The first 2400-bps modem, which sold for \$1299 in 1984.
- ☐ c) A CompuServe-enabled cell phone released in 1986, which weighed almost 7 pounds.
- ☐ d) AOL's first service, which debuted in 1985 and ran only on Commodore 64 computers.

2 The word *cyberspace* was coined by

- ☐ a) Madonna in the 1987 movie *Who's That Girl?*
- ☐ b) Vice presidential candidate Al Gore in a 1992 stump speech.
- ☐ c) Author William Gibson in his 1984 novel, *Neuromancer*.
- ☐ d) Ron Popeil in a 1983 ad for the Digital Fisherman.

3 All of the following are actual Web browsers except

- ☐ a) Surfin' Annette.
- ☐ b) HexaBit Junior.
- ☐ c) Web-O-Matic.
- ☐ d) NetSlacker.

4 The first person to speak of "surfing" the Internet was

- ☐ a) Andy Rooney, the lovable TV curmudgeon.
- ☐ b) Duke Kahanamoku, a legendary Hawaiian surfer.
- ☐ c) Jean Armour Polly, a self-styled 'Net-Mom'.
- ☐ d) David Filo, the inventive cofounder of Yahoo.

How do we spend our time?

AMERICANS SPENT an average of 157 hours (6.5 days) using the Internet at home in 2002. If that seems like small (couch) potatoes, consider that we allocated an average of only 8 hours to the Net annually in 1996. The time that we spend on the Net at home has risen by 1863 percent since 1996—a far greater increase than for any other type of media. As a result, we have decreased the time we spend reading books and magazines by 9 percent over the same period. Still, for total time consumption, nothing compares with watching TV. On average, Americans spent 1663 hours (more than 69 whole days) staring at the tube in 2002.

MEDIA	Hours spent using media in		Change
	1996	2002	
Consumer Internet	8	157	+1863%
Video games	25	84	+236%
Box office, home video	46	90	+96%
Total TV	1563	1663	+6%
Radio, recorded music	1267	1224	-3%
Newspapers, books, magazines	440	399	-9%

IN "TOTAL TV" AND "NEWSPAPERS, BOOKS, MAGAZINES" CATEGORIES, DATA IS FOR PERSONS 18 AND OLDER. IN ALL OTHER CATEGORIES, DATA IS FOR PERSONS 12 AND OLDER. SOURCE: VERNON SMITH STEVENSON.

Answers: 1.d, 2.c, 3.d, 4.c



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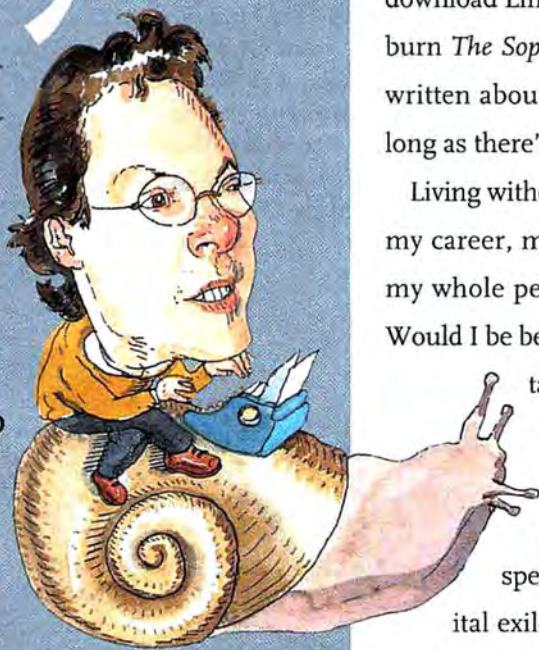


20 Days

Without a PC

No e-mail,
no word processor,
no Google...no problem?
Our reporter goes
cold turkey and lives
to tell the tale.

BY SCOTT SPANBAUER
ICONS BY CAMPBELL LAIRD
ILLUSTRATIONS BY TAVIS COBURN



MY EDITOR CALLS my cell phone while I'm out eating a chile relleno. It's odd to get a call from a computer magazine editor—e-mail is so much simpler. And his proposal is downright dumbfounding. Would I be willing to give up PCs and the Internet for 20 days?

The rationale behind the request: For its 20th anniversary, *PC World* wants to examine the PC's impact on our lives by yanking it away from someone who works and plays with computers every day. That sounds like me—I build desktops, schlep laptops, tweak Windows, download Linuxes, and (don't tell HBO) burn *The Sopranos* onto DVD. And I've written about technology for nearly as long as there's been a *PC World*.

Living without the PC would shake up my career, my leisure time—in short, my whole persona. Still, I'm curious: Would I be better off as an analog guy? I

take up the challenge.

Twenty days later, I'm glad that I did. Sure, I missed Google, MapQuest, and spelling checking. But my digital exile had unexpected upsides—and it revealed how PCs controlled me, in ways I hadn't seen before. More about that later. First, a day-by-day report: ►



DAY 01 I'M TRYING TO DEAL with every last e-mail in my in-box before I shut down my home office's three computers. I print my contacts and calendar, and I send a note to friends mentioning that I'll be off e-mail but available by phone or snail mail.

Then I turn off my slim Sony Z505 laptop and lock it in my office safe for dramatic effect. I power down the two other computers as well. The Eagle has landed.

Already, I miss Google. Want a recipe for ravioli in sage cream sauce? Need to know what a *grimoire* is? Want to see what people think about their 1999 Audi A4 Quattro wagons with Tiptronic transmission? I did recently, and Googled my way to answers in seconds. Without the Web, it dawns on me, I'll have to work harder to learn stuff. Or live with knowing less.

DAY 02 I DRAG MY WIFE Betsy's IBM Selectric II typewriter in from the garage, where it's been moldering for a decade, so I can type a journal for my editor. I can't recall the last time I wrote anything longer than a brief note using anything but a PC.

I blow off some dust, and the Selectric seems to work. My 10-year-old son, Jack, starts typing up his homework, a pen-pal letter to another fourth-grader in Wyoming. Jack doesn't remember a world

without computers, but he pounds on the Selectric like a pro. With no computer to fight over, will we compete for the typewriter instead?

DAY 03 BLISSFULLY free of the need to monitor my e-mail, I spend the morning goofing off at a coffee shop with friends, and then I head to the guitar store to test-drive some Stratocasters. It feels like a highly artificial vacation: *PC World* is paying me not to go through my usual daily grind. (Try striking that kind of a deal with your boss.) Later on, my editor cheerfully tells me that the experiment is probably costing me money—my name keeps coming up for possible *PC World* assignments, but nobody wants to give them to an unwired author.

DAY 04 I GET UP EARLY and head downstairs to the office to write in my journal. The room is incredibly peaceful—the three loud computers no longer rule the roost.

My usual background noise would consist of live-band MP3s. Instead I pull out interesting CDs and LPs I haven't listened to in years. I realize I've been downloading music faster than I can enjoy it.

The mail comes, and I discover that one of the friends I alerted to my experiment has sent me a warning note: *You are in such deep @#@* if you find out you like this.* He could be right. Computers and the Web are understandably pervasive forces in my life. But without them, I feel a wonderful lack of mental clutter. I could get ad-



THERAPY FOR THE PC-ADDICTED

dicted to this, or at least try to find a way to get more of it into my life.

DAY 05 HMMM—THIS Selectric needs work. The right-margin bell doesn't ring, so I keep running off the edge of the paper. Does anyone fix typewriters in 2003? Yup, and business appears to be thriving: I find a repair service in the Yellow Pages but must wait my turn for a house call.

Jack asks when the computer will be available again. "In a couple of weeks," I tell him. Instead of playing Tony Hawk's Pro Skater 3 and cruising skateboarding-magazine sites for video clips, he actually skateboards and reads.

DAY 06 MY TYPING is improving. I crank out three pages in an hour and a half, and run off the side of the page only once. Still, it would have taken me about half that time to do the job in Word, and it would have looked a lot more professional.

Bereft of e-mail, I walk to a nearby drug-store-cum-post office, copy the pages, and mail them to my editor. Total cost of production and delivery (not including the cost of the typewriter): 67 cents. Total travel time from Boulder, Colorado, to my San Francisco-based editor: four days.

DAY 08 TODAY WE'RE preparing for a family trip to New Jersey. Usually I would tote my laptop to



DR. SELECTRIC MAKES A HOUSE CALL

write and to check e-mail with. I'd back up its hard disk over my network before traveling, too. This time I just pack my cell phone charger. With no network hub or cables to curse at, I have no choice but to help my kids with their packing.

DAY 09 WE ZIP THROUGH airport security, as do the laptop-encumbered passengers. Waiting at the gate, I relax and read a book. If my notebook were here, I would probably be tempted to find a phone booth with a data port and compulsively check my e-mail—despite the sluggish connection, and despite the fact that I would probably just end up idly weeding the spam from my in-box.

We're flying into LaGuardia; ordinarily I'd have gone to MapQuest to get the best driving route from there to New Jersey. Instead, I call a friend for advice: the Brooklyn-Queens Expressway to the Verazano Bridge, then across the Goethals Bridge. In hindsight, her advice wasn't so good—the Outerbridge Crossing would have been better than the Goethals. Even a geography-savvy local can't quite match the instant precision of MapQuest.

DAY 12 ONE OF MY in-laws asks me how to burn a song onto CD, something I could tell her how to do while blindfolded and locked in an isolation booth. But she hesitates to fire up the PC, claiming that it's too much effort. I suspect that she's just trying to shield me from contamination.

Our flight home is delayed. One guy appears to be watching a DVD while rocking out to wild music at the same time. I feel a twinge of jealousy. Still, I'll bet his battery won't make it past Cleveland.

DAY 14 WHEN I PERUSE the mail that came during our trip, I find a card from a friend who's visiting Italy. He says the only reason he can take three weeks off is that Italy has Internet access points on every other corner. My e-mail about the experiment

reached him in a café in Siena. Try keeping in touch like that with FedEx.

DAY 16 I'M AT THE LIBRARY for the first time in eons, in search of some car prices and Wendell Berry's essay "Why I Am Not Going to Buy a Computer," both things that I could have found in moments with Google.

I hunt for the card catalog, but it's not there. Turns out the library has replaced it with PCs that access an interlibrary network. I ask the reference librarian to look

up a few books for me, since, um, I'm not much good at computers. She's happy to oblige. I ask if I can call the reference desk later for a car price. "Sure," she says. "Try asking us anything." An uneasy moment of silence passes while I imagine a thousand things I will never ask a librarian.

In the evening I read Wendell Berry, a writer who also works his Kentucky farm using horses. He states that it is his first duty "to reduce, so far as I can, my own consumption," and complains that a computer won't make him a better ▶

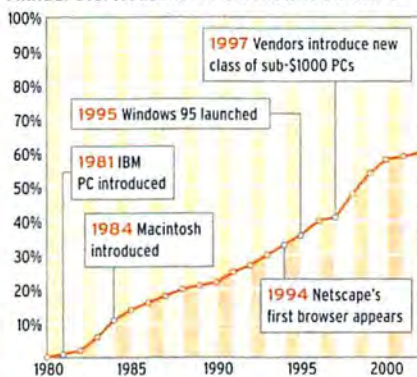
VITAL STATS

Life With (and Without) the PC

TO A WELL-WIRED AMERICAN, 20 days without a PC may sound like sensory deprivation. But it's easy to forget how recently computers and the Web ingrained themselves into our lives—and how much of the world still lives without them. —David J. Lake

60 Percent Own PCs

Annual U.S. Household PC Penetration Rates



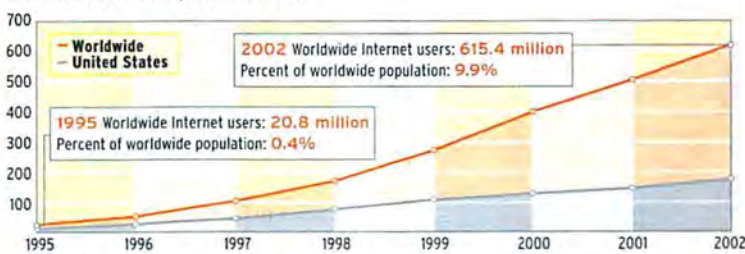
SOURCES: CONSUMER ELECTRONICS ASSOCIATION; PC WORLD RESEARCH

It took **12** years for the personal computer to make it into one-quarter of U.S. households. DVD players and digital cameras have worked their way into 25% of homes in five and seven years, respectively.

SOURCE: CONSUMER ELECTRONICS ASSOCIATION

615 Million People Use the Internet

Internet User Trend, 1995 to 2002



IN MILLIONS. SOURCE: IDC; U.S. CENSUS BUREAU



writer. But no one has said that a PC will make you a better writer, I think to myself. He allows that "a computer will help you to write faster, easier, and more" but asks, "Do I, then, want to write faster, easier, and more? No." That's fine for Wendell Berry. Not all of us can afford to farm with horses, though. I'd like to write better *and* write faster, easier, and more.

DAY 17 JIM, THE Selectric repairman, comes by. IBM built its last Selectric in 1985, but he says that the machines are still widely used to fill out preprinted forms. As he toils, he recommends nutritional supplements for my tendinitis, and tells me about the

VITAL STATS

Digital Exile by the Numbers

HEREWITH some revealing factoids about my experiment, with apologies to *Harper's Index*.

—Scott Spanbauer

1999 Sony PCG-Z505S laptop weight (pounds):	3.5
Original price:	\$3000
Current value on eBay:	\$400
1980 IBM Selectric II weight (pounds):	39
Original price:	\$800
Current value on eBay:	\$50
Minutes spent finding a typewriter repairperson (using Yellow Pages):	2
Cost of typewriter tune-up and minor repairs:	\$97
Minutes required to look up a used-car price at the library (including travel time):	40
Minutes required to look up the same price on the Web:	1
Number of typos in my 16-page typewritten journal:	16
Number of those typos Word would have silently corrected:	3
Remaining typos Word would have flagged as errors:	6
Number of e-mail messages received on day 21:	2041
Days required to slog through 2041 messages:	2
Number of those messages that were spam:	1571
Cost of 1 hour of computer-addiction therapy:	\$80

25th Infantry's December 1967 campaign in Vietnam (he's a vet).

Afterward I head to an appointment with Tina, a therapist who specializes in assisting computer addicts. My own tech cravings are now in check, so I interview her about computer addiction—including her own compulsive playing of the puzzle game Tetris. She knew she had a problem when her husband pointed out that her Tetris sessions were running longer than 5 hours.

One day, as she was talking with a patient, she began to see phantom Tetris blocks falling into place in the air in front of her. "That's when I said, 'no more,'" she remembers.

Her advice for those who love computers too much? First, find out what that wonderful feeling is that comes from using the PC. "People are often very reluctant to talk about it," she says. She encourages patients to find other ways of getting the same feeling. "I'm not asking them to give up the computer, I'm asking them to try this other [way]," she adds.

DAY 21 THE TIME HAS come to reenter the 21st century. I take the Sony out of the safe, boot it up, and start downloading mail. I find more than 2000 messages—including 1571 pieces of unsolicited commercial e-mail. Hallelujah, baby, this is productivity.

I spend much of the next 48 hours weeding through the non-junk messages. There are two that I regret not having seen earlier. In one, an editor needs me to review a column before it goes to the printer—and it needs to happen right away. (Oops.) In the other, a long-lost friend has found me. (We later swap summaries of our families and work.)

It's nice in some respects to be back writing in Word, sending and receiving e-mail, and catching up on the latest news.



RESEARCH @ THE LIBRARY

But I also feel like I've lost something.

In a thousand subtle ways, technology accelerates the pace of life. That's not an unalloyed virtue. Spend an afternoon away from your in-box, and folks wonder if you've dropped off the face of the earth. You produce more work and consume more entertainment and information because...well, because you can.

Simultaneously, the PC's complexity robs us of time. I'm not talking just about spam and buggy software. I ponder the labor that I sink into downloading pirated *Sopranos* episodes from the Net. As good as the show is, I'm not sure if the effort of trolling newsgroups, tracking down files, and stitching them into a watchable video is worth it. Buying a DVD wouldn't just be more legit; it would be a lot simpler.

Part of me wants to shove the laptop back in the safe. I don't—but I do vow to demote the PC a bit from its position of central importance in my life. Maybe I'll close most of my e-mail addresses. I may read one news service instead of five. I might even get rid of a computer or two.

In the end, 20 days without a PC wasn't long enough to permit a final verdict on the culmination of centuries of progress in everything from mathematics to mechanical engineering to typography. Even so, I would happily do it all over again. And maybe one of these days, I will. ■

Contributing Editor Scott Spanbauer started in the PC World mail room in 1984. David J. Lake is an online indexer for PC World.

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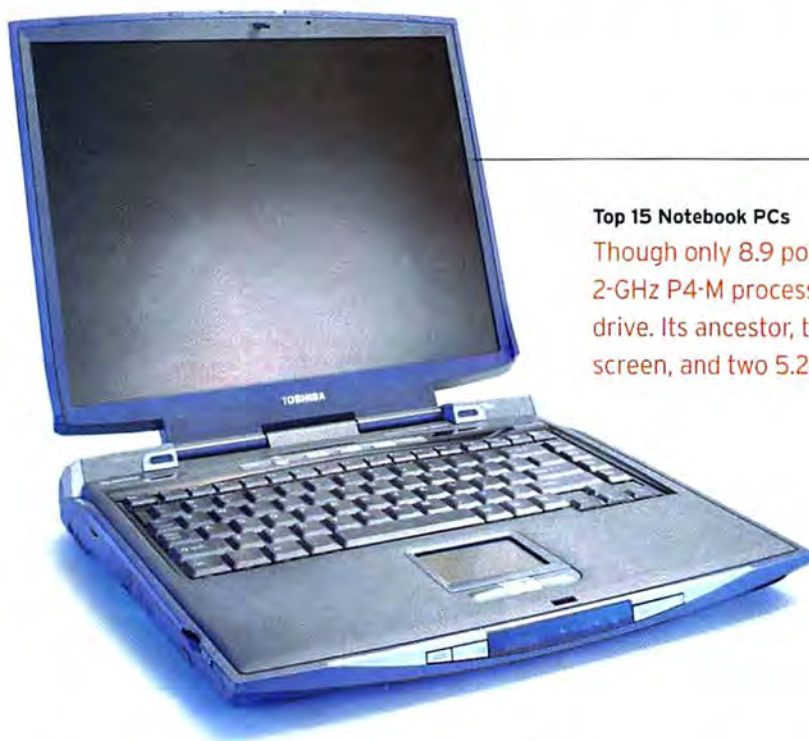
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TOP 100

EDITED BY THE REVIEWS STAFF

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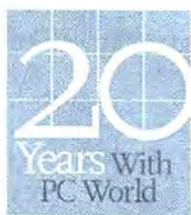
Top 15 Notebook PCs

Though only 8.9 pounds, Toshiba's Satellite 5205-S703 packs a 2-GHz P4-M processor, a 15-inch screen, and a rewritable DVD drive. Its ancestor, the Osborne, had a 4-MHz CPU, a 5-inch screen, and two 5.25-inch floppy drives; it weighed 25 pounds.



Osborne
Computer,
circa 1981.

Modern PCs or Museum Pieces?



Argue all you want about bloated operating systems and software, but you have to admit that 20 years of product development have made personal computers exponentially better. The Toshiba Satellite 5205-S703 laptop leading our *Top 15 Notebooks* chart and the

Gateway Media Center PC 500 at the head of this month's *Top 5 Entertainment PCs* chart are good examples of how computers have improved.

Peripherals have fared well, too: Our top digital camera, the Olympus C-5050 Zoom, takes vibrant pictures, unlike its color-challenged ancestor.

Freelance writers Mick Lockey and Carla Thornton, and PC World reviews editors Tracey Capen, Sean Captain, Rebecca Freed, Alexandra Krasne, Kalpana Narayanamurthi, Melissa J. Perenson, and Alan Stafford contributed to the Top 100 this month. Ulrike Diehlmann, Julio Giannobile, Elliott Kirschling, Jeff Kuta, Tony K. Leung, and Thomas Luong performed testing, with support by Julian Weatherby. Thanks to the Computer History Museum (www.computerhistory.org) for letting us photograph its collection.



Top 10 Printers

Canon's S330 Color Bubble Jet Printer makes 6 pages per minute; Epson's MX-80 F/T dot-matrix printer hammered out 100 characters per second.



Epson MX-80
F/T, circa 1982.



Logitech
FotoMan,
circa 1992.

Top 10 Digital Cameras

The Olympus C-5050 Zoom uses a 5-megapixel, color CCD. The first digital camera marketed to consumers, the spunky Logitech FotoMan, hit the shelves in 1992 with a 376-by-240-pixel CCD that captured 256 shades of gray.



IBM Personal
Computer,
circa 1981.

Top 15 Desktop PCs

The top-ranked Gateway Media Center PC 500 has a 120GB hard drive. IBM PCs didn't even have internal hard drives until 1983.



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 CPU, 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). See find.pcworld.com/15720 for more details on how we compile Top 100 charts.

TOP 15 DESKTOP PCs

POWER SYSTEM		Overall rating	Street price (12/15/02)	PC WorldBench 4 performance score ¹	Faster	Comments
1	Best Buy Dell Dimension 8250 find.pcworld.com/32546	89	Very expensive \$3158	Windows XP Home	Good 123	Dell system remains a Best Buy, but its 3-GHz CPU boosts it only minimally over previous winners. (★★★★★ Feb 03)
2	Micro Express MicroFlex 27A find.pcworld.com/32897	87	Inexpensive \$2199	Windows XP Professional	Outstanding 130	Ties for second-fastest PC on the chart and did well on gaming tests, but its 19-inch LCD supports only 1024 by 768 resolution. (★★★★★)
3	Polywell Poly 875VF-2800 find.pcworld.com/31970	85	Expensive \$2795	Windows XP Home	Outstanding 130	Pricey unit delivers exceptional speed and, with dual 120GB hard drives, massive storage; however, its LCD is unimpressive. (★★★★★ Jan 03)
4	ABS Awesome 3330 find.pcworld.com/32549	85	Inexpensive \$2039	Windows XP Home	Good 124	Quick system performed especially well in our gaming graphics tests; includes two hard drives in a RAID array. (★★★★★ Feb 03)
5	Polywell Poly 880NF2-2700 find.pcworld.com/32900	84	Inexpensive \$2289	Windows XP Home	Outstanding 128	Athlon-based PC earned high marks on our graphics tests, but text on our review unit's monitor could have looked better. (★★★★★)
6	Sys Technology Performance 2800 find.pcworld.com/30758	84	Average \$2565	Windows XP Professional	Outstanding 129	Includes a CompactFlash and SmartMedia card reader and a sharp-looking LCD monitor. (★★★★★ Nov 02)
7	Gateway 700XL find.pcworld.com/32552	83	Very expensive \$3499	Windows XP Home	Fair 119	High-priced, nearly over-the-top configuration has a huge LCD, two 200GB hard disks, and a cordless keyboard and mouse. (★★★★★ Feb 03)
Percent of overall rating ▶			10 percent	25 percent		
VALUE SYSTEM		Overall rating	Street price (12/15/02)	PC WorldBench 4 performance score ¹	Faster	Comments
1	Best Buy ABS Bravado 2240 find.pcworld.com/32555	84	Inexpensive \$1109	Windows XP Home	Very good 121	Unit's high-end graphics card and 17-inch CRT gave great graphics at resolutions up to 1280 by 1024; text was so-so. (★★★★★ Feb 03)
2	Emachines T2200 SE find.pcworld.com/32888	83	Inexpensive \$1250	Windows XP Home	Good 116	The Radeon 9700 Pro card helps provide fast gaming performance, but the minitower case leaves little room for upgrades. (★★★★★)
3	Micro Express MicroFlex 24A find.pcworld.com/32891	82	Very inexpensive \$999	Windows XP Home	Outstanding 131	The speediest model on the chart beats out even the priciest power systems. (★★★★★)
4	Dell Dimension 4550 find.pcworld.com/32558	81	Average \$1479	Windows XP Home	Good 116	A solid balance of overall performance, price, and features, but lackluster performance on our graphics tests. (★★★★★ Feb 03)
5	Compaq Presario 6000 find.pcworld.com/31322	80	Inexpensive \$1152	Windows XP Home	Good 116	A low price and software such as Pinnacle Studio 7 (for video editing) make this PC a good deal. (★★★★★ Dec 02)
6	FreewayTech Innovation A4800M find.pcworld.com/32894	79	Inexpensive \$1280	Windows XP Home	Good 116	Model comes with an excellent audio system and offers all-around solid performance. (★★★★★)
7	Polywell Poly 884RF-2600 find.pcworld.com/31982	78	Average \$1599	Windows XP Professional	Very good 124	Strong performer with an adequate 15-inch LCD monitor; the system's interior could be easier to navigate. (★★★★★ Jan 03)
8	Sys Technology Performance 2000+ find.pcworld.com/31280	77	Inexpensive \$1257	Windows XP Home	Good 119	Fast, basic system offers plenty of room for upgrades. Monitor and sound quality are unimpressive. (★★★★★ Dec 02)
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 Total capacity in gigabytes (may represent multiple drives).

SURPRISINGLY, THE FASTEST SYSTEM in the Top 15 this month placed not on the power list, but on the value side. The new \$999 Micro Express MicroFlex 24A sped through our tests with a stellar PC WorldBench 4 score of 131 to secure its third-place ranking. The next-fastest systems—the new Micro Express MicroFlex 27A and

the two-month-old Polywell Poly 875VF-2800—earned PC WorldBench 4 scores of 130, but these power machines cost significantly more. Emachines' new bargain-priced T2200 SE sailed through our gaming tests, which helped it barely edge out the MicroFlex 24A for second place on the

Visit find.pcworld.com/32543 for reviews of all products tested this month and ranked in this chart.

	BASE CONFIGURATION						Extra features	Graphics quality	Setup and ease of use	Vendor's reliability/ service
	CPU	RAM (MB/type)	Hard drive ²	Monitor	Graphics	Case type ³				
	3.06-GHz Pentium 4	512/ PCIO66 RDRAM	200	18-inch LCD	128MB ATI Radeon 9700 Pro	Midsize tower	Very good: 16X DVD-ROM drive, DVD+RW/+R drive, V.92 modem, network adapter, Microsoft Office XP Small Business Edition	Very good	Very good	Good/Fair
	2.17-GHz Athlon XP 2700+	512/ DDR400 SDRAM	120	19-inch LCD	64MB Gainward GeForce4 Ti 4200	Midsize tower	Good: DVD-RW/-R drive, 40X/12X/40X CD-RW drive, network adapter	Very good	Good	1/4
	2.8-GHz Pentium 4	512/ DDR400 SDRAM	240	18-inch LCD	128MB Gainward GeForce4 Ti 4600	Midsize tower	Good: DVD-RW/-R drive, V.90 modem, network adapter	Outstanding	Good	1/4
	2.25-GHz Athlon XP 2800+	1024/ DDR400 SDRAM	160	19-inch CRT	128MB ATI Radeon 9700	Tower	Fair: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter	Outstanding	Good	Fair/Good
	2.17-GHz Athlon XP 2700+	512/ DDR333 SDRAM	160	19-inch CRT	128MB Leadtek WinFast A250 Ultra	Midsize tower	Very good: DVD-RW/-R drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter	Outstanding	Good	1/4
	2.8-GHz Pentium 4	512/ PCIO66 RDRAM	80	18-inch LCD	64MB Leadtek WinFast A170 DDR T	Midsize tower	Very good: 16X DVD-ROM drive, 40X/12X/48X CD-RW drive, V.92 modem, network adapter, memory card reader, Corel WordPerfect Office 2002	Good	Good	1/4
	3.06-GHz Pentium 4	512/ PCIO66 RDRAM	400	19-inch LCD	128MB ATI Radeon 9700	Tower	Outstanding: DVD-RAM/-R drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter, Microsoft Office XP Small Business Edition, Pinnacle Express	Outstanding	Very good	Fair/Fair
	10 percent						10 percent	15 percent	5 percent	25 percent

	BASE CONFIGURATION						Extra features	Graphics quality	Setup and ease of use	Vendor's reliability/service
	CPU	RAM (MB/type)	Hard drive ²	Monitor	Graphics	Case type ³				
	2-GHz Athlon XP 2400+	512/DDR400 SDRAM	60	17-inch CRT	128MB GeForce4 Ti 4200	Midsize tower	Good: 16X DVD-ROM drive, 48X/12X/48X CD-RW drive, V.92 modem, network adapter	Very good	Fair	Fair/Good
	1.8-GHz Athlon XP 2200+	512/DDR266 SDRAM	100	17-inch CRT	128MB ATI Radeon 9700 Pro	Minitower	Very good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.92 modem, network adapter, Microsoft Works 7, Money 2003, Encarta Online, AOL 7	Very good	Very good	Good/Fair
	2-GHz Athlon XP 2400+	512/DDR400 SDRAM	80	17-inch CRT	64MB Leadtek GeForce2 Ultra	Midsize tower	Good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.90 modem, network adapter, Ulead VideoStudio 6	Fair	Fair	1/4
	2.67-GHz Pentium 4	256/DDR333 SDRAM	60	19-inch CRT	64MB GeForce4 MX 420	Midsize tower	Good: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.90 modem, network adapter	Fair	Very good	Good/Fair
	1.8-GHz Athlon XP 2200+	256/DDR266 SDRAM	80	17-inch CRT	64MB MSI G4MX420-T	Minitower	Outstanding: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.92 modem, network adapter, Microsoft Works 6, Pinnacle Studio 7	Fair	Good	Fair/Poor
	1.8-GHz Athlon XP 2200+	512/DDR266 SDRAM	80	15-inch LCD	128MB ATI Radeon 9000 Pro	Midsize tower	Good: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter	Good	Good	1/4
	2.13-GHz Athlon XP 2600+	512/DDR400 SDRAM	82	15-inch LCD	64MB Leadtek WinFast A250	Midsize tower	Good: 16X DVD-ROM drive, 40X/12X/48X CD-RW drive, V.92 modem, network adapter	Very good	Good	1/4
	1.67-GHz Athlon XP 2000+	256/DDR333 SDRAM	60	19-inch CRT	64MB Leadtek WinFast A170 DDR T	Midsize tower	Good: 40X/12X/48X CD-RW drive, V.92 modem, network adapter, Corel Word-Perfect Office 2002	Fair	Good	1/4
	10 percent						10 percent	10 percent	5 percent	25 percent

³ Vertical cases are towers (over 20 inches), midsized 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).

⁴ Insufficient data to give a rating.

value list. And with great-sounding Altec Lansing 220W speakers and a 15-inch LCD screen, the FreewayTech Innovation A4800M bounds into sixth place.

Both the MicroFlex 27A and the Polywell Poly 880NF2-2700, premiering on the power side in second and fifth place,

respectively, come loaded with AMD's quick 2.17-GHz Athlon XP 2700+ processor, which helped them achieve high PC WorldBench 4 scores. We were surprised to see the 27A lag slightly behind its 24A value cousin, but that result was probably due to the 27A's running Windows XP ▶



EMACHINES' NEW T2200 SE pairs fast graphics with a reasonable price.

TOP 5 ENTERTAINMENT PCs

	SYSTEM	Overall rating	Street price (12/15/02)	PC WorldBench 4 performance score ¹	Faster	Comments
1	Best BUY Gateway Media Center PC 500 find.pcworld.com/32990 NEW	87	Very inexpensive \$1709	Windows XP Media Center Fair 113		Gateway's system is slow, but its raft of video editing features makes it well suited for multimedia. (★★★★☆)
2	Falcon Northwest Mach V 2800+ DV find.pcworld.com/32987 NEW	87	Very expensive \$5425	Windows XP Home Outstanding 132		Two RAID-connected 180GB hard drives round out this loaded (and very expensive) system. (★★★★☆)
3	HP Media Center 883n PC find.pcworld.com/32984 NEW	85	Inexpensive \$2598	Windows XP Media Center Good 121		System is speedy, but suffers lackluster gaming performance due in part to an underpowered graphics card. (★★★★☆)
4	Alienware Area-51 find.pcworld.com/30956	83	Average \$3659	Windows XP Home Good 119		Alienware's flashy PC sped through our gaming tests and earned high marks for audio quality. (★★★★☆ Nov 02)
5	Voodoo Computers Egad Obsidian Black find.pcworld.com/30776	76	Very expensive \$5997	Windows XP Home Good 119		This system has a custom paint job and interior lighting—it's also the priciest PC we've tested in years. (★★★★☆ Nov 02)
Percent of overall rating ▶			10 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 Total capacity in gigabytes (may represent multiple drives).

Professional, which tends to earn lower scores on our benchmark tests than XP Home. (Micro Express assures us that neither of its PCs submitted this month was overclocked.) Finally, the roomy yet bulky 19-inch LCD makes the 27A a fine deal.

Polywell's 880NF2-2700 hit high frame rates in our gaming tests, earning one of the best overall gaming scores we saw this month. To cut down on the number of cords that would otherwise snake around your desk, this PC includes a wireless key-

board and mouse. Dolby Digital 5.1 speakers usually appeal to music listeners, but this system's set produced some hissing during our trials. One oddity: Our review unit's frontside bus was overclocked to a speed of 169 MHz, instead of being set at

TECH TREND

State of the Art: Then and Now

GIVEN THE PERFORMANCE and features of all levels of today's PCs, it's easy to be blasé about hot new computer specs—until you compare them with those of powerhouses we tested in earlier years. This month's *Tech Trend* cranks the clock back to show what we've gained over the past two decades. In 1983, businesses bought computers mainly for spreadsheets and word processing. In 1993, going online was beginning to attract consumers' attention, and software was starting to ship on CD-ROMs. In 2003, even the cheapest new PC can handle basic tasks like spreadsheets and Internet browsing. As computing evolves, you will always need more horsepower to run new applications, such as 3D gaming, video editing, or the latest operating system. Systems will surely evolve to meet those needs.

FEATURE	1983 IBM Personal Computer XT	1993 Gateway 2000 4DX2-66V	2003 Dell Dimension 8250
Processor	Intel 4.77-MHz 8088	Intel 66-MHz 486DX2	Intel 3.06-GHz Pentium 4
RAM	128KB	8MB	512MB
Hard drive space	10MB	202MB	200GB
Removable storage	360KB, 5.25-inch floppy	1.44MB 3.5-inch and 1.2MB 5.25-inch floppy drives	Rewritable DVD drive
Monitor	11.5-inch monochrome green phosphor	15-inch SVGA	18-inch LCD
Modem	optional 1.2-kbps (\$699)	optional 14.4-kbps (\$195)	56-kbps (V.92)
Price	\$4995	\$2875	\$3158
Operating system	DOS 2.0	Windows 3.1 over DOS	Windows XP Home
Best feature	Internal hard drive	CD-ROM drive	Rewritable DVD drive
Killer app	Lotus 1-2-3	AOL	3D gaming

Visit find.pcworld.com/33029 for reviews of all products tested this month and ranked in this chart.

BASE CONFIGURATION						Extra features ⁴	Graphics/ sound quality	Setup and ease of use	Vendor's reliability/ service
CPU	RAM (MB/ type)	Hard drive (GB) ¹	Monitor	Graphics	Case type ³				
2.4-GHz Pentium 4	256/ DDR333 SDRAM	120	17-inch LCD	128MB GeForce4 MX 440G	Midsize tower	Outstanding: DVD-RW/-R/+RW/+R drive, V.92 modem, memory card reader, remote control, Pinnacle Studio 8, The Sims game	Limited/ Good	Fair	Fair/Fair
2.25-GHz Athlon XP 2800+	1024/ DDR333 SDRAM	360	21-inch CRT	128MB ATI Radeon 9700 Pro	Tower	Outstanding: DVD-RW/-R/+RW/+R drive, 48X/24X/48X CD-RW drive, 16X DVD-ROM drive, Adobe Premiere 6.5, Ulead VideoStudio 6	Outstanding/ Outstanding	Very good	*/ ⁵
2.67-GHz Pentium 4	512/ DDR266 SDRAM	120	17-inch LCD	64MB Asus Y8170 Magic	Minitower	Outstanding: DVD+RW/-R drive, 32X/12X/48X CD-RW drive, V.92 modem, remote control, memory card reader, WordPerfect 2002	Limited/ Good	Fair	Fair/Poor
2.8-GHz Pentium 4	1024/ PC1066 RDRAM	120	19-inch CRT	128MB ATI Radeon 9700 Pro	Tower	Good: DVD-RW/-R drive, 16X DVD-ROM drive, V.90 modem, Pinnacle Studio 7, ArcSoft ShowBiz, Dronex	Outstanding/ Outstanding	Outstanding	*/ ⁵
2.8-GHz Pentium 4	1024/ PC1066 RDRAM	160	22-inch CRT	128MB ATI Radeon 9700	Tower	Fair: 12X DVD-ROM/20X10X40X CD-RW drive, wireless mouse and keyboard, memory card reader, Deus Ex, Giants: Citizen Kabuto games	Outstanding/ Outstanding	Very good	*/ ⁵
10 percent						10 percent	20 percent	5 percent	25 percent

¹ Vertical cases are towers (over 20 inches), midsized 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).

⁴ All PCs include a network adapter unless otherwise noted.

⁵ Insufficient data to give a rating.

TOP 5 CORPORATE PCs

find.pcworld.com/32114

1 **Best Buy** Compaq Evo D510
Convertible Minitor
find.pcworld.com/32009

2 Dell OptiPlex GX260
find.pcworld.com/30191

3 Gateway E-6000
find.pcworld.com/32012

4 IBM NetVista M42
find.pcworld.com/32015

5 MicronPC ClientPro 325
find.pcworld.com/32018

From the January 2003 Issue

the usual 166 MHz. Polywell representatives state that the company ships the system to customers this way and offers a full warranty on this configuration.

LET THESE PCs ENTERTAIN YOU

TWO PCs LOADED with Microsoft's Windows XP Media Center debut on our *Top 5 Entertainment PCs* chart. Designed more for the living room than for the office, these machines include several component hookups, along with a remote control, VCR-like television recording capabilities, and video editing software.

One of the new models, Gateway's Media Center PC 500 Series, tops the chart. By far the least-expensive model of the five, it's equipped with a rewritable DVD drive and plenty of hard-drive space

to record your favorite shows. Its gaming capabilities pale in comparison with those of the non-Media Center systems on the chart, however, so its best use is as an entertainment system rather than as a gaming powerhouse.

HP's Media Center 883n PC joins the ranks in third place. It too offers a rewritable DVD drive, a 120GB hard drive, and personal video recording capabilities. Its rather pedestrian 64MB GeForce4 MX 420-based graphics card contributed to relatively slow frame rates in our gaming tests. On the other hand, its bright 17-inch LCD monitor and set of Klipsch THX ProMedia 5.1 surround-sound speakers round out the system's package very well.

Even though Microsoft's Windows XP Media Center Edition makes recording video easier, you don't need to buy a computer loaded with that OS to get those nifty options. In fact, all you need is a graphics card that includes an antenna input and a TV tuner, video recording software such as SnapStream (see *New Products*, page 70), and a roomy hard drive for storing TV shows on. Of course, if you want to watch shows on your TV rather than on your monitor, the Gateway and HP models both include S-Video-out ports, too. If your system lacks a graphics card with TV-tuner functionality, a separate TV-tuner card costs as little as \$30. (You don't get a remote, though.)

Falcon's pricey but loaded Mach V

2800+ DV slides into the second spot, just a hair behind the number one Gateway model. With 360GB of storage space (split between two hard drives), a high-end video editing software bundle, a fast AMD Athlon XP 2800+ processor, and a top-notch ATI Radeon 9700 Pro graphics card, Falcon's Mach V is a dream machine for gamers and video aficionados alike. Producing five times the average frame rate on our tests than the two Media Center machines did, this Falcon is much better suited for gaming. Even for most gamers, though, the \$5425 price is a budget buster; still, the PC includes plenty of the high-end stuff that you would expect to find on such a costly system, and you can knock a substantial chunk off the price with a judicious selection of options. ►

TOP 5 PCs UNDER \$900

find.pcworld.com/32648

1 **Best Buy** ABS Sensation 1300
find.pcworld.com/32651

2 Compaq Evo D310 Microtower
find.pcworld.com/32654

3 FreewayTech Innovation A7000
find.pcworld.com/32657

4 Gateway 300X
find.pcworld.com/32660

5 Dell Dimension 2350
find.pcworld.com/32663

From the February 2003 Issue

TOP 15 NOTEBOOK PCs

POWER NOTEBOOK			Overall rating	Street price (12/13/02)	PC WorldBench 4 performance score ¹	Faster	Comments
1	Best Buy Toshiba Satellite 5205-S703 find.pcworld.com/32819	NEW	86	Expensive \$2699	Windows XP Home	Very good 104	Good-looking, great-sounding, beefy laptop delivers top-notch speed and lets you record DVDs. (★★★★☆)
2	IBM ThinkPad T30 find.pcworld.com/29898		86	Average \$2499	Windows XP Professional	Good 95	Two-spindle machine has dual pointing devices and integrates Bluetooth and Wi-Fi (802.11b) networking. (★★★★☆ Sept 02)
3	Gateway 600XL find.pcworld.com/31847		85	Average \$2419	Windows XP Home	Very good 103	Huge desktop replacement features a jumbo screen and keyboard. It can hold two optical drives, three batteries, or three hard drives. (★★★★☆ Jan 03)
4	Dell Inspiron 8200 find.pcworld.com/31832		85	Inexpensive \$2155	Windows XP Home	Good 95	Desktop replacement has a FireWire (IEEE 1394) port and a high-resolution screen; could have better audio-shortcut button design. (★★★★☆ Jan 03)
5	Compaq Evo N610c find.pcworld.com/32228		84	Inexpensive \$2149	Windows XP Professional	Very good 101	Funky silver Wi-Fi (802.11b) module and dual pointing devices enhance this square black laptop. (★★★★☆ Feb 03)
6	MicronPC TransPort T1000 find.pcworld.com/32822	NEW	84	Average \$2354	Windows XP Professional	Good 99	A silver case and light-blue keyboard make this a flashy-looking machine; it's relatively light and includes a fingerprint reader. (★★★★☆)
7	Dell Latitude C640 find.pcworld.com/32825	NEW	83	Average \$2206	Windows XP Professional	Good 98	Basic, black business notebook boasts dual-pointing flexibility, but it's not a multimedia star. (★★★☆☆)
Percent of overall rating ▶			15 percent	20 percent			
VALUE NOTEBOOK			Overall rating	Street price (12/13/02)	PC WorldBench 4 performance score ¹	Faster	Comments
1	Best Buy Gateway 450S find.pcworld.com/32231		80	Average \$1419	Windows XP Home	Good 95	One-bay laptop offers a great, easy-to-use keyboard and a combination drive. (★★★★☆ Feb 03)
2	Dell Inspiron 4150 find.pcworld.com/31142		80	Average \$1602	Windows XP Home	Very good 98	For an extra \$20, this average performer ships with a tiny 16MB USB flash-media device, in lieu of a floppy drive. (★★★★☆ Dec 02)
3	Toshiba Satellite 1415-S173 find.pcworld.com/32828	NEW	79	Average \$1399	Windows XP Home	Very good 98	Thickset but not excessively heavy, this well-equipped Wi-Fi-ready laptop is great for buyers on a tight budget. (★★★★☆)
4	IBM ThinkPad R32 find.pcworld.com/31145		79	Average \$1699	Windows XP Professional	Good 94	Lightweight model has a modular bay, as well as a spacious screen and a comfortable keyboard. (★★★★☆ Dec 02)
5	Compaq Evo N1015v find.pcworld.com/32834	NEW	78	Inexpensive \$899	Windows XP Home	Good 90	This relatively thin and light notebook has a big screen for its size. A stylish Wi-Fi (802.11b) module sits on the lid. (★★★★☆)
6	IBM ThinkPad A31 find.pcworld.com/32831	NEW	78	Expensive \$1974	Windows XP Professional	Very good 97	Desktop replacement has a well-laid-out keyboard, dual modular bays, and a proprietary USB UltraPort for attaching IBM devices. (★★★★☆)
7	Micro Express NP1020A find.pcworld.com/31841		77	Average \$1499	Windows XP Professional	Very good 103	A cool bluish-silver lid, dedicated audio controls, and a SmartMedia slot highlight this one-bay unit. (★★★★☆ Jan 03)
8	Amax Elite 6400W find.pcworld.com/30800		75	Expensive \$1959	Windows XP Professional	Very good 101	Sleek, one-bay notebook comes with a SmartMedia slot and an optical drive conveniently located on the front. (★★★★☆ Nov 02)
Percent of overall rating ▶			20 percent	15 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 Except where noted, all Intel CPUs are SpeedStep chips, which run at a slower speed on battery power.
³ In gigabytes.

AT LONG LAST, NOTEBOOKS are arriving armed with DVD burners, and the first such model to land on our chart is the new power Best Buy, the Toshiba Satellite 5205-S703. Not only is the 5205-S703 one of the best multimedia notebooks we've seen in a while—for instance, its FireWire port lets you download video to create your own

DVD movies—but it's faster and better-equipped than the former, longtime Best Buy, the IBM ThinkPad T30.

In sixth place on the power list, the MicronPC TransPort T1000 has a good head for business and a great design.

In seventh place sits Dell's Latitude

Visit find.pcworld.com/32837 for reviews of all products tested this month and ranked in this chart.

BASE CONFIGURATION							Extra features ⁴	Overall design	Battery life (hours:min) ⁵	Average weight (pounds) ⁶	Vendor's reliability/ service
CPU ²	Screen (inches)	RAM (MB)	Hard drive ³	Pointing device	Multi-purpose bays						
2-GHz Pentium 4-M	15	512	60	Touchpad	1	Very good: DVD-RW/-R drive, built-in modem and network adapter, Secure Digital slot	Outstanding	Good/ 3:05	Heavy/ 8.9	Good/Fair	
1.8-GHz Pentium 4-M	14.1	256	40	Touchpad, eraserhead	1	Good: 8X DVD-ROM and 8X/8X/24X CD-RW combo drive, built-in modem and network adapter, Lotus SmartSuite Millennium	Outstanding	Fair/ 2:30	Light/ 6.7	Good/Good	
2.2-GHz Pentium 4-M	15.7	512	60	Touchpad	2	Good: 8X DVD-ROM and 24X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002	Outstanding	Good/ 3:02	Very heavy/ 9.9	Good/Fair	
2-GHz Pentium 4-M	15	256	40	Touchpad, eraserhead	1	Good: 8X DVD-ROM and 24X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002	Outstanding	Fair/ 2:23	Heavy/ 9.3	Fair/Fair	
2-GHz Pentium 4-M	14.1	256	40	Touchpad	1	Fair: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter	Very good	Fair/ 2:04	Light/ 6.6	Fair/Poor	
2-GHz Pentium 4-M	14.1	256	40	Touchpad	1	Outstanding: 8X DVD-ROM and 20X/10X/24X CD-RW combo drive, built-in modem and network adapter, Office XP SBE	Very good	Fair/ 2:50	Average/ 7.1	'/'	
2-GHz Pentium 4-M	14.1	256	40	Touchpad, eraserhead	1	Good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter	Fair	Good/ 3:00	Average/ 7.9	Fair/Fair	
5 percent							10 percent	10 percent	5 percent	10 percent	25 percent

BASE CONFIGURATION							Extra features ⁴	Overall design	Battery life (hours:min) ⁵	Average weight (pounds) ⁶	Vendor's reliability/ service
CPU ²	Screen (inches)	RAM (MB)	Hard drive ³	Pointing device	Multi-purpose bays						
1.7-GHz Pentium 4-M	14.1	256	30	Touchpad	1	Very good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002	Very good	Fair/ 2:57	Average/ 7.4	Good/Fair	
1.8-GHz Pentium 4-M	14.1	256	30	Touchpad, eraserhead	1	Very good: 8X DVD-ROM and 20X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002	Outstanding	Fair/ 2:57	Average/ 7.2	Fair/Fair	
1.8-GHz Mobile Celeron [*]	15	256	30	Touchpad	0	Very good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002	Fair	Fair/ 2:15	Heavy/ 8.5	Good/Fair	
1.8-GHz Pentium 4-M	14.1	256	30	Eraserhead	1	Good: 8X DVD-ROM drive, built-in modem and network adapter, Lotus SmartSuite Millennium	Outstanding	Fair/ 2:58	Light/ 6.7	Good/Good	
1.2-GHz Athlon 4 XP 1400+	13.3	128	20	Touchpad	0	Limited: 16X-24X CD-ROM drive, built-in modem and network adapter	Fair	Very good/ 3:51	Average/ 8.0	Fair/Poor	
1.9-GHz Pentium 4-M	15	256	30	Eraserhead	2	Good: 8X DVD-ROM drive, built-in modem and network adapter, Lotus SmartSuite Millennium	Outstanding	Fair/ 2:15	Average/ 8.0	Good/Good	
2-GHz Pentium 4-M	14	512	40	Touchpad	1	Very good: 8X DVD-ROM and 8X/8X/24X CD-RW combo drive, built-in modem and network adapter	Fair	Fair/ 2:29	Average/ 7.7	'/'	
2-GHz Pentium 4-M	14.1	256	30	Touchpad	1	Fair: 8X DVD-ROM drive, built-in modem and network adapter, Microsoft Works 2002	Very good	Fair/ 2:25	Average/ 7.3	'/'	
5 percent							10 percent	10 percent	5 percent	10 percent	25 percent

* Word score reflects both listed and unlisted features.

† Unless otherwise noted, all notebooks come with a lithium ion battery.

* Includes computer, AC adapter, power cord, floppy drive, and optical drive.

‡ Insufficient data to give a rating.

* Single-speed CPU.

C640, updated with a 2-GHz Pentium 4-M chip. Dell hasn't changed this reliable business line much in nearly five years.

On the value side, Gateway's capable 450S edges the Dell Inspiron 4150 out of the top spot. Close behind them is the third-place Toshiba Satellite 1415-S173, a

Celeron-equipped system with standout features for a \$1399 notebook. In fifth place, Compaq's Evo N1015v offers a 13.3-inch screen and almost 4 hours of battery life for \$899. The A31, a basic notebook in IBM's ThinkPad A Series of desktop replacements, snags sixth place. ►

MICRONPC Trans-Port T1000 has a fingerprint reader.



TOP 10 PRINTERS

Visit find.pcworld.com/33032 for reviews of all products tested this month and ranked in this chart.

CANON RULES THE CHART with the top four models. The \$79 I320 and \$149 I550 Color Bubble Jet Printers retain their leading positions from our January roundup's chart of general-purpose units, while the second-ranked photo printer from that review, the \$190 Canon I850 Photo Printer, proves

versatile enough to snag third place here. In fourth, the new, \$100 Canon S330 generates very good photo prints. Also debuting are two Color Jetprinters from Lexmark. The \$85 Z45se prints crisp text and attractive photos on glossy paper; the \$70 Z35 produces acceptable photos but blotchy text. ►

	INK JET PRINTER	Street price (12/13/02)	Overall rating	Speed for text/graphics (ppm) ¹	Print quality for text/graphics	Cost/page yield for color inks ²	Comments
1	Best Buy Canon I320 Color Bubble Jet Printer find.pcworld.com/32105	\$79	94	4.7/0.7	Good/Good	\$19/170	FEATURES: Rated 10 ppm monochrome/6 ppm color. 2400-by-1200-dpi maximum resolution, 150 sheets input and output; black cartridge and one tricolor cartridge. SUMMARY: Inexpensive model prints clean and clear text, plus fairly accurate skin tones, but slightly washed-out photos. (★★★★☆ Jan 03)
2	Best Buy Canon I550 Color Bubble Jet Printer find.pcworld.com/32108	\$149	93	7.3/1.3	Good/Good	\$36/490	FEATURES: Rated 18 ppm monochrome/11 ppm color. 2400-by-1200-dpi maximum resolution, 150 sheets input and output; black cartridge and three color cartridges. SUMMARY: An excellent, all-purpose performer with good printing times. Colors in photos looked accurate but slightly washed out. (★★★★☆ Jan 03)
3	Canon I850 Photo Printer find.pcworld.com/32096	\$190	92	7.7/2.2	Very good/Good	\$36/463	FEATURES: Rated 22 ppm monochrome/14 ppm color. 4800-by-1200-dpi maximum resolution, 150 sheets input and output; black cartridge and three color cartridges. SUMMARY: Fastest printer here is a good choice for budget-minded photographers, but photo prints could have been more vivid. (★★★★☆ Jan 03)
4	Canon S330 Color Bubble Jet Printer find.pcworld.com/32876 NEW	\$100	91	5.9/0.9	Good/Good	\$19/170	FEATURES: Rated 14 ppm monochrome/10 ppm color. 2400-by-1200-dpi maximum resolution, 100 sheets input and output; black cartridge and one tricolor cartridge. SUMMARY: This low-priced, all-purpose printer handles most basic jobs well and produces good-looking photo prints. Setup was a snap. (★★★★☆)
5	HP Deskjet 3820 find.pcworld.com/30821	\$99	86	4.1/1.1	Very good/Good	\$35/450	FEATURES: Rated 6 ppm monochrome/4.5 ppm color. 1200-by-1200-dpi maximum resolution, 100 sheets input, 50 output; black cartridge and one tricolor cartridge. SUMMARY: Text was clear but could have been denser. Photos looked especially bright and sharp, though one image had a blue cast. (★★★★☆ Jan 03)
6	HP Deskjet 5550 find.pcworld.com/30818	\$150	85	4.8/1	Good/Good	\$35/400	FEATURES: Rated 6 ppm monochrome/4 ppm color. 4800-by-1200-dpi maximum resolution, 100 sheets input, 50 output; black cartridge and one tricolor cartridge. SUMMARY: Prints beautiful photos and has advanced features to sense paper type and to automatically calibrate the device. Text printing was rather slow. (★★★★☆ Jan 03)
7	Epson Stylus C62 find.pcworld.com/30827	\$99	83	6.2/1.6	Fair/Fair	\$28/300	FEATURES: Rated 14 ppm monochrome/10 ppm color. 5670-by-720-dpi maximum resolution, 100 sheets input, 30 output; black cartridge and one tricolor cartridge. SUMMARY: Details in photos were impressive with excellent transitions. Skin tones appeared slightly too pink. (★★★★☆ Jan 03)
8	HP Photosmart 7550 find.pcworld.com/32102	\$299	81	4.2/0.8	Good/Very good	\$70/ ³	FEATURES: Rated 17 ppm monochrome/13 ppm color. 4800-by-1200-dpi maximum resolution, 100 sheets input, 50 output; black cartridge and two color cartridges. SUMMARY: Details in our test photo were very sharp. Long-lived inks should be able to last up to 70 years under glass without fading. (★★★★☆ Jan 03)
9	Lexmark Z45se Color Jetprinter find.pcworld.com/32870 NEW	\$85	81	5/0.6	Good/Fair	\$38/450	FEATURES: Rated 15 ppm monochrome/9 ppm color. 4800-by-1200-dpi maximum resolution, 100 sheets input, 50 output; black cartridge and one tricolor cartridge. SUMMARY: Though it faltered a bit on gray-scale images and color graphics, this basic model printed text well and at a fairly good clip. (★★★★☆)
10	Lexmark Z35 Color Jetprinter find.pcworld.com/32867 NEW	\$70	77	4.1/0.5	Good/Fair	\$32/275	FEATURES: Rated 11 ppm monochrome/6 ppm color. 2400-by-1200-dpi maximum resolution, 100 sheets input, 50 output; black cartridge and one tricolor cartridge. SUMMARY: This printer costs slightly less than the Z45se, but is slower and provides lower-quality text and gray-scale output. (★★★★☆)

HOW WE TEST: The overall rating we assign to each ink jet printer is based on price (25 percent), print quality (20 percent), features (15 percent), ease of use (15 percent), speed (10 percent), service and support (10 percent), and cost of consumables (5 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. ¹Text speed is the average time required to print a text document and spreadsheets in different quality modes; graphics speed is the average of the speeds for printing graphics from various applications, in color and in gray scale. ²Cost is for a full set of color inks, which may come in multiple cartridges; yield is the average of vendor-specified page yields for each color (excluding black). ³No data available.

TOP 10 MONITORS

TOP 100

TEST
Center

Visit find.pcworld.com/33410 for reviews of all products tested this month and ranked in this chart.

OF THE 12 NEW 15-INCH FLAT-PANEL displays we tested this month, NEC's MultiSync L1560M leads the pack. This Best Buy has sterling image quality, a hub with four USB 2.0 downstream ports, and pleasing sound from its built-in speakers. Our ergonomically correct second Best Buy, the

Compaq TFT 1520, offers adjustable height and can be pivoted to portrait orientation—the latter a plus for viewing business applications or Web pages. The AOC LM520, noteworthy for its bargain \$299 price, produced the best overall image quality among displays with analog-only video input. ▶

15-INCH LCD MONITOR			Street price (12/19/02)	Overall rating	Quality of text/graphics	Comments
1	Best Buy NEC MultiSync L1560M find.pcworld.com/33005	NEW	\$380	94	Outstanding/ Outstanding	FEATURES: 15-inch viewable area, 13.6 by 6.5 by 13.6 inches, 9.7 pounds, dual video inputs, three-year warranty, 24-hour daily toll-free tech support. SUMMARY: This stately, coal-black unit shines, thanks to a triple treat of desirable features: lovely screen colors, a four-port USB 2.0 hub, and unusually crisp sound from its built-in speakers. It swivels, too. (★★★★★)
2	Best Buy Compaq TFT 1520 find.pcworld.com/32921	NEW	\$399	92	Very good/ Very good	FEATURES: 15-inch viewable area, 13.9 by 8.2 by 15.6 inches, 10.3 pounds, dual video inputs, three-year warranty, 24-hour daily toll-free tech support. SUMMARY: This model's panel is height-adjustable and can pivot 90 degrees into portrait mode, a plus for viewing Web pages or legal documents. In our tests it was better at displaying graphics than text. (★★★★★)
3	IBM T560 find.pcworld.com/32939		\$459	88	Very good/ Good	FEATURES: 15-inch viewable area, 14.4 by 9.3 by 17.2 inches, 10.8 pounds, dual video inputs, three-year warranty, 24-hour daily toll-free tech support. SUMMARY: This stealth-black monitor renders sharp text on business documents and true-to-life colors in photos. The panel flexes easily; on-screen control buttons are hard to see and require hard pressing. Retested this month. (★★★★★)
4	Samsung SyncMaster 152T find.pcworld.com/32927		\$449	88	Good/ Very good	FEATURES: 15-inch viewable area, 14.1 by 7.2 by 14.1 inches, 6.6 pounds, dual video inputs, three-year warranty, 24-hour daily toll-free tech support. SUMMARY: The 152T produced impressive text and graphics. Its silver-toned panel can lift up and extend outward; the buttons for adjusting the on-screen controls are thin slivers, but making adjustments isn't difficult. Retested this month. (★★★★★)
5	Sony SDM-X52 find.pcworld.com/32933	NEW	\$449	87	Outstanding/ Very good	FEATURES: 15-inch viewable area, 15.4 by 7.8 by 14.1 inches, 10.6 pounds, dual video inputs, three-year warranty, 24-hour daily toll-free tech support. SUMMARY: This stylish flat panel displays colors with richness and depth, and it rendered fonts on business documents evenly in our tests. The built-in speakers, however, produced thin sound at all volume settings. (★★★★★)
6	Dell 1504FPD find.pcworld.com/32930		\$399	87	Very good/ Very good	FEATURES: 15-inch viewable area, 13.7 by 6.8 by 14.1 inches, 8.3 pounds, dual video inputs, three-year warranty, 24-hour daily toll-free tech support. SUMMARY: Typically bundled with a color-matched Dell desktop, this gray unit generates bright colors and sharp text; horizontal viewing angles are narrower than those of other monitors, and you get no height adjustment. Retested this month. (★★★★★)
7	AOC LM520 find.pcworld.com/32909	NEW	\$299	86	Good/ Very good	FEATURES: 15-inch viewable area, 14.0 by 6.5 by 14.2 inches, 7.3 pounds, analog video input, three-year warranty, 11-hour weekday toll-free tech support. SUMMARY: This bargain-priced, black-and-charcoal model displays colors better than it does text. On-screen adjustments are easy to make, thanks to a handy dial. The monitor comes with few extras, however, and the casing doesn't feel as solid as other units'. (★★★★★)
8	Envision EN-5200e find.pcworld.com/32936	NEW	\$299	86	Good/ Good	FEATURES: 15-inch viewable area, 14.0 by 5.9 by 14.1 inches, 6.6 pounds, analog video input, three-year warranty, 11-hour weekday, 8-hour Saturday toll-free tech support. SUMMARY: This low-priced monitor has analog-only inputs. Judges noted uneven brightness on white screens, and colors in photos had inconsistent quality—at times bland or oversaturated. (★★★★★)
9	CTX S530 find.pcworld.com/32924	NEW	\$319	85	Very good/ Good	FEATURES: 15-inch viewable area, 14.6 by 6.5 by 14.2 inches, 8.2 pounds, analog video input, three-year warranty, 24-hour daily toll-free tech support. SUMMARY: This ivory-toned LCD looks quite attractive, but it lacks the color-output performance of better displays. Individual controls for tweaking text and graphics screens are a plus, though on-screen controls require extra pokes. (★★★★★)
10	IBM T541 find.pcworld.com/32948	NEW	\$349	85	Good/ Good	FEATURES: 15-inch viewable area, 14.4 by 8 by 13.6 inches, 10.5 pounds, analog video input, three-year warranty, 24-hour daily toll-free tech support. SUMMARY: A pared-down (but still expensive) version of the T560, this model has an elegant, thin profile. Its image quality is marred by uneven focus on text documents and excessively dark colors on photos; the on-screen control buttons are hard to see. (★★★★★)

HOW WE TEST: Twelve judges rate a monitor's text and graphics quality. We evaluate each unit on how well it displays screens of typical letters, spreadsheets, Web pages, and scanned photos. Color and gray-scale screens are taken from the DisplayMate for Windows video utility. 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. * Width by depth by height; includes base. † Includes both digital (DVI) and analog inputs. The digital input must be used with a graphics card that has a digital output.

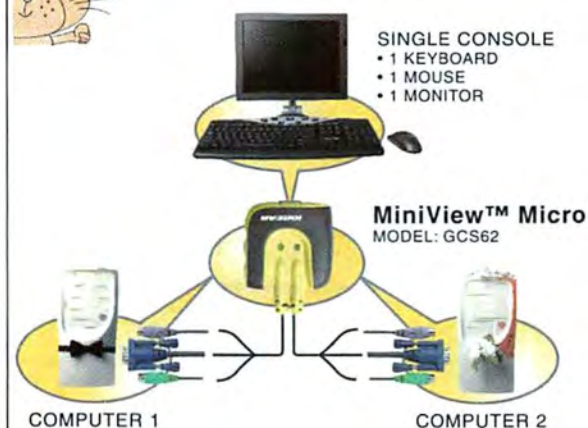


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TOP 10 CD-RW DRIVES

Visit find.pcworld.com/33419 for more information on all products ranked in this chart.

NEW 52X CD BURNERS ARE HERE, and four of the five we tested this month made our chart. In spite of past concerns in the industry about the integrity of CD media when spinning at the high rotational speeds 52X drives can achieve (read more at find.pcworld.com/33176), Asus, CenDyne, Lite-On,

and Memorex haven't been deterred from bringing out 52X units. But our tests show that these faster drives shave mere seconds off the performance of the best 48X-rated drives. CyberDrive USA's CW099D 52X CD-R/RW just missed our chart, due to its sluggish CD-ROM read performance. ▶

	CD-RW DRIVE	Street price (12/18/02)	Overall rating	Performance/support policies	CD-R write speed for 650MB/ CD-RW write speed for 100MB (min:sec)	Comments
1	Best BUY LG Electronics GCE-8480B find.pcworld.com/31754	\$60	87	Very good/ Good	2:48/0:56	FEATURES: 48X/16X/48X, IDE, internal, 2MB buffer, Roxio Easy CD Creator 5.3 and DirectCD 5.3, one-year warranty, 13-hour weekday and 9-hour Saturday toll-free support. SUMMARY: This is the least-expensive drive on the chart, and its performance is above average. Price drop helps move it to the top spot this month. (★★★★☆ Jan 03)
2	Best BUY TDK 48X VeloCD find.pcworld.com/31757	\$100	85	Very good/ Very good	2:32/0:56	FEATURES: 48X/24X/48X, IDE, internal, 2MB buffer, Mt. Rainier support, Ahead Nero Express 5.5 and InCD 3.3, one-year warranty, 10.5-hour daily toll-free support. SUMMARY: Speedy model includes a music-burning utility and comes with daily technical support. Ships with a simplified version of Nero Burning ROM. (★★★★☆ Jan 03)
3	Asus CRW-5224A find.pcworld.com/33137 NEW	\$75	85	Outstanding/ Fair	2:29/0:51	FEATURES: 52X/24X/52X, IDE, internal, 2MB buffer, Mt. Rainier support, Ahead Nero Express 5.5 and InCD 3.33, one-year warranty, 11.5-hour weekday support (not toll-free). SUMMARY: A low price and excellent performance—including the fastest digital audio extraction we've seen—help this model to debut high on the chart. (★★★★☆)
4	Lite-On LTR52246 find.pcworld.com/33149 NEW	\$70	81	Outstanding/ Fair	2:22/0:59	FEATURES: 52X/24X/52X, IDE, internal, 2MB buffer, Mt. Rainier support, Ahead Nero Burning ROM 5.5 and InCD 3.39, one-year warranty, 8-hour weekday toll-free support. SUMMARY: Performance is virtually identical to that of the CenDyne 52X drive; though this model is \$10 cheaper, you get fewer hours of tech support. (★★★★☆)
5	Yamaha CRW-F1 find.pcworld.com/31058	\$115	81	Very good/ Good	2:59/0:57	FEATURES: 44X/24X/44X, IDE, internal, 8MB buffer, Mt. Rainier support, Ahead Nero Burning ROM 5.5 and InCD 3.32, one-year warranty, 8.5-hour weekday and 7-hour Saturday toll-free support. SUMMARY: This model uses the drive's laser to etch a label on the underside of the disc, and includes backup software from Dantz. (★★★★☆ Nov 02)
6	CenDyne 52X CD-RW find.pcworld.com/33140 NEW	\$80	80	Outstanding/ Fair	2:22/0:59	FEATURES: 52X/24X/52X, IDE, internal, 2MB buffer, Mt. Rainier support, Ahead Nero Burning ROM 5.5 and InCD 3.39, one-year warranty, 12-hour weekday and 4-hour Saturday support (not toll-free). SUMMARY: Terrific on-the-fly CD-R write performance and consistently speedy CD-ROM read performance make this a good deal. (★★★★☆)
7	Plexor PlexWriter 48/24/48A find.pcworld.com/31061	\$110	79	Very good/ Fair	2:42/0:59	FEATURES: 48X/24X/48X, IDE, internal, 4MB buffer, Mt. Rainier support, Roxio Easy CD Creator 5.3 and DirectCD 5.3, Oak SimpliCD, one-year warranty, 11-hour weekday toll-free support. SUMMARY: Very good all-around performer, and Plexor is the only vendor to bundle two CD mastering applications. (★★★★☆ Nov 02)
8	Pacific Digital Mach 48 CD-RW find.pcworld.com/29906	\$85	79	Very good/ Fair	2:36/1:06	FEATURES: 48X/12X/48X, IDE, internal, 2MB buffer, Mt. Rainier support, Ahead Nero Burning ROM 5.5 and InCD 3.27, one-year warranty, 12-hour weekday toll-free support. SUMMARY: This model sped through our CD-R performance tests; however, it lags the fastest drive at installing applications by about 20 percent. (★★★★☆ Sept 02)
9	LG Electronics GCC-4320B find.pcworld.com/31763	\$85	79	Fair/ Good	3:46/1:29	FEATURES: 32X/10X/40X/16X, IDE, internal, 2MB buffer, Roxio Easy CD Creator 5.1 and DirectCD 5.1, one-year warranty, 13-hour weekday and 9-hour Saturday toll-free support. SUMMARY: Combination drive had average results for its rated CD read/write speeds. Only drive on the chart that can read DVD-ROM discs at up to 16X. (★★★★☆ Jan 03)
10	Memorex Internal CD-ReWritable 52X E-IDE Drive find.pcworld.com/33161 NEW	\$90	79	Outstanding/ Fair	2:22/0:52	FEATURES: 52X/24X/52X, IDE, internal, 2MB buffer, Mt. Rainier support, Ahead Nero Burning ROM 5.5 and InCD 3.39, one-year warranty, 9-hour weekday support (not toll-free). SUMMARY: This unit ties for the chart's top performance on our CD-R write test and is second in CD-RW speed, but it lagged on our application installation tests. (★★★★☆)

HOW WE TEST: To determine CD-R write performance, we burn data to CD-R discs from an image file and on the fly. 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. To gauge CD-ROM read performance, we time how long the drive takes to install Microsoft Office 2000 SBE (disc one); we also evaluate the drive's digital audio extraction speed by extracting 320MB of musical tracks from an audio CD to our hard drive. 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/DVD-ROM read (if applicable). ² Unless otherwise noted, all drives use buffer underrun protection.

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Enjoy DVDs

Navigator lets you watch DVDs from anywhere in the room, whether you're at your desk or on your living room couch. With advanced viewing features, you can sit back, relax, and enjoy a rich, full-screen experience in 5.1 surround sound.

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No matter what digital camera you have, Navigator will allow you to view digital photos one at a time or create an automated slide show. You can even personalize your photos by adding dates, titles, and background music.

Listen to Digital Music

Shuffle and play music from anywhere in the room. Play MP3s from the Internet, music CDs, or music from your hard drive. Quickly locate your favorite albums, artists, songs, or play lists with an easy-to-use search function.

Edit Digital Video

Import and edit digital video files to create your own movies. Keep them organized in a digital library for easy archive and retrieval.

Alienware® recommends Microsoft® Windows® XP.

NAVIGATOR PRO MEDIACENTER

Intel® Pentium® 4 Processor at 2.66GHz
533FSB and 512KB Advanced Transfer Cache
High-Performance Heatsink/Cooling System
Intel® 845GE Chipset Motherboard
512MB PC-2700 DDR SDRAM
120GB 7200RPM Ultra ATA100 Hard Drive
NVIDIA® GeForce4™ Ti 4200 64MB DDR
5.1 Surround Sound with Optical Digital Output
Pioneer® DVR-A05 DVD-R/RW Writer
Black Navigator Case with 200-Watt PS
Four USB 2.0 Ports and Three IEEE 1394 Ports
10/100 Integrated Ethernet Controller
Black Microsoft® Internet Keyboard
Black Microsoft® Intellimouse Explorer 3.0
Navigator Remote Control with Infrared Blaster
Navigator TV Tuner PCI Card
Navigator Universal Media Card Reader
Microsoft® Windows® XP Media Center Edition
1-Year Toll-Free 24/7 Technical Support
with Alienware On-Site Home Service
Personalized Owner's Manual
FREE Exclusive Alienware® T-Shirt
FREE Custom Alienware® Mouse Pad
Optimized & Configured for High-Performance

\$1,999.00

NAVIGATOR EXTREME MEDIACENTER

Intel® Pentium® 4 Processor at 3.06GHz
533FSB and 512KB Advanced Transfer Cache
High-Performance Heatsink/Cooling System
Intel® 845GE Chipset Motherboard
1024MB PC-2700 DDR SDRAM
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TOP 10 AUDIO PLAYERS

TOP 100

TEST
Center

Visit find.pcworld.com/33335 for reviews of all products tested this month and ranked in this chart.

REGARDLESS OF HOW YOU LIKE your music, our inaugural chart of digital audio players has something for you. Our Top 10 is divided into two groups: players that rely on flash media, and devices that use hard disks or CDs. Flash-media

players are small and relatively inexpensive, but provide limited storage space; hard-drive models offer terrific capacity (20GB worth of music is about 4000 songs), but command a high price. CD devices fall somewhere in between. ▶

FLASH-MEDIA PLAYER		Street price (12/29/02)	Overall rating	Features/ease of use	Comments
1	Best BUY iRiver IFP-190T find.pcworld.com/33320	\$199	86	Very good/ Very good	FEATURES: 256MB of internal memory, FM tuner, voice recorder, earpiece headphones, neck strap, USB cable, one AA battery, 1.1 ounces; plays MP3, WMA, and ASF files; iRiver Music Manager software. SUMMARY: The tiny IFP-190T's elongated shape and neck strap let you wear it as a pendant, and it can record from either the built-in radio or the mike. It produces great sound but does not have a media slot. (★★★★☆)
2	Sonicblue Rio S50 find.pcworld.com/33332	\$180	83	Very good/ Very good	FEATURES: 128MB of internal memory, MultiMediaCard/Secure Digital Card slot, FM tuner, earpiece headphones, USB cable, one AA battery, 1.9 ounces; plays MP3 and WMA files; Rio Music Manager and RealOne software. SUMMARY: The sturdy S50 isn't as small as other flash players, but it has the best LCD we've seen. It also has an extremely intuitive menu system, excellent sound, and a clock and stopwatch. (★★★★☆)
3	Panasonic SV-S050 E-wear SD Audio/MP3 Player find.pcworld.com/33326	\$150	82	Good/ Very good	FEATURES: 64MB Secure Digital Card, USB Secure Digital Card drive, earpiece headphones, neck strap, takes one AAA battery, 1.5 ounces; plays MP3, WMA, and AAC files; Panasonic Media Manager and RealOne software. SUMMARY: The smallest player on the chart, this device also has one of the tiniest and least-readable displays. It delivers great sound quality, however, and it includes an SD Card drive for transferring music files. (★★★★☆)
4	PoGo Products RipFlash DX find.pcworld.com/33329	\$219	80	Very good/ Very good	FEATURES: 128MB of internal memory, MultiMediaCard/Secure Digital Card slot, voice recorder, earpiece headphones with remote control, slipcase, USB cable, two AAA batteries, 1.9 ounces; plays MP3 and WMA files; RipFlash DX Manager and MoodLogic software. SUMMARY: The compact RipFlash DX is well designed. It includes a line-in jack and cable for on-the-fly WMA encoding. Bundled software for uploading music is easier to use than most. (★★★★☆)
5	CenDyne Grövstick MP3+3 find.pcworld.com/33323	\$179	79	Very good/ Very good	FEATURES: 128MB of internal memory, voice recorder, earpiece headphones, neck strap, integrated USB connection and extension cable, takes one AAA battery, 1.1 ounces; plays MP3 and WMA files; Digital Audio Manager software and USB driver. SUMMARY: This slim player looks and acts like a USB memory drive, but can not only play music but also record voice memos and store data. Includes FM transmitter. The two-line LCD is difficult to read, though. (★★★★☆)
CD/HARD-DRIVE PLAYER		Street price (12/29/02)	Overall rating	Features/ease of use	Comments
1	Best BUY TDK Mojo B60 CD-MP3 Digital Jukebox find.pcworld.com/33338	\$140	86	Very good/ Very good	FEATURES: Plays CD audio and 700MB CD-R/RW discs, 8-minute buffer, earpiece headphones, slipcase, two NiMH batteries, 5.3 ounces; plays MP3 and WMA files; Navitrack and MoodLogic software. SUMMARY: Sleek, blue metallic unit includes an in-line remote control with a clearly readable display; buttons on the side also control basic playback operations. Can configure on-the-fly playlists, and comes with an attachment for use with two AA batteries. (★★★★☆)
2	iRiver IMP-400 SlimX find.pcworld.com/33344	\$200	80	Very good/ Good	FEATURES: Plays CD audio and 700MB CD-R/RW discs, 8-minute buffer, FM tuner, wraparound headphones, slipcase, two NiMH batteries, 6.8 ounces; plays MP3, WMA, and ASF files. SUMMARY: Trim and metallic, this stylish model produces terrific sound. The in-line remote has an adequate four-line LCD, but it sorts tracks only by song names, not artist, album, or genre. Supports .M3U playlist files, and includes a car adapter and an external AA battery pack. (★★★★☆)
3	Sony MPD-AP20U find.pcworld.com/33341	\$275	80	Very good/ Good	FEATURES: Plays CD audio, 700MB CD-R/RW discs, and up to 128MB Memory Stick media, 8-minute buffer, records to CD-R/RW media, earpiece headphones, USB cable, two NiMH batteries, 12.5 ounces; plays MP3, WMA, and .wav files; B's Recorder Gold and Musicmatch Jukebox software. SUMMARY: Also functions as a 24X/10X/24X CD-RW burner and an 8X DVD-ROM reader. You need its elegant in-line remote to use it as a stand-alone music player. (★★★★☆)
4	Creative Nomad Jukebox Zen find.pcworld.com/32531	\$350	74	Very good/ Good	FEATURES: 20GB hard drive, wraparound headphones, custom-fit case, USB and FireWire connectors, built-in lithium ion battery, 9.5 ounces; plays MP3, WMA, and .wav files; Creative PlayCenter 3, AudioSync, and File Manager software. SUMMARY: Though a bit bulkier than Apple's iPod, the Zen matches the iPod in storage capacity and is priced \$150 less. Menu navigation is mostly intuitive, but it has some quirks. (★★★☆☆ Feb 03)
5	Apple iPod for Windows find.pcworld.com/33347	\$500	71	Good/ Good	FEATURES: 20GB hard drive, earpiece headphones, slipcase, FireWire connector, built-in lithium polymer battery, 7.2 ounces; plays MP3, AIFF, and .wav files; Musicmatch Jukebox software. SUMMARY: The lightest, most compact, and priciest high-capacity music player we've seen, the iPod has a bright LCD screen and a slick, touch-sensitive, menu-navigation interface. Has a small, wired remote control, but the remote lacks an LCD for viewing track information. (★★★★☆)

HOW WE TEST: Visit find.pcworld.com/33335 for our test methodology; see find.pcworld.com/10860 for details on PC World's Star Ratings. ¹ Supports USB 1.1 for data transfer. ² Battery not included. ³ Vendor-estimated skip-protection buffer, depending upon bit rate and size of music file. ⁴ Supports USB 2.0 for data transfer.

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TOP 10 DIGITAL CAMERAS

Visit find.pcworld.com/33392 for reviews of all products tested this month and ranked in this chart.

THE NEW OLYMPUS C-5050 Zoom tops our chart, thanks to crisp 5-megapixel images and advanced yet easy-to-navigate controls. Another newcomer, Canon's PowerShot G3, replaces the company's G2 model. The G3 has a longer optical zoom (4X) and a faster maximum shutter speed, but its reso-

lution remains at 4 megapixels, while several rival units now offer 5. One of these, the ninth-ranked Olympus C-50 Zoom, sells for a reasonable \$600. Another \$600, 5-megapixel model, Konica's Digital Revio KD-500Z, missed the chart—in part because of so-so images and limited battery life. ▶

	CAMERA: \$500 AND OVER	Street price (12/30/02)	Overall rating	Image quality	Ease of use	Battery life/ shots	Comments ¹
1	Best BUY Olympus C-5050 Zoom NEW find.pcworld.com/33212	\$800	86	Outstanding	Very good	Good/ 372	FEATURES: 5-megapixel resolution, 32MB XD-Picture Card media (also accepts SmartMedia and CompactFlash media), 35mm-105mm focal range; USB and video output; 17.3 ounces. SUMMARY: A serious shooter's camera, the C-5050 produces razor-sharp images and comes with powerful, intuitive controls. (★★★★★)
2	Best BUY Nikon Coolpix 4300 find.pcworld.com/32000	\$500	86	Outstanding	Fair	Good/ 277	FEATURES: 4-megapixel resolution, 16MB CompactFlash media, 38mm-114mm focal range; USB and video output; 10.1 ounces. SUMMARY: Lightweight camera takes wonderful shots and is easy to hold with one hand, but its multilayered menus make using its advanced features a tad difficult. (★★★★★ Jan 03)
3	Canon PowerShot G3 NEW find.pcworld.com/32516	\$800	83	Very good	Good	Very good/ 447	FEATURES: 4-megapixel resolution, 32MB CompactFlash media, 35mm-140mm focal range; USB and video output; 17.5 ounces. SUMMARY: Successor to the PowerShot G2, the G3 adds a 4X zoom lens and greater color depth, but no higher resolution. Some competitors' 5-megapixel models have better image quality. (★★★★★)
4	Fujifilm FinePix S602 Zoom find.pcworld.com/30470	\$700	82	Good	Very good	Very good/ 425	FEATURES: 3.1-megapixel resolution, 16MB SmartMedia card, 35mm-210mm focal range; USB and video output; 20.4 ounces. SUMMARY: The S602 has a hot-shoe flash sync and both SmartMedia and CompactFlash media slots, but it is very expensive for a 3-megapixel camera. (★★★★★ Nov 02)
5	Sony Cyber-shot DSC-F717 find.pcworld.com/31526	\$1000	81	Very good	Good	Very good/ 491	FEATURES: 5-megapixel resolution, 32MB Memory Stick media, 38mm-190mm focal range; USB and video output; 23.8 ounces. SUMMARY: Besides taking great shots, this model offers advanced features, including user-selectable zone autofocus and USB 2.0 support for faster downloads. (★★★★★ Jan 03)
6	Nikon Coolpix 4500 find.pcworld.com/30845	\$650	80	Good	Good	Good/ 300	FEATURES: 4-megapixel resolution, 16MB CompactFlash media, 38mm-155mm focal range; USB and video output; 13.6 ounces. SUMMARY: Price falls \$50 on a camera featuring 16 scene modes and the ability to add optional lens adapters. The lens rotates independently of the camera body for self-portraits. (★★★★★ Nov 02)
7	HP Photosmart 850 find.pcworld.com/31994	\$500	79	Very good	Good	Fair/ 185	FEATURES: 3.9-megapixel resolution, 16MB Secure Digital media, 37mm-300mm focal range; USB and video output; 17.8 ounces. SUMMARY: Big, clunky camera has a gorgeous LCD and an extralong (8X) zoom lens, but the zoom is noisy and inaccurate. Lacks rechargeable batteries and a charger. (★★★★★ Jan 03)
8	Casio QV-R4 find.pcworld.com/31997	\$500	76	Very good	Good	Good/ 372	FEATURES: 4-megapixel resolution, 11MB internal memory, Secure Digital media slot, 38mm-113mm focal range; USB output; 7.8 ounces. SUMMARY: Inexpensive for a 4-megapixel camera, the QV-R4 lets you set exposure by selecting from sample scenes that approximate the results of different settings. (★★★★★ Jan 03)
9	Olympus C-50 Zoom NEW find.pcworld.com/33209	\$600	75	Good	Fair	Good/ 260	FEATURES: 5-megapixel resolution, 32MB XD-Picture Card media, 38mm-114mm focal range; USB and video output; 8 ounces. SUMMARY: This medium-size model has manual exposure modes and high resolution, but its tiny buttons and awkward playback method make it unnecessarily hard to use. (★★★★★)
10	Nikon Coolpix 5700 find.pcworld.com/31118	\$1200	75	Very good	Fair	Good/ 336	FEATURES: 5-megapixel resolution, 16MB CompactFlash media, 35mm-280mm focal range; USB and video output; 19 ounces. SUMMARY: The complex, powerful Coolpix 5700 takes impressive pictures. Its long 8X zoom lens is useful for photographing sports events and wildlife. (★★★★★ Jan 03)

HOW WE TEST: Each camera's overall rating is based on price (15 percent), picture quality (30 percent), ease of use (15 percent), features (20 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 coloring such as skin tones. A panel of judges reviews the on-screen and printed photos and assigns image-quality scores; we then average those scores. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. 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, and camera weights include batteries.



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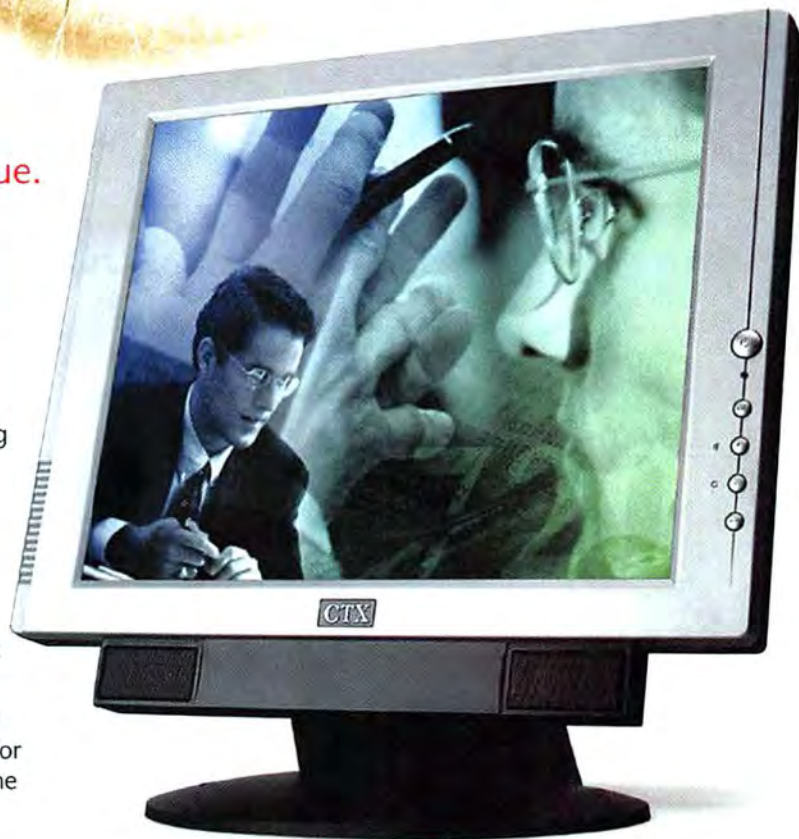
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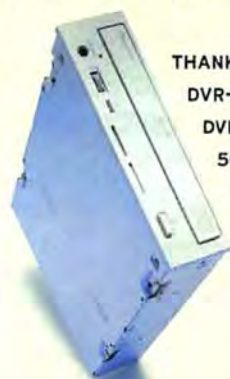
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MORE REVIEWS

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 *Top 10* charts, go online and type in the *PC World* Find-It URL

at the top of each chart (for example, go to find.pcworld.com/32417 for products on the *Top 10 Monochrome Laser Printers* chart). Next month we'll look at rewritable DVD drives, 17-inch CRT monitors, and digital cameras under \$500. ■



THANKS TO 4X-RATED media, Pioneer's DVR-A05 posted the fastest times of any DVD-RW drive in our tests. Sony's DRU-500A is still in first place, in part because it writes to multiple formats.

PALM'S TUNGSTEN T has a unique sliding case that, when open, exposes its Graffiti input area; closing it makes the unit compact.



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	4 Minolta-QMS PagePro 1250E find.pcworld.com/30102	4 Memorex DVD+RW+R Internal ReWriteable Drive find.pcworld.com/31421	4 Sony Clie PEG-NX70V find.pcworld.com/32474	4 Olympus D-550 Zoom find.pcworld.com/30839
	5 HP Laserjet 1200 find.pcworld.com/17405	5 Philips DVDRW 228 find.pcworld.com/31418	5 HP IPaq Pocket PC H5450 find.pcworld.com/32477	5 HP Photosmart 720 find.pcworld.com/30494
CORPORATE LASER	1 Best Buy Xerox Phaser 4400/N find.pcworld.com/32405	6 Alera DVD+R Cruiser DVDRW6002 find.pcworld.com/32579	1 Best Buy Palm Zire find.pcworld.com/32507	6 Konica Digital Revio KD-400Z find.pcworld.com/32435
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	3 IBM Infoprint 1120n find.pcworld.com/32408	8 LaCie D2 DVD-RW U&I find.pcworld.com/31433	3 HandEra 330 find.pcworld.com/21564	8 Olympus C-720 Ultra Zoom find.pcworld.com/30899
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	From the February 2003 Issue	From the February 2003 Issue	From the February 2003 Issue	From the February 2003 Issue



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



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

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HERE'S HOW

EDITED BY MICHAEL S. LASKY, DENNIS O'REILLY, AND ERIC DAHL



WINDOWS TIPS

SCOTT DUNN

XP Error Messages: You Decide What to Report

Windows XP SO THERE YOU ARE, minding your business, using your computer just the way you're supposed to, when bam! Up pops an announcement that some application or Windows component has 'encountered a problem and needs to close'. Note the wording: Apparently, the glitch came out of nowhere, and the application just happened to encounter it. By the way, the message states, the information you were just working on might be lost.

At least in Windows XP you can tell Microsoft about the problem. When you see the error announcement, click *Send Error Report* to transmit information to Microsoft that may or may not help avert the problem in future versions of the OS or in a Windows update.

If you want to know what you're sending to Microsoft, click the link provided in the error message. Unfortunately, digging through all the information to figure out just what the report contains is no

small chore. The report will include some of the information that was in your system's memory at the time of the crash—oops, I mean the *problem*. Assume that it includes a list of applications that were running at the time of the crash. Moreover, if you were working in a document, some or all of that file's information may be reported, too. The message could even contain some of your passwords.

Microsoft officials say that they use the information for quality control, not for marketing purposes or for monitoring individual users or machines. They claim to discard information that doesn't help them solve the problem, and even data that is helpful gets deleted once the issue is unraveled. Still, if you've just had a crash, you probably want to get back to work as soon as possible. The quick solution, of course, is to click *Don't Send*. But there may be times when you want to tell Microsoft a little bit about a system crash. Fortunately, Windows XP provides a way to customize error reporting to ensure that you send only the information you want to share—or none at all.

Right-click *My Computer* and choose *Properties*. (If you don't have a *My Computer* icon on your desktop, start Windows Explorer and right-click *My Computer* in the left pane.) Click the *Advanced* tab in the System Properties dialog box, then choose the *Error Reporting* button on the lower right. Here are your options:

Windows only: If you don't mind informing Microsoft every time Windows blows a gasket, but you want to stay mum about the applications you use, uncheck *Programs* under 'Enable error reporting' but leave *Windows operating system* checked (see **FIGURE 1**). Click OK twice.

Selected Microsoft programs: To send error

140 WINDOWS TIPS

Add sound and visual effects to your error messages; diagnose memory woes; a better way to tweak Windows.

144 INTERNET TIPS

The 411 on 404 errors; alternative paths to good URLs that won't open; unplug IE 6's script debugging.

146 STEP-BY-STEP

Internet Connection Sharing makes it fast, simple, and safe to put several Windows PCs on a single network link.

148 HARDWARE TIPS

A second monitor gives you the screen space you need to view multiple open apps at once; six-to-four-pin FireWire.

150 ANSWER LINE

Start Windows in Safe mode to boot an unbootable PC; nonsensical Windows error messages; add Excel data to a Word file; print later by saving as .prn; transfer Word AutoCorrect settings.



FIGURE 1: REPORT ONLY WINDOWS' own crashes to Microsoft via these options.

reports to Microsoft when applications crash, make sure *Programs* is checked and then click *Choose Programs*. By default, *All programs* is selected in the *Choose Programs* dialog box, but you can be a bit more restrictive by clicking *All programs in this list*. To report crashes of Microsoft applications only (such as Word and Excel), leave *Programs from Microsoft* checked. To alert the company to problems with individual Windows components (such as Paint and WordPad), make sure *Windows components* is checked.

Your choice of apps: To add to your list of reporting programs, click *Add* in the *Choose Programs* dialog box and type the name of each application's executable file (the one with the .exe extension). If you don't know the name, click *Browse*, find and select the program, click *Open*, and then *OK*. You can add non-Microsoft programs to the tattle list, or report on only specific Microsoft applications or Windows components. After you add the programs to your list, uncheck *Programs from Microsoft* and/or *Windows components*,

then click *OK* as many times as needed.

Your choice of exceptions: It's easy to create a list of applications about which you do not want error reports sent. In the

Choose Programs dialog box, select either *All programs* or *All programs in this list*, and then click the *Add* button below 'Do not report errors for these programs' (not the *Add* button below 'All programs in this list'). Type the name of the program's executable file, or click *Browse* and select it (see FIGURE 2). Repeat this process for all the applications you don't want to send a report on. Look over the entire dialog box one more time to make sure that the check boxes reflect your error-reporting preferences, and then click *OK* until all the dialog boxes are closed.

Never report: If you never want Microsoft to hear about your PC's problems, select *Disable error reporting* in the *Error Reporting* dialog box and click *OK* twice.

Never see error messages: To avoid being alerted at all about your system errors, select *Disable error reporting* in the *Error Reporting* dialog box and uncheck *But notify me when critical errors occur*. I don't recommend this option, however. I like to know whether an application actually crashed or my cat Bruno just happened to press <Alt>-<F4> when I wasn't looking. If you don't mind a little mystery, though, this option saves you from having to close the error message whenever a program goes belly-up.

Now every time an application that isn't specified by your settings crashes, you'll see an error message similar to the old one, but without the request to send a report (see FIGURE 3).

MAKE MESSAGES GET YOUR ATTENTION

ALL Versions

WHEN YOUR computer performs a time-consuming task—such as sorting a large database or backing up—you may leave it to its work, only to find on your return that the process stopped as your machine waited for you to respond to an error message or other prompt. Luckily, it's simple to make Windows get your attention.

Start by opening *Control Panel*: In Windows 9x, Me, and 2000, choose *Start>Settings>Control Panel*. In Windows XP, select *Start>Control Panel* (if *Control Panel* is in *Category view*, click *Sound, Speech, and Audio Devices*). Now click or double-click the *Sounds, Sounds and Multimedia*, or *Sounds and Audio Devices* icon, depending on your version of Windows. With the *Sounds* tab selected, choose one of the items in the *Events, Sound Events*, or

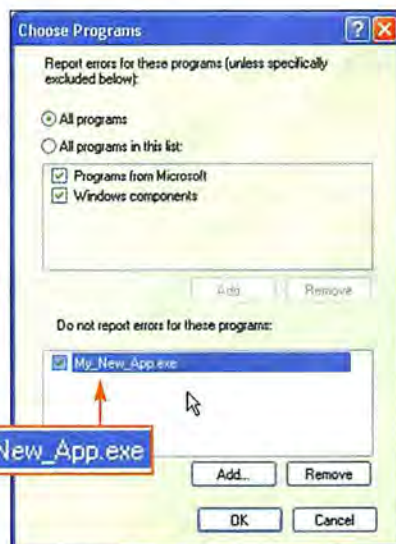


FIGURE 2: BLOCK ERROR reports by listing apps in the *Choose Programs* dialog box.


Program Events list and make sure there is a sound associated with it in the Name drop-down list ('Sounds' in Windows XP). Click the *Play* icon  to test it. Be sure you can hear the Asterisk, Critical Stop, Default Sound (Default Beep), Exclamation, Program error, and Question sounds. In Windows XP, test the System Notification sound, which accompanies the balloon messages that pop up from the right side of taskbar. By default,



FIGURE 3: REMOVE THE OPTION to send a report to Microsoft via the Error Reporting dialog box.

it's a subtle bubble-popping sound, so you may want to change it to something more noticeable. Choose sounds for the other events as desired, then click the *Save As* button to preserve your scheme if you need to retrieve it in the future. Click *OK*.

If using sound to get your attention isn't an option, all is not lost. Return to Control Panel and click or double-click *Accessibility Options*. (In XP, you may have to click this link twice.) Choose the *Sound* tab and check *Use SoundSentry* (see FIGURE 4). This translates your alert sounds into visual flashes. If necessary, click the *Settings* button and choose the item to flash—the active window, the desktop, or the title bar (called the caption bar in this dialog box). Then click *OK* as needed.



FIGURE 4: GIVE SOUNDS a visual cue, to see your error alerts when the volume is down.

MEMORY MADNESS



ANYONE WHO has used Windows for any length of time has almost certainly encountered memory errors. Usually they can be recognized by catch phrases, such as 'X has caused an invalid page fault in module such and such', or 'X caused a general protection fault'. You may also see a message stating 'This program has caused a Fatal Exception' (usually

noted with an error code of 0D). In most cases, the error occurs when one software component has attempted to use a portion of your memory that is already being used by another. Here's what to

keep in mind as you react to and attempt to resolve these so-called protection errors.

Skip the 'Details': Some memory-related error messages have a *Details* button, raising the expectation that clicking it will answer all your questions about what has occurred and why. It won't. The *Details* list you get for protection-error messages contains information of use only to the programmers of the offending software (and not even to them in many cases). Don't bother trying to read or save this list unless a technical support rep asks you to.

Save and reboot: Although recent versions of Windows have become much better at continuing to work after a crash, doing so poses a degree of risk in Windows 9x and Me, and to a lesser extent in Windows 2000. Moreover, even if you don't experience another crash in your current session, you'll have less memory available until you do a complete reboot. The best thing to do is to save your work in all applications that weren't closed by the crash, and then reboot your system at the next convenient interval.

Isolate the cause: Once you've gotten past the shock of your application crash and possible loss of data, the next step is to find out how to prevent the problem from recurring. Think about what you were doing at the time of the crash. For exam-

WINDOWS TOOLBOX

Windows Configurator: Still More Ways to Tweak Your OS

THERE'S A BETTER WAY to customize your operating system. Windows Configurator is a compact program that lets you use a single tabbed dialog box to change your desktop icons, uninstall applications, and perform many other functions found in the Windows Control Panel and Microsoft's free Tweak UI (part of Microsoft's PowerToys for Windows). Windows Configurator lets you hide drives, remove individual tabs from certain control panels, erase unwanted built-in Start menu commands, hide or restrict desktop elements, and prevent Windows Explorer and Internet Explorer toolbars from being



changed, among other functions. Unlike Tweak UI, Windows Configurator allows you to save your settings in a file so you can load or unload groups of settings or transfer them to another system. Best of all, the program is free. Visit find.pcworld.com/32195 to download your copy.

ple, if you get a protection error every time you use your mouse wheel, chances are the problem is related to your mouse driver. The quick fix in these cases is to go to the manufacturer's Web site and see if there are new patches or drivers that you can download and install. Visit find.pcworld.com/32723 to check out Microsoft's Windows 98 and Windows Me Error Message Resource Center. ■

Send Windows-related questions and tips to scott_dunn@pcworld.com. We pay \$50 for published items. Visit find.pcworld.com/31607 for more Windows Tips. Scott Dunn is a contributing editor for PC World.

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INTERNET TIPS

SCOTT SPANBAUER

Unlocking the Mysteries of Browser Error Messages

THE INTERNET IS a resilient creature—it survives viruses, worms, hackers, crackers, and even commercialization without breaking a sweat. That's why it's so shocking when you type in a Web address or click a link only to receive the dreaded '404 Not Found' error message from the remote Web server. By all appearances, the site you wanted has ceased to be (see **FIGURE 1** for the standard obituary). But don't just give up—the 404 error appears for numerous reasons:

- The page you want may have moved.
- You may have clicked or typed a URL (universal resource locator—in this case, a Web site address) that contains an error.
- Your browser may have failed to connect to the remote Web server at the domain in the URL. This is the most common

and easiest 404 to fix: Just press the **<Backspace>** key, if necessary, until the URL you want is displayed in your browser's address window, then press **<Enter>**.

HURL THE RIGHT URL

IF NO AMOUNT of pounding on the **<Enter>** key yields the site you want, all is not lost. Here's the good news: The fact that you're receiving a 404 message means that your Internet connection is good, and that the URL at least points to a domain with a functioning Web server. The bad news is that either the path that follows the domain name is wrong, or you have the wrong domain altogether. A bogus path is the source of the problem in Figure 1. The portion of the URL that describes the domain—www.spanbauer.com—is correct, but the path that follows the domain is not. I probably wanted to type `'/index.html'` instead of `'/index.htm'`.

Bad URL paths leading to 404 errors also plague you when you click URLs received in e-mail messages. When the sending e-mail program inserts line breaks into a long address, the receiving e-mail program will often treat the first break it encounters as the end of the URL. The solution is to reassemble the complete URL in your browser's address field by copying and pasting the pieces.

Alternatively, especially if the fractured address is particularly long, copy it into a word processor, delete the line breaks, and then copy and paste the results into your browser. Or see February's *Home Office* (find.pcworld.com/33413) for Steve Bass's solution to broken links in e-mail.

Bad domain names don't always yield 404 errors. Type www.pcworld.net into

your browser's address field instead of www.pcworld.com, and your browser will probably tell you the site doesn't exist. That's correct—it doesn't. But if you type www.microsoft.com/windowsxp instead of www.microsoft.com/windowsxp (i instead of o), the Web server at the domain microsoft.com kicks into action.

If you're satisfied that the URL you entered is correct and complete, but you still get a 404 error, what next? One solution is to enter just the domain portion of the URL (only through the `'com'` or `'org'`, for example), press **<Enter>** to go to the Web site's home page, and then use its search or navigation tools to find the page you were looking for.

But it may be better to use Google's search engine to find the page. In addition to finding related pages, Google has a huge cache of Web sites that allows you to view sites and some of their pages that have been deleted from the original Web server. If clicking on a Google search link yields a 404 or other error, press **<Backspace>**, and instead click the small *Cached* link (if it exists) at the bottom of the search item. ■

Send your questions and tips to nettips@spanbauer.com. We pay \$50 for published items. See find.pcworld.com/31523 for more Internet Tips. Scott Spanbauer is a contributing editor for PC World.

KILL IE'S DEBUG BUGGING

IF YOU RECENTLY upgraded to Internet Explorer 6 from an earlier version of the browser, you may have encountered an annoying new feature: script debugging. You're surfing along happily when suddenly a dialog box pops up alerting you to a script error in the site visited. Would you like to debug?

Why Microsoft enabled this handy troubleshooting tool for Web site developers in its browser is a mystery to me. Unless you're working the kinks out of a scripted Web site, it serves no purpose other than to slow down your browsing. To exterminate the feature, choose **Tools•Internet Options•Advanced**, check *Disable script debugging*, and click **OK**.



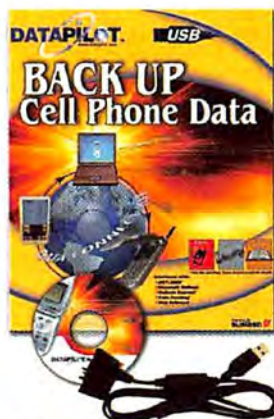
FIGURE 1: DON'T GIVE UP when sites go AWOL. You may have mistyped the address.

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STEP BY STEP

STAN MIASTKOWSKI

Share Your Net Connection

IF YOU HAVE multiple PCs, it doesn't make sense for each computer to have its own dedicated Internet link. Fortunately, all of your PCs can share a single connection, by using Windows' built-in Internet Connection Sharing (ICS) software.

To begin, you'll need to link your PCs together in a network. (See "Set Up a Network in a Snap" in our January 2002 issue, find.pcworld.com/32504.) You will also need a working Internet connection.

A dial-up connection is usually acceptable for a network of two or three PCs. Broadband is a necessity for a larger network, or for heavy downloading. ICS can work with a broadband connection, but you should consider purchasing a router (find.pcworld.com/33362) instead.

ICS is available for Windows 98, Me, 2000, XP Home, and XP Professional. We recommend using an XP-based system as the ICS computer; the example shown

THE TOP DOWN

Benefits: Share a single Internet connection among networked PCs.

Costs: Using an existing PC, free; using broadband router, \$75-\$100

Expertise level: Beginner-intermediate

Time required: 1 hour

Vendors (broadband routers): Asanté (www.asante.com), D-Link (www.dlink.com), Linksys (www.linksys.com), Net-Gear (www.netgear.com), SMC Networks (www.smc.com), Zyxel (www.zyxel.com)

here uses XP Home. For information on setting up an ICS PC using other versions of Windows, go to Help and then search for Internet Connection Sharing. ■

Stan Miastkowski is a PC World contributing editor. Contact him at stan_miastkowski@pcworld.com. Visit find.pcworld.com/31676 for past Step-By-Step columns.

1 Activate the XP Network Wizard.

Click **Start** and select **My Network Places**. In the Network Tasks selection box in the upper corner, click **Set up a home or small office network**. The Network Setup Wizard will appear. Click **Next**.



2 Make sure your network is ready.

Review the 'Before you continue' dialog box carefully. Your network should already be up and running, so you shouldn't need to click the 'Checklist for creating a network' link. Click **Next**.

3 Select the current PC for Internet Connection Sharing.

On the 'Select a connection method' screen, make certain *This computer connects directly to the Internet* is checked, and then click **Next**.

Select the statement that best describes this computer:

☒ This computer connects directly to the Internet. The other computers on my network connect to the Internet through this computer.

[View an example](#)

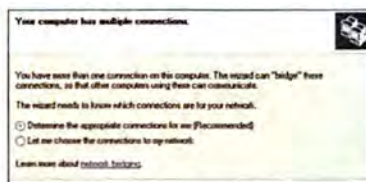
4 Specify the Internet connection that will be shared.

On the 'Select your Internet connection' screen, highlight the connection you wish to share. If you're sharing a modem or a USB-based cable or DSL connection, the choice will be obvious. But if you have two network cards in your PC, choosing the correct network adapter can be tricky. For more information, click the *how to determine your Internet connection* link. If you still have problems, forge onward.



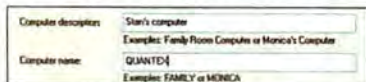
5 Construct the network bridge.

The 'Your computer has multiple connections' screen allows XP to set up a "bridge" between the connections, an essential step in ICS. If you're familiar with networking, click the second choice. For most users, the first choice, which permits XP to determine the connections automatically, is the better choice.



6 Name the ICS computer and the network.

Some Internet providers require that the computer be given a specific name (which will be shown on the screen), although this isn't necessary for dial-up connections. If your ISP requires a specific name, don't change it. If not, any name will do.

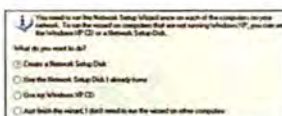


In the next screen, you'll give your network a name. All computers must use the same one. Suggestion: Use **WORKGROUP**.

The next screen summarizes your network settings. Click **Next** to complete the process. (It can take several minutes.)

7 Create a network disk.

Next, you need to create a network setup disk that you can use to automatically set up the other computers on your network to access the Internet through the sharing PC. Though there are other choices on the screen, using a floppy disk is the easiest way. Follow the directions.



8 Set up your other networked computers.

Insert the network setup disk into each computer's floppy drive, open **My Computer**, double-click **3_ Floppy (A:)**, and double-click **netsetup**. Follow the directions. If you have problems, try running the Network Setup Wizard on the ICS computer again.

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HARDWARE TIPS

KIRK STEERS

Broaden Your View by Adding a Second Monitor

WHAT SHOULD YOU do with your bulky old CRT monitor now that you've got a fancy new flat-panel display? Keep using it, of course. One of Windows' handiest features is its ability to use two monitors at once, which can double your PC's work area. Setting your system to use two monitors can save you time and reduce wear and tear on your wrists.

All you need are a second monitor, a graphics card to drive it, and a free PCI or AGP expansion slot for the card. Do your homework, though, before you buy another graphics card. Some won't play second fiddle, and others require updated drivers to do so. Ask the card's manufacturer about these and other restrictions, and visit find.pcworld.com/32198 to check Microsoft's Hardware Compatibility List.

To avoid using a second expansion slot (and having to configure two different boards), buy a graphics card that supports two monitors, such as the Matrox G450 (find.pcworld.com/32201) or the ATI Radeon 7500 (find.pcworld.com/32204).

After installing your new board and

hooking up your second monitor, right-click the desktop and select *Properties* to open Windows' Display Properties dialog box. Select the *Settings* tab to see pictures of the monitors, labeled 1 and 2 (see **FIGURE 1**). Click the image of the number 2 monitor, and when Windows asks if you want to enable it, click *OK*.

Now set the resolution and color depth for the second monitor. You can change the relative position of the two screen displays by dragging one monitor picture above, below, or to either side of the other. Make sure *Extend my Windows desktop onto this monitor* is checked, and click *Apply* or *OK*. The second monitor will now display half your desktop.

Note that changing the position of the pictures won't change one monitor from primary to secondary. Your primary monitor displays your PC's initialization data when your system starts, and it's the display most of your applications will appear on. (For programs that don't support multiple monitors, it's the *only* monitor they'll appear on.) Be sure to designate your best monitor/board combo as the primary. In Windows 2000 and XP, right-click the desktop and select *Properties*, the *Settings* tab, the *Advanced* button, and finally the *Monitor* tab. Make sure *Use this device as the primary monitor* is checked.

In Windows 98 and Me, the primary monitor is solely determined by your PC's BIOS. If you're using two PCI graphics boards, the BIOS usually selects the card that is closer to the CPU on your motherboard as the primary, so just swap the position of the cards in the expansion slots to change the primary monitor.

If you're using one PCI card and one

AGP card with Windows 98 or Me, the BIOS usually selects the PCI card as the primary, but most users have the better graphics card in the AGP slot. To fix this, check the Setup program of your PC's BIOS. Some motherboards let you choose between AGP and PCI as the primary expansion slot. If yours doesn't, your motherboard vendor may have an updated BIOS version that adds this capability.

FIREWIRE IN THE HOLE

I JUST ACQUIRED a hand-me-down digital camcorder. I tried to attach it to my Sony VAIO laptop, but the FireWire connector at the end of the cord running from the camcorder is too big for the port on the laptop. Isn't Sony's "i.Link" port just a FireWire port by another name?

Frank Johnson, Fort Worth, Texas



FIGURE 1: WINDOWS' DISPLAY settings show two monitors when you install a second one.

IT IS. Sony's i.Link is the same as Apple's FireWire and everybody else's IEEE 1394. Standard i.Link connectors like the one for your camcorder have six pins: four that move data and two that carry power to nonpowered devices. The smaller, four-pin i.Link connector on your laptop carries only data. You can get a six-to-four-pin FireWire adapter cable from Belkin (www.belkin.com) for around \$30. ■

You can reach PC World Contributing Editor Kirk Steers at kirk_steers@pcworld.com. We welcome your tips and questions and pay \$50 for published items. Visit find.pcworld.com/31511 for more Hardware Tips.

CLOSE YOUR PC'S BORDERS

WITH EVERYONE so worried about Internet security these days, it's easy to overlook two of the most obvious threats to your PC: a nosy coworker who pokes around in it, or a nasty virus that infiltrates it through the floppy drive, CD-ROM drive, or I/O ports. DeviceLock from SmartLine is a handy software program that keeps interlopers out of your PC by locking it when you're not around. Point your browser to find.pcworld.com/32216 to download your free copy.

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What Do You Do When Windows Doesn't Boot?



I'VE TRIED EVERYTHING I can think of, but I can't get Windows Me to boot. Is there anything I can do?

Aric Michael Warden, via the Internet

HERE'S THE SOLUTION to recalcitrant PCs running Windows 98 and Me. First, boot your computer into Safe mode: Turn on your computer, then immediately press and hold down the <Ctrl> key. When the start-up options appear, release the

and press <Enter> to get a list of your available backups (see FIGURE 1).

If your computer uses Windows 98, you must fix or restore the Registry from outside Windows. Once again, hold down <Ctrl> as you start your machine, but this time, select *Command prompt only* from the resulting start-up menu. At the C> prompt, type `scanreg /fix` (no *w* this time) or `scanreg /restore` and press <Enter>.

In either Windows 98 or Me, if you can't get to Safe mode, the command prompt, or the Startup menu, it's time to break out your Startup floppy. If you don't have one, find a PC running Windows 98 or Me, select *Start•Settings•Control Panel*, double-click *Add/Remove Programs*, choose the *Startup Disk* tab, click the *Create Disk* button, and follow the instructions.

You'll need a blank, formatted floppy.

Put the Startup floppy into your A: drive and reboot your troubled system. You'll see another start-up menu. Select *Start computer without CD-ROM support* and press <Enter>. Starting the computer with CD-ROM support takes longer and is useful only if you need to reinstall Windows.

At the A> prompt, type `dir c:` and press <Enter>. If you see a list of files and folders, you can relax; your hard drive is readable and you probably haven't lost your data. If your drive isn't readable, and you don't have backups, contact a company such as Ontrack (www.ontrack.com) to see if it can restore your data.

Here are some other useful commands: **scandisk c:** checks your hard drive for errors; **sys c:** restores some primary files needed for booting from the hard drive; and **fdisk /mbr** restores your drive's master boot record, which, if it's corrupted, just might be the cause of your problems.

Go to find.pcworld.com/32219 to learn how to jump-start ailing systems that are using Windows 2000 and XP.

CRAZY ERROR MESSAGES



SCANDISK KEEPS telling me that an FSInfoSector error was detected and corrected. If it was corrected, how come it keeps coming back? And how can I correct it permanently?

Mike Greene, Alexandria, Virginia

THERE ARE A LOT of crazy error messages that can crop up. I'll explain yours as well as two other confusing ones.

FSInfoSector is where FAT32 stores file system information. When Windows fails to shut down correctly, this sector gets corrupted. The next time you run ScanDisk, the problem is detected and fixed, and you get a message telling you so.

If you're getting frequent FSInfoSector errors, chances are Windows isn't shutting down properly. Try closing all ▶

AUTOCORRECT TRANSFERS

IF YOU HAVE Microsoft Word on two computers, you can transfer your AutoCorrect list from one to the other with `autocorrect.dot`, a Word macro by Microsoft Most Valuable Professional contributor Dave Rado and distributed via the MVP Web site (www.mvps.org). Go to find.pcworld.com/32225 for a free copy. If macros have been disabled, select *Tools•Macro•Security* in Word. On the Security Level tab, select *Medium*, then click *OK*. If Word warns you that the file contains macros, click *Enable Macros*. Run `Autocorrect.dot` on the first PC and click *Backup* to export your settings to a Word document. Now run `Autocorrect.dot` on the second PC and select *Restore* to import your AutoCorrect list. You'll lose only settings with the same name as the imported AutoCorrect items.

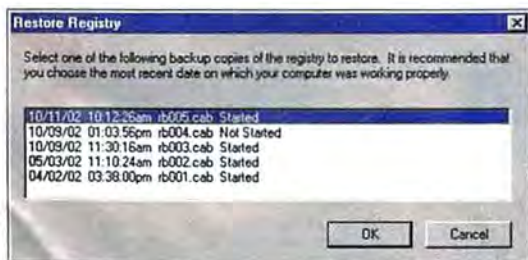
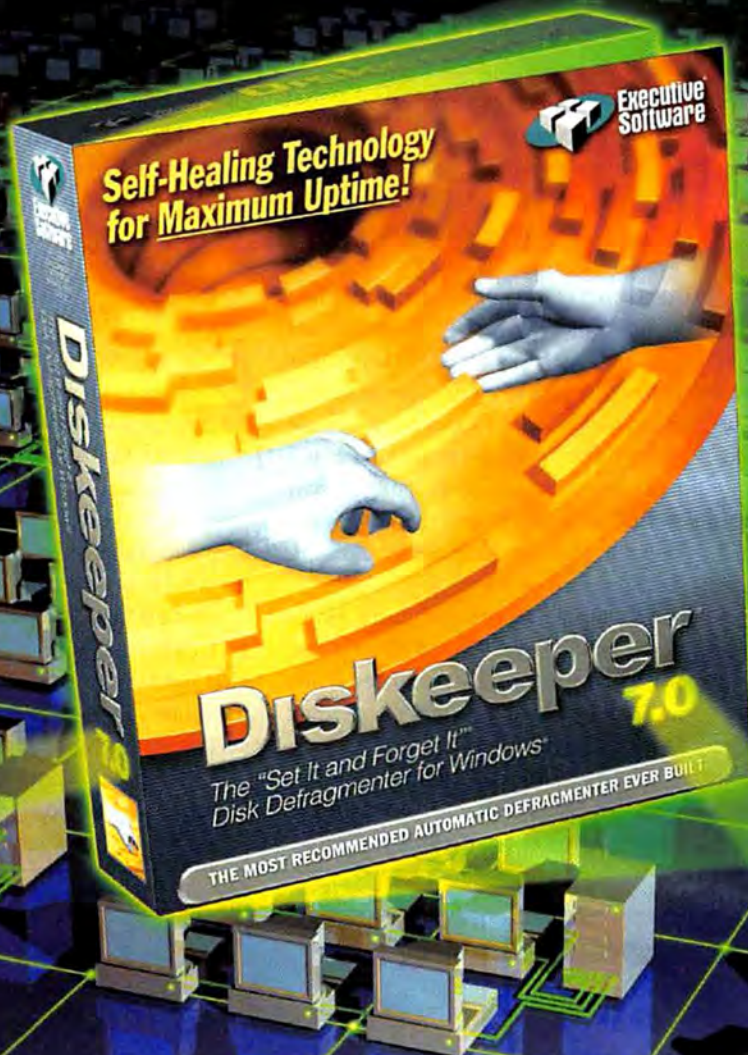


FIGURE 1: RESTORE YOUR REGISTRY from Safe mode with Scanreg—a tool that comes with Windows Me.

<Ctrl> key and use the arrow keys to select *Safe mode*, then press <Enter>.

This brings you to a limited version of Windows. Now you can access your data and change back whatever caused the problem. For instance, you might uninstall a program or device you installed just prior to the snafu's first occurrence.

You can also repair or restore the Windows Registry. If you use Windows Me, select *Start•Run*, type `scanregw /fix` (note the *w* and the space that follows it), and press <Enter> to repair the Registry. To restore an earlier version of the Registry (Windows backs it up at regular intervals), select *Start•Run*, type `scanregw /restore`,



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your programs before shutting Windows down to see if that solves the problem. And be sure not to turn off your system until Windows says it's ready to be shut down (or until your system has shut itself down, if it is set to do so).

Some error messages can be needlessly alarming. One of my favorite examples of such overstatements is Microsoft's choice of the words *fatal exception*, as in 'A fatal exception xx has occurred at yyyy:yyyyyyyy'. To my knowledge, a fatal exception has never killed anyone—outside of Redmond, Washington, that is.

The error message is really trying to tell you that something stepped on a part of memory where it didn't belong, or on a part that has gone bad. If this error happens only occasionally, don't worry about it. If it happens a lot, however, enter Safe mode by following the steps described in the previous tip and see if the error recurs. If the problem goes away in Safe mode, the source is most likely a bad

driver. Browse to your device vendors' Web sites for updates.

On the other hand, the error may be the result of a defective RAM chip. In that case, you might be able to correct the problem by entering your PC Setup program (press the appropriate key when your computer starts; your system should tell you which key that is). Then either adjust your memory wait states or turn off your motherboard's L2 cache. There are many different PC Setup programs, so I can't give you exact instructions on how to find the specific settings, but it's not difficult. If the problem persists, consider replacing your RAM.

Another message that confuses people is one in Windows 2000 and XP announcing that a program 'has generated errors and will be closed by Windows' and that 'An error log is being created'.

That log is in C:\Documents and Settings\All Users\Documents\DrWatson, and its name is drwtsn32.log. Double-

click it to open it in Notepad, but don't expect it to be much help. Only a tech can decipher its gobbledygook. See this month's *Windows Tips* on page 140 for more on Windows XP's error reporting.

SELECTIVELY LINK EXCEL DATA TO A WORD DOC



I'D LIKE TO LINK only a *section* of an Excel spreadsheet to a Word document, but when I select Insert>Object, click the 'Create from File' tab, and choose my Excel file, I get the whole spreadsheet. How do I get just the piece I want, and keep it linked so it updates when I change the original spreadsheet?

Clint Collier, Walnut Creek, California

THE TRICK is not to use Insert>Object. First, open the spreadsheet in Excel, select the range you want to link to the Word document, and press <Ctrl>-C.

Next, open the Word file that you want to link to the spreadsheet. Position the cursor where you want the range to

SUMMARY NOTICE OF SETTLEMENT

ATTENTION: UMAX ASTRA 1220 SERIES SCANNER PURCHASERS

IF YOU PURCHASED AT RETAIL WITHIN THE UNITED STATES, FOR YOUR OWN USE AND NOT FOR RESALE, A UMAX ASTRA 1220 SERIES SCANNER (model numbers 1220S, 1220P or 1220U) ON OR BETWEEN MARCH 16, 1998 AND DECEMBER 31, 1998, AND DID NOT RETURN IT, YOU MAY BE ENTITLED TO SHARE IN THE BENEFITS OF A PROPOSED CLASS ACTION SETTLEMENT.

THIS NOTICE IS GIVEN TO INFORM ALL POTENTIAL CLASS MEMBERS OF A PROPOSED SETTLEMENT OF A CLASS ACTION LAWSUIT. PLEASE READ THIS SUMMARY NOTICE CAREFULLY AND IN FULL AS YOUR RIGHTS WILL BE AFFECTED BY THE PROCEEDINGS IN THIS ACTION.

NOTICE IS HEREBY GIVEN that a hearing will be held before the Honorable Jack Komar of the Superior Court of California for the County of Santa Clara, Department 17C, located at 191 N. First Street, San Jose, CA, 95113, on May 13, 2003, at 9:00 o'clock a.m. to determine, among other matters, (1) whether the proposed settlement of the Action on terms set forth in a Stipulation of Settlement dated November 15, 2002, is fair, reasonable and adequate; (2) whether a settlement class should be certified; (3) whether the Court should enter the proposed final judgment; and (4) whether the application of counsel for the class for an award of attorneys' fees and expenses in an amount not to exceed \$410,000 should be granted.

DESCRIPTION OF THE ACTION

The Class Representatives in this Action allege that UMAX Technologies, Inc. made misrepresentations and false statements in connection with the marketing, promotion and advertising of the color specification of the UMAX Astra 1220 Series Scanners. UMAX has denied and continues to deny these allegations and has asserted numerous affirmative defenses.

DESCRIPTION OF THE SETTLEMENT

Subject to Court approval, and in consideration of and in exchange for dismissing the Action with prejudice and releasing UMAX and certain other parties from certain claims, UMAX will provide each Settlement Class Member with a Claim Certificate that will be convertible into a payment of up to ten dollars (\$10). Eligibility to participate in the settlement is subject to certain restrictions and limitations set forth in the detailed "Notice of Pendency of Class Action, Proposed Settlement and Hearing."

HOW TO PARTICIPATE IN THE SETTLEMENT

If you are a Settlement Class Member, you must submit a completed Claim Certificate to participate in the settlement. To receive a Claim Certificate and a detailed "Notice of Pendency of Class Action, Proposed Settlement and Hearing" which describes the Action, the proposed settlement, the eligibility requirements, the deadlines for submitting a Claim Certificate, and the rights and options available to Settlement Class Members, you must send a written request including your name and address by mail to Dept. #30980, Request for Claim Form, P.O. Box 52900, Phoenix, AZ 85072, or visit the settlement website at www.umaxclassaction.com. The detailed "Notice of Pendency of Class Action, Proposed Settlement and Hearing" and Claim Certificate may be printed from the settlement website.

REQUESTS FOR EXCLUSION AND OBJECTIONS

Any requests for exclusion from the proposed settlement must be sent by mail to Class Counsel, Jonathan Shub, Sheller, Ludwig & Bady, P.C., 1528 Walnut Street, Third Floor, Philadelphia, PA 19102, and postmarked on or before April 25, 2003. The procedure, rights and effects regarding exclusion are fully explained in the detailed "Notice of Pendency of Class Action, Proposed Settlement and Hearing."

Any objections to the proposed settlement must be filed with the Court and copies served on Jonathan Shub at the above address and Counsel for UMAX Technologies, Inc., John Leo Wagner, Irell & Manella LLP, 840 Newport Center Drive, Suite 400, Newport Beach, California, 92660, on or before April 25, 2003. The procedure for making an objection is fully explained in the detailed "Notice of Pendency of Class Action, Proposed Settlement and Hearing."

PLEASE DO NOT CONTACT THE COURT OR THE CLERK'S OFFICE FOR INFORMATION.

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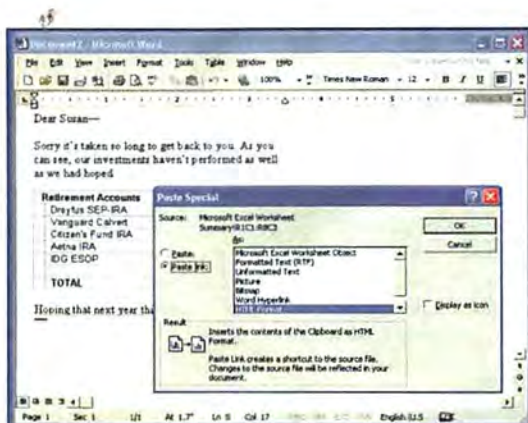


FIGURE 2: PASTE AN EXCEL RANGE, not the entire spreadsheet, into Word and update it automatically.

appear in the document, and then select *Edit>Paste Special* (you may have to expand the Edit menu to see this option). Choose *Paste link* (see **FIGURE 2**). If you don't want the data to update in Word when you change it in Excel, simply select *Paste*.

Now choose one of the 'As' options. The selection is basically aesthetic. I like

a .prn file so that you can print it later. For instance, your notebook PC may not be connected to your printer at the moment, or you may want to use a particular printer that isn't currently attached to your desktop (you will still need to have a driver installed on your system for that printer). Although the standard Windows

the look of the *Microsoft Excel Worksheet Object, Picture, and HTML Format* options.

POSTPONE PRINTING WITH A .PRN FILE

I RECENTLY "printed" a Web page with the 'print to file' option, planning to actually print the page later. When I did this, however, my computer created a .prn file. How do I print one of these?

Tony Lee, Grand Prairie, Texas
OCCASIONALLY YOU may find it useful to "print" something to

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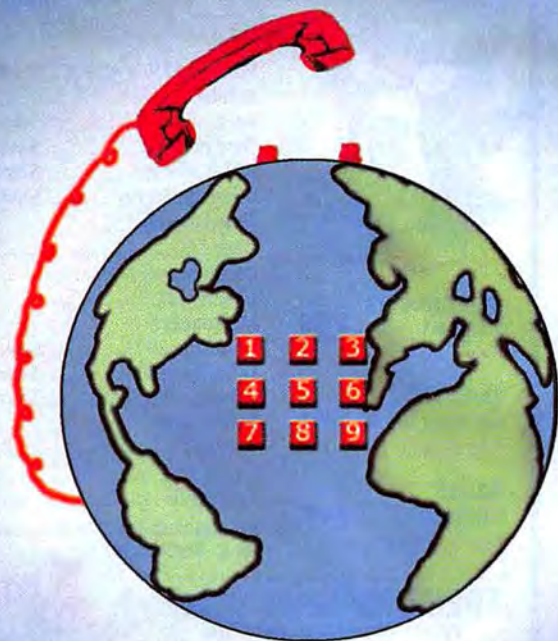
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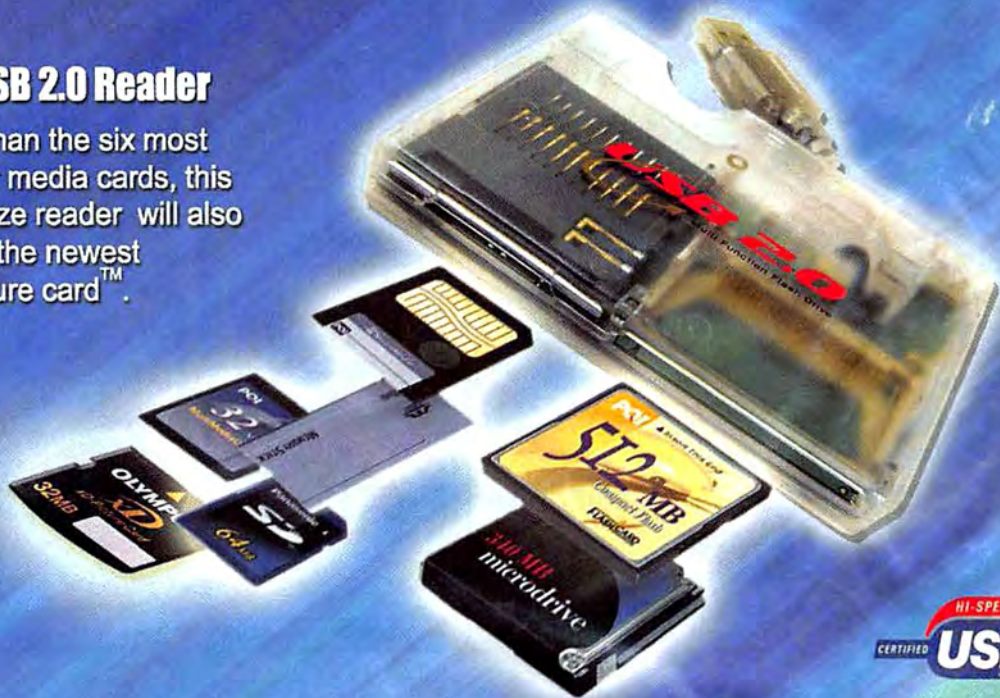
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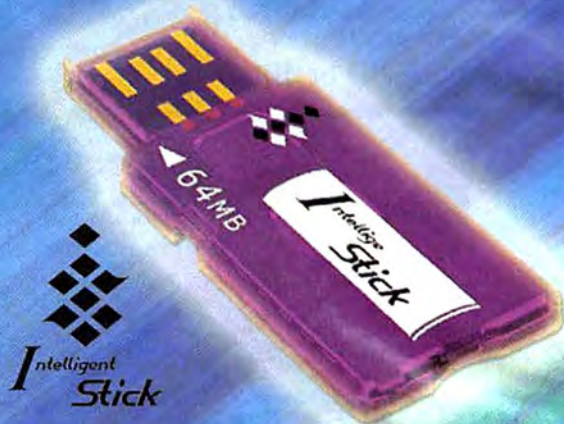
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The More This PC World Changes...

THIS MAGAZINE HAS BEEN COVERING PCs for 20 years now. And so have I, though I didn't turn up in these pages until 1995. I got my start back in the March 1983 issue of (ahem) *PC Magazine* with a review of a product that purported to add semiautomatic footnoting to my favorite

word processor of the time, WordStar. I can't even remember the name of the thing, but trust me, it was awful.

In the intervening years, almost everything about PCs has gotten faster, more capacious, and more versatile. But it's worth noting that some things about the PC business haven't changed much at all:

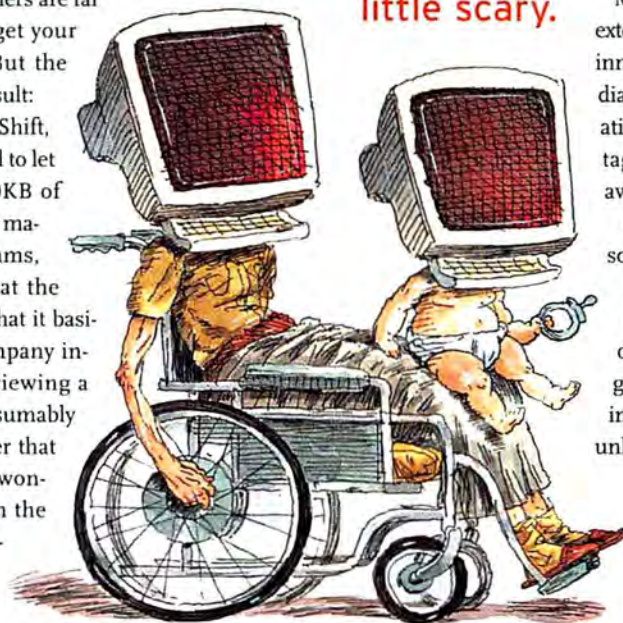
Software is never finished. I still recall the agony of working with the goofy footnoting program as I discovered glitch after glitch. Every time I phoned the developer to point out one more failing, he thanked me, hunkered down, and overnighted me a new floppy with marginally better code. Today's teams of programmers are far less responsive, and you get your fixes over the Internet. But the basic problem remains. Result:

Users are testers. Memory Shift, another 1983 app, promised to let you divide your huge 640KB of RAM into a bunch of virtual machines, load several programs, and switch among them at the touch of a key. I reported that it basically didn't work. The company insisted that I had been reviewing a "gamma test" version, presumably in honor of the Greek letter that comes after beta. How, I wondered, did this differ from the copies being shipped to customers? A spokesman admitted it was exactly the

same. Today, Windows XP urges you to send an error report every time a program crashes; *everything* is a "gamma test."

Documentation stinks. The PC's early days brought us elegantly boxed linen-bound manuals, most of which were poorly conceived, badly written, and often downright wrong—exactly like today's online help. Then and now, much of this boils down to one fact: Brilliant tech writers are never wooed or paid like star programmers.

**Old tech, new tech:
The resemblance is a
little scary.**



A single sea change outweighs a hundred incremental improvements. The difference between using a typewriter and using a word processor is a quantum leap; the difference between the first word processor and the latest models, though immense, is far less remarkable. Major developments like the Web and Wi-Fi genuinely shake up the world forever; subsequent tweaks will end up as historical footnotes.

Still, ongoing improvements can be crucial. Early ink jet printers, for example, were okay at best; it took several years of steady enhancements to get to the point where the product suddenly made sense.

Little ideas end up in big programs. In the old days, using features like footnoting, spell-checking, outlining, and synonym finding required buying a separate program for each function. Word processors quickly swallowed up those features.

More recently, Microsoft's monopoly extension efforts have ensured that others' innovations in everything from multimedia to browsers would end up in the operating system. That has short-term advantages—but once the competition goes away, improvements essentially cease.

And so big programs like word processors and operating systems keep on getting bigger. Which is one more reason why software is never finished. And one more reason why, amid all of the great and surprising changes we'll see in the next two decades, some things are unlikely to change at all. ■

Visit find.pcworld.com/31595 to see more columns by contributing editor Stephen Manes. He has been writing about technology for two decades.



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